Eastleigh Borough Local Plan Review

Habitat Regulations Assessment Preliminary Screening Report

November 2024

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EASTLEIGH BOROUGH COUNCIL

This preliminary report supports the Eastleigh Borough Local Plan Review. It starts the process of assessing the plan in accordance with the habitat regulations (in respect of international biodiversity designations).

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URBAN EDGE ENVIRONMENTAL CONSULTING

NATURAL PROGRESSION

Habitats Regulations Assessment for the Eastleigh Local Plan

Preliminary Screening Report: Issues and Options

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Preliminary Screening Report: Issues and Options

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CIEEM REGISTERED PRACTICE 2022-2023

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Abbreviations

µg/m^3	Micrograms per cubic metre
APIS	Air Pollution Information System
CJEU	Court of Justice of the European Union
CL	Critical Load/Level
Ha	Hectare
HRA	Habitats Regulations Assessment
kg N/ha/yr	Kilograms nitrogen per hectare per year
kEq/ha/yr	Kiliequivalent per hectare per year
NH_3	Ammonia
NO_X	Nitrogen oxides
SPA	Special Protection Area
PfSH	Partnership for South Hampshire
SAC	Special Area of Conservation
SGO	Strategic Development Options
SPA	Special Protection Area
SRMP	Solent Recreation Mitigation Partnership
WWTW	Waste Water Treatment Works
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRZ	Water Resource Zone
WeBS	Wetland Bird Survey

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0 Executive Summary

0.1 Introduction

0.1.1 Eastleigh Borough Council is undertaking a review of its Local Plan. It is currently at an early stage in the process and is considering a number of Issues and Options. As an integral part of this process, the Council is undertaking a Habitats Regulations Assessment (HRA). A related Sustainability Appraisal has also been prepared and is reported separately.

0.1.2 HRA is a requirement of the Conservation of Habitats and Species Regulations 2017 (as amended; commonly referred to as 'the Habitats Regulations'), and must be applied to any plan or project not directly connected with or necessary to the management of a European site, if it is likely to have a significant effect on a European site either alone or in combination with other plans or projects. An effect is "likely" in this context if the risk cannot be excluded on the basis of objective information (see chapter 2).

0.1.3 The HRA incorporates evidence on likely impact pathways and considers the potential for likely significant effects in view of European site conservation objectives. No reliance is placed on mitigation during the screening assessment. Chapter 2 presents information about the overall methodology used for the HRA.

0.2 Scope of the Assessment

0.2.1 Acknowledging that the Local Plan is not directly connected with or necessary to management of the sites for nature conservation, the HRA considers the following European sites for likely significant or adverse effects on integrity:

- Emer Bog SAC
- New Forest SAC
- River Itchen SAC
- Solent Maritime SAC
- Solent and Dorset Coast SPA
- New Forest SPA
- New Forest Ramsar
- Solent and Southampton Water SPA
- Solent and Southampton Water Ramsar

0.2.2 Chapter 3, supported by Appendix I, presents information about the sites, including their qualifying features and conservation objectives.

0.3 Impact Pathways

0.3.1 The following impact pathways are considered for likely significantly effects on the European sites:

- Atmospheric pollution;
- Coastal squeeze;
- Recreational disturbance;
- Land outside European site boundaries (functionally linked land);
- Displacement due to shortened sight-lines;
- Site specific disturbance: noise and vibration;
- Impacts on otter outside Europeans site boundaries;
- Non-native species and site-specific hydrological impacts;
- Water abstraction; and
- Water pollution.

0.3.2 Chapter 5 describes the available evidence about these impact pathways in relation to the European sites and identifies Strategic Development Options (SDOs) and small / medium sites proposed by developers and so under consideration which could result in likely significant effects, either alone or in combination with other plans and projects.

0.4 Summary of Findings

0.4.1 In summary, the assessment of the Issues and Options SDOs and small / medium sites finds that:

- Likely significant effects were identified in relation to the New Forest SAC / SPA / Ramsar for recreational disturbance in combination with other plans and projects.
- Likely significant effects were identified in relation to the River Itchen SAC for air pollution, recreational disturbance, site-specific disturbance, otter outside European site boundaries, and non-native species and hydrological impacts, alone or in combination with other plans and projects.
- Likely significant effects were identified in relation to the Solent Maritime SAC for air pollution, coastal squeeze, recreational disturbance, non-native species and hydrological impacts, and water pollution, alone or in combination with other plans and projects.
- Likely significant effects were identified in relation to the Solent and Southampton Water SPA / Ramsar for air pollution, recreational disturbance, functionally linked land, shortened sight lines, site-specific disturbance and water pollution, alone or in combination with other plans and projects.
- Likely significant effects were identified for Solent and Dorset Coast SPA for site-specific disturbance and water pollution, alone or in combination with other plans and projects.

0.5 Conclusions

0.5.1 In the absence of mitigation the SDOs and small / medium sites under consideration at the Issues and Options stage could result in a range of likely significant effects to European sites. At the next plan stage, any SDOs and small / medium sites taken forward into the Preferred Options Plan, together with any new sites / options, will be subject to further screening.

1 Introduction

1.1 Purpose of the Report

1.1.1 This report has been prepared for Eastleigh Borough Council as part of the Habitats Regulations Assessment (HRA) for the Local Plan Review. The report accompanies the Issues and Options consultation and forms part of the evidence base upon which it is based. A related Sustainability Appraisal has also been prepared by the Council and is reported separately.

1.2 The Eastleigh Local Plan Review

1.2.1 Upon adoption, the Local Plan Review will replace the adopted Eastleigh Borough Local Plan (2016-2036). It will form part of the Council's Development Plan along with the Hampshire Minerals and Waste Plan 2013. This is currently subject to a partial review and is expected to be adopted by Summer 2025. The Council is also supporting neighbourhood planning activity across the Borough. This currently includes the Botley and Bishopstoke Neighbourhood Plans which are at different stages of being progressed.

1.2.2 The Local Plan Review will set the planning strategy for Eastleigh Borough and address emerging housing and employment needs through to 2044. When adopted the Local Plan Review will provide a strategy for the distribution, scale and form of development and supporting infrastructure, a set of proposals to deliver the strategy, policies against which to assess planning applications, and proposals for monitoring the success of the plan.

1.3 Habitats Regulations Assessment

1.3.1 HRA must be applied to any plan or project likely to have a significant effect on a 'European site' either alone or in combination with other plans or projects. HRA is a requirement of the Conservation of Habitats and Species Regulations 2017 (as amended; henceforth 'the Habitats Regulations'), the UK' transposition of European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive'). Since the UK left the EU the Habitats Directive no longer applies directly to the assessment of plans and projects in the UK. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 amend parts of the 2017 Regulations so that they continue to operate effectively[1].

1.3.2 European sites[2] provide ecological infrastructure for the protection of rare, endangered or vulnerable natural habitats and species of exceptional importance. European sites consist of

[1] Defra (2021): *Changes to the Habitats Regulations Assessment 2017.* Accessed online [22/01/2024] at: https://www.gov.uk/government/publications/changes-to-the-habitats-regulations-2017/changes-to-the-habitats-regulations-2017

[2] Although the term is not used in the Habitats Directive, a statutory definition of 'European site' is given in regulation 8 of the Habitats Regulations 2017. This document therefore refers collectively to SAC/SPA as European sites

Special Areas of Conservation (SAC) and Special Protection Areas (SPA) and together form part of new national site network in the UK to replace the EU Natura 2000 network. Additionally, the National Planning Policy Framework (NPPF; DLUHC, 2023) and Circular 06/05 (ODPM, 2005) require that Ramsar sites (UNESCO, 1971) are treated as if they are fully designated sites for the purposes of considering development proposals that may affect them.

1.3.3 The HRA Report responds to recent case law from the Court of Justice of the European Union (CJEU) and Natural England's position in relation to nutrient neutral development (Natural England, 2022).

1.4 Scope and Structure of this Document

1.4.1 The document is structured around the following sections:

- Chapter Two: HRA methodology;
- Chapter Three: European sites, qualifying features, conservation objectives, condition status, population trends and threats to site integrity;
- Chapter Four: Information about the Issues and Options under consideration;
- Chapter Five: Identifying impact pathways and preliminary screening for likely significant effects; and
- Chapter Six: Summary and conclusions.

2 Methodology

2.1 Good Practice Guidance

2.1.1 Broad guidance on HRA has been published by MHCLG (2019) and DEFRA (2021) with more detailed guidance issued by the European Commission (2021). *The Habitats Regulations Assessment Handbook* (Tyldesley & Chapman, 2013) was developed to provide a definitive source of detailed practical guidance consistent with case law, examples of recent good practice and government guidance. The requirement for HRA stems from Articles 6(3) and 6(4) of the Habitats Directive, which are represented by four stages within the HRA process as listed in Table 2.1.

2.1.2 The Screening Assessment and Appropriate Assessment for the Local Plan are being undertaken with reference to the *HRA Handbook* and other guidance documents[3].

Table 2.1: Stages of HRA in Guidance from Tyldesley & Chapman (2013)

HRA Handbook stage
Stage 1: Screening for Likely Significant Effects
Stage 2: Appropriate Assessment & Integrity Test
Stage 3: Alternative Solutions
Stage 4: Imperative Reasons of Overriding Public Interest and Compensatory Measures

2.1.3 In *The Habitats Regulations Assessment Handbook* (Tyldesley & Chapman, 2013) section F.1.1.2 (Introduction and overview to 'Plan' assessment) it is recognised that the assessment of a plan may not be as precise and detailed as that of a project at application stage. Plans, and in particular strategic plans such as a Local Plan, also vary in their degree of specificity ranging from very general statements and policy aspirations which may cover a wide geographic area to more prescriptive proposals that are scale and location specific.

2.1.4 An HRA must determine whether or not a plan or project will adversely affect the integrity of the European site(s) concerned, in view of the site's conservation objectives. Where adverse effects are anticipated changes must be made to the plan or project. The process is characterised by the precautionary principle, defined as (European Commission, 2000):

> *"If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with the protection normally afforded to these within the European Community, the Precautionary Principle is triggered.*

[3] Reference has also been made to relevant case law, including the summary of applicable principles in paragraph 8 of R (Mynydd y Gwynt Ltd) v Secretary of State for Business, Energy and Industrial Strategy [2018] EWCA Civ 231, [2018] P.T.S.R. 1274.

> *"Decision-makers then have to determine what action to take. They should take account of the potential consequences of taking no action, the uncertainties inherent in the scientific evaluation, and they should consult interested parties on the possible ways of managing the risk. Measures should be proportionate to the level of risk, and to the desired level of protection. They should be provisional in nature pending the availability of more reliable scientific data.*
>
> *"Action is then undertaken to obtain further information enabling a more objective assessment of the risk. The measures taken to manage the risk should be maintained so long as the scientific information remains inconclusive and the risk unacceptable."*

2.1.5 The precautionary approach applies at both screening and appropriate assessment stages and means that:

- At screening stage, if a risk of a significant effect on a European site cannot be ruled out on the basis of objective information, the effect is "likely" and an appropriate assessment must be carried out. The words "likely" and "unlikely" are used in this HRA applying that approach (unless otherwise indicated).
- Following an appropriate assessment, if a competent authority cannot rule out all reasonable scientific doubt of an adverse effect on a site's integrity, the plan or project can only be authorised if the statutory derogation tests are satisfied.

2.1.6 Whilst the UK is no longer part of the EU, the UK Government's ongoing commitment to the precautionary principle is enacted in section 16(2) of the EU (Withdrawal) Act 2018 and further embodied within the Environment Act 2021. The precautionary principle therefore continues to be applicable to the HRA process.

2.2 Screening for Likely Significant Effects

2.2.1 Screening is the process which identifies whether a plan or project is likely to result in significant effects to European sites, either alone or in combination with other plans or projects. A significant effect is any effect that would undermine the conservation objectives for a European site. There must be a causal connection or link between the plan or project and the qualifying features of the site which could result in significant effects, but this may be direct or indirect (Tyldesley & Chapman, 2013).

2.2.2 *The Handbook* defines a list of 'screening categories' to provide a rigorous and transparent approach to determining which aspects of the plan could potentially result in significant (adverse) effects. These are listed in Table 2.2, where green indicates that the proposal can be screened-out, orange denotes proposals which may have a significant effect in combination and require further analysis, and red specifies proposals likely to have a significant effect. The colour-coded categories provide the means of recording the results of the assessment in such a way that important issues are identified whilst proposals that have no effect are screened out.

Table 2.2: Screening Categories (Source: Tyldesley & Chapman, 2013)

Cat.	Description
A	General statement of policy / aspiration
B	Policy listing general criteria for testing the acceptability / sustainability of proposals
C	Proposal referred to but not proposed by the plan
D	Environmental protection / site safeguarding policy
E	Policy/proposal steers change in such a way as to protect European sites from adverse effects
F	Policy that cannot lead to development or other change
G	Policy/proposal that could not have any conceivable effect on a European site
H	Policy/proposal the (actual or theoretical) effects of which cannot undermine the conservation objectives (either alone or in combination with other aspects of this or any other plan/project)
I	Policy/proposal with a likely significant effect on a European site alone
J	Policy/proposal with an effect on a site but not likely to be significant alone; check for likely significant effects in combination
K	Policy/proposal not likely to have a significant effect either alone or in combination (after the in combination test)
L	Policy/proposal likely to have a significant effect in combination (after the in combination test)
M	Bespoke area, site or case specific policies or proposals intended to avoid or reduce harmful effects on a European site

2.2.3 At the preliminary screening stage, four strategic options and 52 small / medium sites under consideration in the Issues and Options document have been subject to preliminary screening for likely significant effects on European sites. Chapter 3 defines which European sites are considered during the assessment, together with their qualifying features and conservation objectives. Chapter 5 describes the ways in which each European site might be significantly affected by the Local Plan (impact pathways) and identifies those strategic options and small / medium sites applicable to each. Chapter 6 summarises the outputs of the preliminary screening assessment.

2.3 Appropriate Assessment

2.3.1 The purpose of the Appropriate Assessment stage is to further analyse likely significant effects identified during the screening stage, as well as those effects which were uncertain or not well understood and taken forward for assessment in accordance with the precautionary principle. An Appropriate Assessment evaluating the implications of the plan, either alone or in combination with other plans or projects, in light of the conservation objectives of affected European sites will accompany the Regulation 19 stage of plan preparation.

2.3.2 The Appropriate Assessment stage will include a test of whether the plan proposals will result in adverse effects on site integrity which can be defined as (ODPM, 2005):

> *"The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."*

2.3.3 In the 2018 *Holohan* judgment[4], the CJEU ruled that an Appropriate Assessment must consider the interest features of European sites even where those features may be found outside the strict boundaries of those sites and must also consider other habitat types or species, which are present on the site, for which that site has not been listed but which are necessary to the conservation of the habitat types and species listed for the protected area. The former matter is conventionally captured in Appropriate Assessment in England (and in this HRA) through consideration of the concept of 'functionally linked land' (e.g. land outside the Solent SPA boundaries which supports Brent goose and waders) while the latter is captured where, for example, habitats within a European site that are not themselves designated are nonetheless considered when assessing impacts because of their functional role in enabling the site to meet its conservation objectives (e.g. marginal vegetation in the River Itchen SAC which is used by southern damselfly for egg laying).

2.4 Counteracting Measures

2.4.1 This section draws on Principle C.5 of the *HRA Handbook* (Tyldesley & Chapman, 2013) to identify different types of counteracting measure and describes how they should be considered within the HRA. There is a well-established policy and ethical approach to assessment which recognises a hierarchy of counteracting measures, which prefers avoidance of adverse effects in the first instance, then cancellation, then reduction, and finally compensatory measures where these can be adequately justified. This approach is embedded in guidance (e.g. CIEEM, 2018; MHCLG, 2019), professional standards (BS42020:2013) and the National Planning Policy Framework (para. 186; DLUHC, 2023).

2.4.2 A distinction must be drawn between measures intended to avoid, cancel or reduce adverse effects on European sites (collectively referred to as mitigation measures) and those which are intended to compensate for adverse effects (compensatory measures); the latter must only be considered following application of the Imperative Reasons of Overriding Public Interest test:

- Mitigation: Avoidance measures: intended to stop or prevent effects from occurring, or to eliminate the risk of them occurring. Successful avoidance measures mean there will be no adverse effect, and hence no requirement to assess effects in combination.
- Mitigation: Cancellation measures: intended to completely neutralise adverse effects. In this context a proposal will have a potential effect, but its potentially negative outcomes have been cancelled without residual effect, and there is no requirement to assess effects in combination.
- Mitigation: Reduction measures: intended to diminish an effect either by reducing the scale of the effect, or its likelihood of occurring, or both. Such measures can reduce the severity/likelihood of an effect to the point where it can no longer be regarded as a likely

[4] Case C 461/17 Court of Justice of the European Union (2018): Holohan v. An Bord Pleanála.

significant effect, but may result in a risk of residual effects. Residual effects need to be considered for their potential to lead to cumulative or in combination effects.

- Compensatory measures: intended to offset the harm to the integrity of a European site that would occur as a result of a plan or project. They are considered only after having established that the harm to the site itself cannot be further reduced by mitigation or alternative solutions, and are the measures required to ensure that the overall coherence of the national site network is protected.

2.4.3 In the *People Over Wind* judgment[5], the CJEU ruled that measures intended to avoid or reduce the harmful effects of a plan or project on a European site (i.e. mitigation measures) cannot be taken into account by a competent authority when considering, at the HRA screening stage, whether the plan or project is likely to have a significant effect on a European site. July 2019 updates to Planning Practice Guidance on HRA note that features that are integral to the design or physical characteristics of the project / plan that is being assessed (as opposed to factors that have been introduced to avoid or reduce harm) may be considered at the screening stage. However, this will need to be determined on a case by case basis.

2.4.4 Thus where mitigation measures are incorporated into the plan or project, are effective, reliable, timely, guaranteed and of sufficient duration, they should be taken into account at the integrity test stage (Stage 2). A competent authority can impose additional mitigation measures over and above incorporated mitigation, if necessary, so as to ensure that a plan or project would not adversely affect the integrity of a European site, either alone or in combination with other plans and projects. Additional mitigation measures should also be considered at the integrity test stage.

2.5 In-Combination Effects

2.5.1 Other plans and projects being prepared or implemented in the area may have the potential to cause negative effects on European sites. These effects may act in combination with the effects of the Local Plan, possibly leading to an insignificant effect becoming significant. It is therefore important to consider which other plans and projects could generate similar effects as development within Eastleigh Borough, at the same European sites, and which may act in-combination.

2.5.2 Those plans / projects considered to have the greatest potential for in-combination effects include:

- Hampshire Water Transfer and Water Recycling Project – Portsmouth to Otterbourne pipeline;
- Southampton City Vision Local Plan (emerging);
- Southampton City Centre Action Plan (adopted 2015),
- Southampton Core Strategy including the changes from the Core Strategy Partial Review (adopted 2015);

[5] Case C 323/17 Court of Justice of the European Union (2018): People Over Wind, Peter Sweetman v Coillte Teoranta.

- Test Valley Borough Revised Local Plan (adopted 2016);
- Test Valley Draft Local Plan 2040 (emerging);
- Winchester District Local Plan 2020 – 2040 (emerging);
- Winchester District Local Plan Part 1 – Joint Core Strategy (adopted 2013);
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013);
- Fareham Local Plan 2037 (adopted 2023);
- Hampshire Local Transport Plan 4;
- Partnership for South Hampshire (PfSH) Spatial Position Statement 2023;
- North Solent Shoreline Management Plan (2010) and related coastal strategies;
- Hampshire Minerals and Waste Plan (adopted 2013);
- Hampshire Minerals and Waste Plan – Partial Update (emerging); and
- Botley Neighbourhood Plan 2016 – 2036 (emerging).

3 European Sites

3.1 Scope of the Assessment

3.1.1 European sites considered within the scope of this assessment include all those falling partially within or close to Eastleigh Borough. Additionally, there may be activities occurring as a result of development within the Borough, which could take place outside of the Borough boundaries, possibly affecting European sites further afield. Three types of protected site are considered:

- **Special Areas of Conservation (SAC):** SACs are strictly protected sites originally designated under the EC Habitats Directive (92/43/EEC). Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds which are conserved by SPA and Ramsar – see below). Following the UK's exit from the EU, the EC no longer has a role in designating SACs in the UK. The Habitats Regulations 2019 establish a single stage designation process, where the appropriate authority is the decision maker. The selection and designation of SACs is based on the criteria set out in Annex III of the Habitats Directive so far as it applies to the UK.
- **Special Protection Areas (SPA):** The EC Wild Birds Directive (2009/147/EC) provides for the protection, management and control of all species of naturally occurring wild birds in the European territory of Member States. In particular it requires Member States to identify areas to be given special protection for the rare or vulnerable species listed in Annex I (Article 4.1) and for regularly occurring migratory species (Article 4.2) and for the protection of wetlands, especially wetlands of international importance. These areas are known as Special Protection Areas. Following the UK's exit from the EU the EC no longer has a role in designating SPAs in the UK and they are instead designated under the Habitats Regulations 2019.
- **Ramsar:** Ramsar sites are wetlands of international importance designated under the Ramsar Convention (UNESCO, 1971). In the UK, the first Ramsar sites were designated in 1976 and since then many more have been designated. The initial emphasis was on selecting sites of importance to waterbirds within the UK, and consequently many Ramsar sites are also SPAs, as is the case with many of the sites which are being considered by this assessment.

3.1.2 Acknowledging that the Local Plan is not directly connected with or necessary to management of the sites for nature conservation, the HRA considers the following European sites for likely significant or adverse effects on integrity; see Figure 3.1:

- Emer Bog SAC
- New Forest SAC
- River Itchen SAC
- Solent Maritime SAC
- New Forest SPA
- New Forest Ramsar
- Solent and Southampton Water SPA
- Solent and Southampton Water Ramsar

- Solent and Dorset Coast SPA

3.1.3 These sites have been designated to conserve a wide variety of bird species. Table 3.1 and Table 3.2 set out the qualifying features for the SAC and SPA designations. Ramsar sites do not have qualifying features, however the justification for the application of the relevant Ramsar criterion to each site is set out in Table 3.3. These European Sites are described further in Appendix I.

3.1.4 Emer Bog SAC is located approximately 2.3km from Eastleigh Borough boundary at its closest point (Figure 3.1). The site is designated for the bog / mire habitat present (Table 3.1) and therefore the site's hydrology is integral to its designation. Given its geographic location in relation to Eastleigh Borough, there are not considered to be any pathways by which the Local Plan could impact water quality and quantity within Emer Bog and therefore the SAC is not considered an further within the screening assessment.

Eastleigh Local Plan Habitats Regulations Assessment

SPA

SAC

Ramsar

Eastleigh Borough

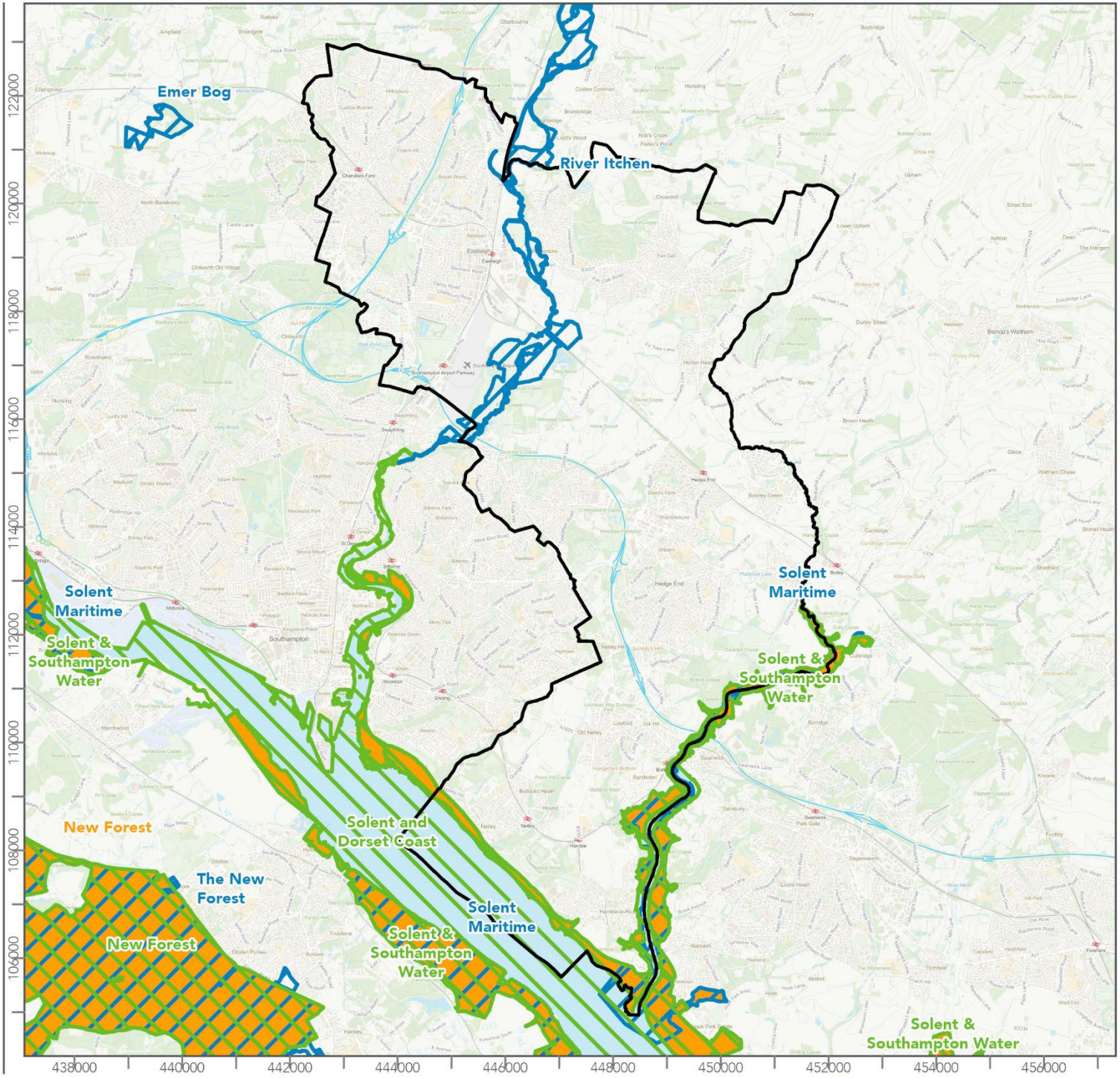

Figure 3.1: European Sites in and around Eastleigh Borough

0 2,500 5,000 N

Metres

Scale (at A4): 1:105,000 **Created by:** EM

Date: Jul 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh:Fig 3.1 SACs, SPAs, Ramsar

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Table 3.1: SAC Qualifying Features

Site Name	Description	Qualifying Features
Emer Bog SAC	Emer Bog SAC comprises an area of approximately 37 ha of extensive valley bog together with associated damp acidic grassland, heathland and developing woodland over Bracklesham Beds in the Hampshire Basin. The site is an excellent example of an ungrazed valley bog with a rich flora and fauna which includes most typical bog species. The main elements of the bog vegetation include tall stands of common reed *Phragmites australis* and a shorter mixed association of sedges, especially white sedge *Carex curta*, bottle sedge *C. rostrata* and star sedge *C. echinata*, with notable quantities of marsh cinquefoil *Potentilla palustris* and bogbean *Menyanthes trifoliata*, together with marsh violet *Viola palustris* and southern marsh-orchid *Dactylorhiza praetermissa*. The bog grades downstream into mature alder carr and upstream into heathland, heavily invaded with pine, birch and scrub.	Annex I Habitat - Transition mires and quaking bogs (very wet mires often identified by an unstable 'quaking' surface)
New Forest SAC	The New Forest SAC encompasses an area of approximately 29,262 ha, located to the west of Southampton in Hampshire. The site comprises a mosaic of formerly common but now fragmented and rare habitats including lowland heath, valley and seepage step mire, or fen, and ancient pasture woodland, including riparian and bog woodland and a range of acid to neutral grasslands, over eroded terraces of soft sedimentary clays and sands capped with flint gravel of the Hampshire Basin. Outstanding examples of thirteen habitats of European interest are represented together with two priority habitat types, bog woodland and riverine woodland, which support an exceptionally rich diversity of fauna and flora. Many of these habitats are dependent on the traditional management practices of grazing through Rights of Common complemented by annual heathland burning and cutting programmes.	Annex I Habitat - Alkaline Fens - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*) * - *Asperulo-Fagetum* beech forests - Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) - Bog woodland* - Depressions on peat substrates of the *Rhynchosporion* - European dry heaths - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) - Northern Atlantic wet heaths with *Erica tetralix* - Old acidophilous oak woods with *Quercus robur* on sandy plains - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*

Site Name	Description	Qualifying Features
		- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) - Transition Mires and Quaking Bogs <u>Annex II Species</u> - Great Crested Newt *Triturus cristatus* - Southern Damselfly *Coenagrion mercuriale* - Stag Beetle *Lucanus cervus*
River Itchen SAC	The River Itchen SAC comprises an area of approximately 309 ha and is a classic chalk river which flows from mid-Hampshire to join with Southampton Water, being mainly spring fed. The river's vegetation is dominated by higher plants and species rich aquatic flora with many typical chalk stream plants present in abundance. The majority of species are present throughout the system. The river is rich in invertebrates, supporting diverse populations of aquatic molluscs and one of a few populations of the native freshwater crayfish remaining in rivers of southern England as well as a population of otters. The river is dominated throughout by aquatic *Ranunculus spp*. The headwaters contain pond watercrowfoot *Ranunculus peltatus*, while two Ranunculus species occur further downstream: stream watercrowfoot *R. penicillatus* ssp. *pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*. The fish fauna of the Itchen are typical of lowland chalk rivers including bullhead Cottus gobbio and brook lamprey *Lampetra planeri* as well as Atlantic salmon *Salmo salar* and a localised population of Atlantic stream crayfish *Austropotamobius*. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development. The Itchen valley contains areas of fen, swamp and meadow supporting vegetation with diverse plant communities, some typically species-rich. Water courses including meadow ditches, base-rich runnels and flushes in open areas, small side-channels and parts of the main river support strong populations of southern damselfly *Coenagrion mercu*.	<u>Annex I Habitat</u> - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation <u>Annex II Species</u> - Atlantic Salmon *Salmo salar* - Brook Lamprey *Lampetra planeri* - Bullhead *Cottus gobio* - Otter *Lutra lutra* - Southern damselfly *Coenagrion mercuriale* - White-clawed (or Atlantic stream) Crayfish *Austropotamobius pallipes*
Solent Maritime SAC	The Solent Maritime SAC comprises a major estuarine system covering an area of approximately 11,325 ha on the south coast of England. The Solent and its inlets are unique in Britain and Europe for their unusual tidal regime, including double tides and long periods	<u>Annex I Habitat</u> - Annual vegetation of drift lines

Site Name	Description	Qualifying Features
	of tidal stand at high and low tide. As a result, the Solent Maritime SAC is a unique suite of functionally linked estuaries and dynamic marine and estuarine habitats. The site has the largest number of small estuaries in the tightest cluster anywhere in Great Britain, with examples of coastal plain estuaries (Yar, Medina, King's Quay Shore and Hamble) and bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). It is located in one of the only major sheltered channels in Europe, lying between a substantial island (the Isle of Wight) and the mainland. Sediment habitats within the site include extensive areas of intertidal mudflats and sandflats, often supporting eelgrass (*Zostera sp.),* subtidal sandbanks, saltmarsh and natural shoreline transitions such as drift line vegetation. The Solent Maritime SAC is of particular interest as it is the only site to support all four species of cordgrass (*Spartina*) found in the UK, including the rare native small cordgrass (*Spartina maritima*). The Solent Maritime SAC also includes a number of coastal lagoons, sand dunes at East Head and at the time of designation supported a population of the rare Desmoulin's whorl snail (*Vertigo moulinsiana*).	- Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* - Coastal lagoons* - *Spartina* swards - Estuaries - Mudflats and sandflats not covered by seawater at low tide - Perennial vegetation of stony banks - *Salicornia* and other annuals colonising mud and sand - Sandbanks which are slightly covered by sea water all the time - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes") <u>Annex II Species</u> - Desmoulin's Whorl Snail *Vertigo moulinsiana*

* Denotes priority feature

Table 3.2: SPA Qualifying Features

Site Name	Description	Qualifying Features
New Forest SPA	The New Forest SPA covers approximately 28,003 ha and is located in southern Hampshire. The New Forest is an area of semi-natural vegetation including valley mires, fens and wet heath within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. The habitats present are of high ecological quality and diversity with undisturbed transition zones. The suite of mires is regarded as the locus classicus of this type of mire in Britain. Other wetland habitats include numerous ponds of varying size and water chemistry including several ephemeral ponds and a network of small streams mainly acidic in character which have no lowland equivalent in the UK. The plant communities in the numerous valleys and seepage step mires show considerable variation, being affected especially by the nutrient content of groundwater. In the most nutrient-poor zones, Sphagnum bog-mosses, cross-leaved heath, bog asphodel, common cottongrass and similar	<u>Wild Birds Directive Article 4.1 Qualification: Annex I Species</u> - Nightjar *Caprimulgus europaeus* (Breeding) - Woodlark *Lullula arborea* (Breeding) - Honey Buzzard *Pernis apivorus* (Breeding) - Dartford Warbler *Sylvia undata* (Breeding) - Hen Harrier *Circus Cyaneus* (Non-breeding) <u>Wild Birds Directive Article 4.2 Qualification: Migratory Species not listed in Annex I</u> - Hobby *Falco Subbuteo* (Non-breeding) - Wood Warbler *Phylloscopus sibilatrix* (Non-breeding)

Site Name	Description	Qualifying Features
	species predominate. In more enriched conditions the communities are more fen-like. The area supports important populations of breeding birds associated with such habitats.	
Solent and Southampton Water SPA	The Solent and Southampton Water SPA covers approximately 5,506 ha and is located on the south English coast. The area covered extends from Hurst Spit to Hill Head along the south coast of Hampshire, and from Yarmouth to Whitecliff Bay along the north coast of the Isle of Wight. The site comprises a series of estuaries and harbours with extensive mud-flats and saltmarshes together with adjacent coastal habitats including saline lagoons, shingle beaches, reedbeds, damp woodland and grazing marsh. The mud-flats support beds of *Enteromorpha spp.* and *Zostera spp.* and have a rich invertebrate fauna that forms the food resource for the estuarine birds. In summer, the site is of importance for breeding seabirds, including gulls and four species of terns. In winter, the SPA holds a large and diverse assemblage of waterbirds, including geese, ducks and waders. Dark-bellied Brent goose *Branta b. bernicla* also feed in surrounding areas of agricultural land outside the SPA/Ramsar.	<u>Wild Birds Directive Article 4.1 Qualification: Annex I Species</u> - Mediterranean Gull *Larus melanocephalus* (Breeding) - Little Tern *Sterna albifrons* (Breeding) - Roseate Tern *Sterna dougalli* (Breeding) - Common Tern *Sterna hirundo* (Breeding) - Sandwich Tern *Sterna sandvicensis* (Breeding) <u>Wild Birds Directive Article 4.2 Qualification: Migratory Species not listed in Annex I</u> - Teal *Anas crecca* (Non-breeding) - Dark-bellied Brent Goose *Branta bernicla bernicla* (Non-breeding) - Ringed Plover *Charadrius hiaticula* (Non-breeding) - Black-tailed Godwit *Limosa limosa islandica* (Non-breeding) Waterbird Assemblage
Solent and Dorset Coast SPA	The Solent and Dorset Coast SPA was formally designated in February 2020. The SPA is located along the coasts of Dorset, Hampshire, Isle of Wight and West Sussex and adjacent areas offshore. The site comprises approximately 255 square nautical miles (SNM) and extending from the Isle of Purbeck in the West to Bognor Regis in the East, following the coastline on either side to the Isle of Wight and into Southampton Water. The site is intended to protect important foraging areas at sea used by breeding colonies in nearby SPA. There are already four SPA within the Greater Solent that are designated for breeding terns. These are Chichester & Langstone Harbours SPA (for Sandwich and little tern), the Solent and Southampton Water SPA (for common, Sandwich and little tern) and Pagham Harbour SPA (little tern). The fourth associated SPA lies within Poole Harbour (common tern and Sandwich tern). The new SPA covers the area that the breeding terns use for foraging during April to September. Whilst management measures are already in place in	<u>Wild Birds Directive Article 4.1 Qualification: Annex I Species</u> - Little Tern *Sterna albifrons* (Breeding) - Sandwich Tern *Sterna sandvicensis* (Breeding) - Common Tern *Sterna albifrons* (Breeding)

Site Name	Description	Qualifying Features
	this foraging area due to the existing SPA, the classification of this new site will provide clarity to stakeholders about the areas the terns forage within and the species that require consideration. The site includes the sub-tidal areas not currently encompassed in the existing SPAs. Therefore, its landward boundary is at mean low water (MLW) where it abuts any existing SPA where terns are already a feature. Elsewhere the landward boundary is the mean high water (MHW) so as to afford the birds protection within the intertidal areas; for example at Portsmouth Harbour. However, the landward boundary of the SPA extends to MHW within Pagham Harbour and hence overlaps with the existing SPA. This is because the easternmost extremity of the SPA is determined by the modelled usage of Sandwich terns foraging from Chichester & Langstone Harbours SPA, and Sandwich terns are not a qualifying feature of Pagham Harbour SPA.	

Table 3.3: Ramsar Qualifying Features

Site Name	Description	Qualifying Features
New Forest Ramsar	The New Forest is an area of semi-natural vegetation including valley mires, fens and wet heath within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. The habitats present are of high ecological quality and diversity with undisturbed transition zones. The suite of mires is regarded as the locus classicus of this type of mire in Britain. Other wetland habitats include numerous ponds of varying size and water chemistry including several ephemeral ponds and a network of small streams mainly acidic in character which have no lowland equivalent in the UK. The plant communities in the numerous valleys and seepage step mires show considerable variation, being affected especially by the nutrient content of groundwater. In the most nutrient-poor zones, Sphagnum bog-mosses, cross-leaved heath, bog asphodel, common cottongrass and similar species predominate. In more enriched conditions the communities are more fen-like.	***Criterion 1*** - High density of Valley more and wet heaths Criterion 2 - Diverse assemblage of wetland plants and animals; seven species of nationally rare plant and 65 British Red Data Book species of invertebrate. Criterion 3 - Mire habitats of ecological quality and diversity with undisturbed transition zones. The invertebrate fauna of the site is important due to the concentration of rare and scare wetland species. The whole site complex, with its examples of semi-natural habitats is essential to the genetic and ecological diversity of southern England.

Site Name	Description	Qualifying Features
Solent and Southampton Water Ramsar	The area covered extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site comprises of estuaries and adjacent coastal habitats including intertidal flats, saline lagoons, shingle beaches, saltmarsh, reedbeds, damp woodland, and grazing marsh. The diversity of habitats support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an important assemblage of rare invertebrates and plant.	***Criterion 1*** - Many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs. Criterion 2 - Important assemblage of rare plants and invertebrates: 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site. Criterion 5 - Winter assemblage of 51,343 Waterfowl over winter (5 year peak mean 1998/99-2002/2003). Criterion 6 On Passage - Ringed Plover *Charadrius hiaticula* Overwintering - Dark-bellied Brent Goose *Branta bernicla bernicla* - Teal *Anas crecca* - Black-tailed Godwit *Limosa limosa islandica*

3.2 Conservation Objectives for SAC and SPA

3.2.1 The Habitats Regulations require the appropriate authority to maintain or where appropriate restore habitats and species populations of European importance to favourable conservation status. European site conservation objectives are referred to in the Habitats Regulations and Article 6(3) of the Habitats Directive. They are for use when there is a need to undertake an Appropriate Assessment under the relevant parts of the respective legislation. The conservation objectives are set for each feature (habitat or species) of an SAC / SPA. Where the objectives are met, the site can be said to demonstrate a high degree of integrity and the site itself makes a full contribution to achieving the aims of the Habitats and Birds Directives.

3.2.2 The conservation objectives defined by Natural England for the SPAs and SACs included within the scope of this HRA are given in Table 3.4 and Table 3.5. Natural England has published *Supplementary advice on conserving and restoring site features* for each site (Natural England, 2019, 2022 & 2023).

Table 3.4: Conservation Objectives for SPA

Conservation Objectives for SPA
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.

Table 3.5: Conservation Objectives for SAC

Conservation Objectives for SAC
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.

3.3 Conservation Objectives for Ramsar Sites

3.3.1 Ramsar sites do not have agreed conservation objectives, but in most instances overlap with SPA site boundaries. However, it should be noted that Ramsar qualifying features can include a range

of habitats and non-bird species common to SAC designations, as well as bird species and assemblages and their supporting habitats, which are common to SPAs.

3.3.2 Of the Ramsar sites in and around Eastleigh, the qualifying Ramsar Convention criteria for the Solent and Southampton Water site overlap substantially with the features of the equivalent SPA. No additional conservation objectives are defined to assess these features, and those relating to the equivalent SPAs can be used in the assessment.

3.3.3 Conversely, the Ramsar criteria for the New Forest overlap with the features of its equivalent SAC. No additional conservation objectives are defined to assess these features, and those relating to the SAC can be used in the assessment

3.4 Condition Status

3.4.1 The conservation status of European sites is not routinely reported by Natural England, but it carries out condition monitoring of Sites of Special Scientific Interest (SSSI) at regular intervals. Although not exactly matching the boundaries of European sites, and being notified for different purposes, the condition status of a SSSI helps to give an impression of the overall ecological status of the SAC/SPA/Ramsar with which it coincides. The latest condition assessments (July 2024) of SSSIs forming part of the European sites within the scope of this assessment are illustrated on Figure 3.2.

Eastleigh Local Plan Habitats Regulations Assessment

SSSI Condition Units

- Favourable
- Unfavourable Recovering
- Unfavourable No Change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Eastleigh Borough

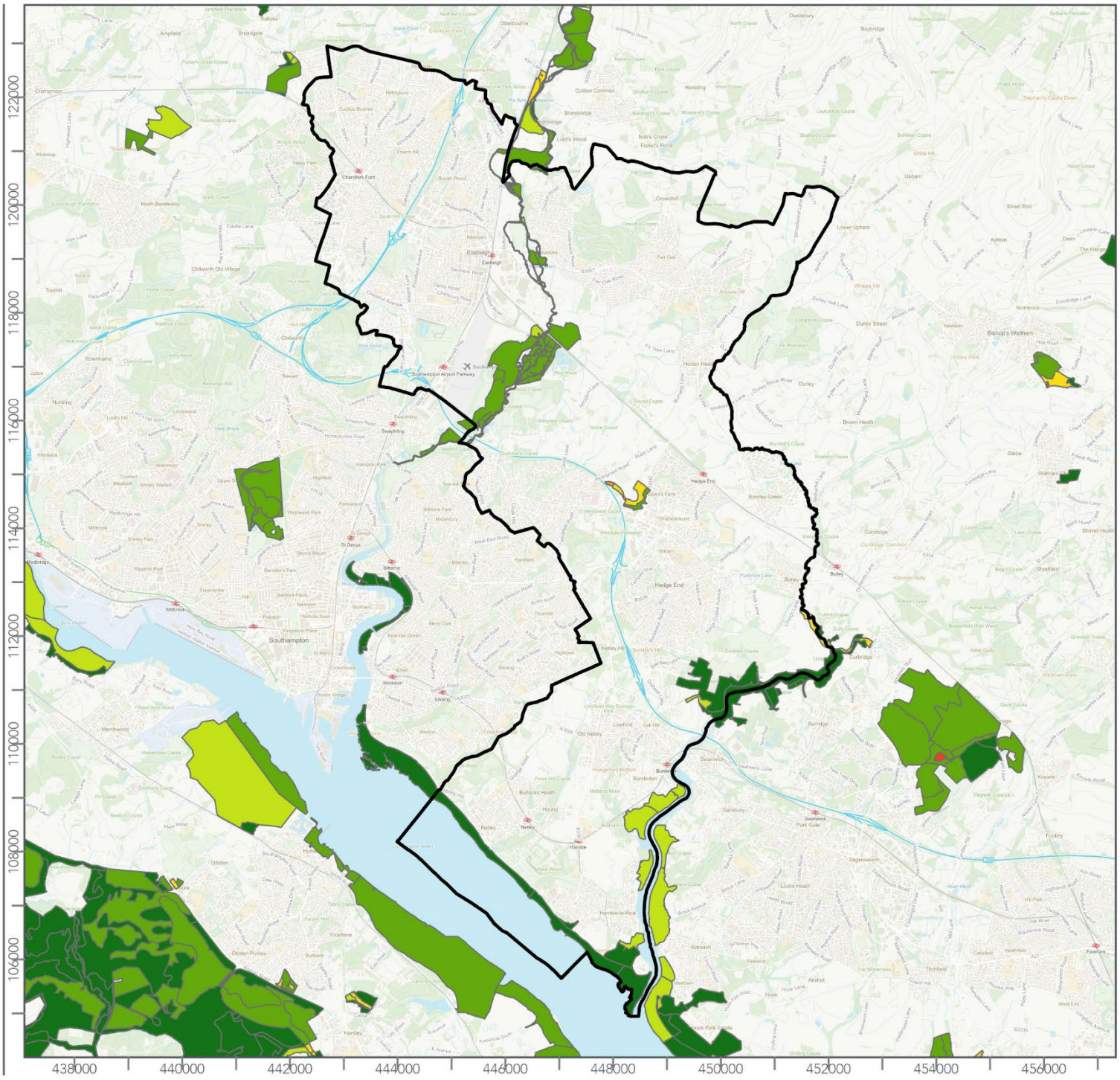

Figure 3.2: SSSI Condition Status

0 2,500 5,000 N

Metres

Scale (at A4): 1:105,000 **Created by:** EM

Date: Jul 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh:Fig 3.2 SSSI Condition

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4 The Local Plan: Issues and Options

4.1 Introduction

4.1.1 A wide range of sites have been proposed by developers and landowners. The Council has no view at present as to which sites may be supported and which should continue to be protected. For the purposes of assessment, these sites have been grouped into strategic and small / medium options.

4.2 Strategic Options

4.2.1 Four Strategic Development Options (SDOs) are being considered as part of the Issues and Options consultation document. The strategic options are divided into a series of sub-options set out in Table 4.1. In each case, the first sub-option is based on the sub-area closest to the urban edge. Otherwise sub-areas are not assessed individually. The other sub-options are based on combining sub-areas, to represent larger urban extensions. The SDOs and sub-options are shown on Figure 4.1.

Table 4.1: Strategic Development Options – Sub-options

Strategic Development Option	Sub-options
Option A: North East of Fair Oak	A1 A1+A2 combined A1+A2+A3 combined A1+A2+A3+A4 combined
Option B: South of Bishopstoke	B1a B1b B1a+B1b+B2 combined
Option C: North of West End	C1 C1+C2* combined C1+C2*+C3 combined
Option D: North of Hedge End	D1 D1+D2 combined

**For clarity C2 includes the whole strip of land from Allington Lane to Burnetts Lane, broken up in places by biodiversity designations.*

4.3 Small and Medium Sites

4.3.1 Fifty-two small and medium sites are also considered within the Issues and Options document. These are based on all the other sites put forward in the 'call for sites' exercise in summer 2023 (i.e. they do not fall within one of the SDOs above). In some cases, where it makes sense to do

so, the individual sites put forward have been combined into one site for the purposes of assessment. The small / medium sites are also shown on Figure 4.1.

Eastleigh Local Plan Habitats Regulations Assessment

Strategic Development Options

Small / Medium Sites

Eastleigh Borough

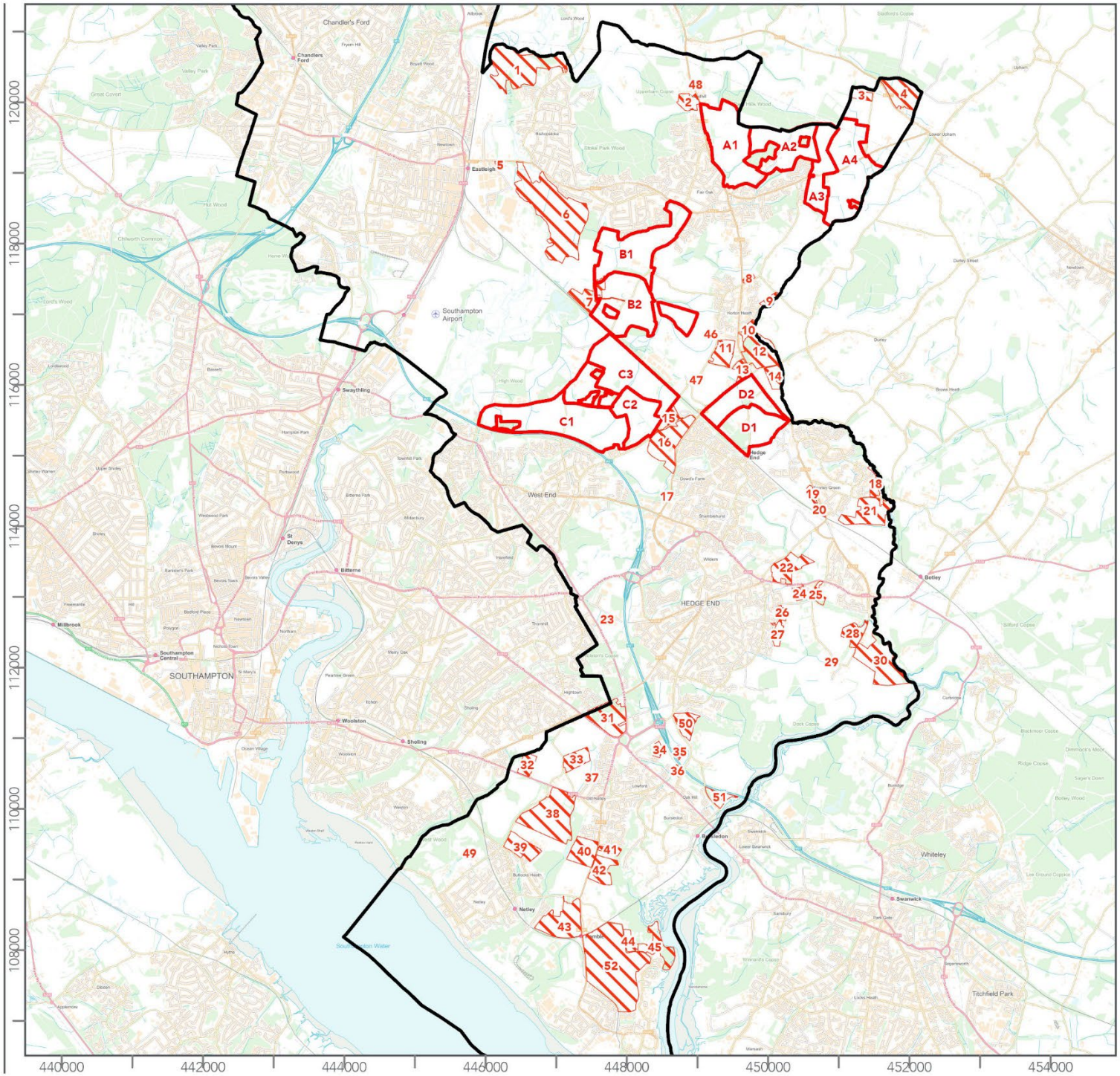

Figure 4.1: Strategic Development Options and Small / Medium Sites

0 2,000 4,000 Metres

N

Scale (at A4): 1:80,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 4.1 SDOs and small/med sites

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5 Identifying Impact Pathways and Preliminary Screening

5.1 Introduction

5.1.1 This chapter discusses the available evidence relating to the pathways of impact to European sites. At the end of each impact pathway section, the potential for the Strategic Development Options (SDOs) and the small / medium sites to result in likely significant effects for each of the European sites is discussed, not taking account of mitigation. Those pathways will be taken forward for further consideration at the next plan stage. Table 5.12 provides a summary of the preliminary screening assessment.

5.2 Air Pollution

5.2.1 Atmospheric pollution is a widespread issue, with background air quality heavily influenced by large point-source emitters including transboundary sources. Local pollutant sources can also affect designated sites and especially from road traffic emissions. The Local Plan cannot feasibly influence causes of background pollution such as large point sources but, through the scale of development proposed, road network and sustainable transport measures will affect the way in which locally emitted pollutants reach each site.

5.2.2 The following descriptions draw on information presented through the Air Pollution Information Systems (APIS)[6] and the Institute of Air Quality Management (IAQM) guidance (IAQM, 2020). The main pollutants affecting vegetation are:

- nitrogen oxides (NO_X) produced through combustion processes, with approximately half of UK emissions from road traffic (APIS, no date1); and
- ammonia (NH_3), the main source of which is agriculture (e.g. manures and fertilisers).

5.2.3 These gases can result in direct effects to vegetation through exposure, and indirect effects through deposition to soil and freshwater (dry deposition) or with precipitation (wet deposition).

5.2.4 Direct exposure of vegetation to NOx and NH_3 has phytotoxic effects, especially in areas close to sources, such as roadside verges; lichens and bryophytes (which include mosses, landworts and hornworts) are particularly vulnerable to these sorts of toxic effects, which can result in changes to plant growth, in the plant's ability to assimilate CO_2, and in biochemical effects.

5.2.5 Indirect effects through deposition include:

- Acid deposition: acid deposition is most likely to affect vegetation indirectly through changes to soil properties. NOx and ammonium (from NH_3) react with rain/cloudwater to form nitric

[6] Online at: http://www.apis.ac.uk/ [Accessed 13/03/24]

(or sulphuric) acid. Increases in soil acidity can increase the mobility of certain toxic metals which can result in root damage, stunted growth and reduced microbial activity. These effects can lead to changes in species composition.

- Eutrophication by nitrogen deposition: dry deposition of NOx is greatest within large conurbations and close to major roads. Whilst nitrogen is essential for plant growth, excessive amounts can become toxic, as instead of acting as a nutrient, nitrogen becomes a pollutant. Many semi-natural plants (including bryophytes) do not have the capacity to assimilate nitrogen when excess nitrogen is available and can therefore be outcompeted by plants that can (such as many grass species), through shading to inability to compete for other limiting resources. Overall, this can lead to long term compositional changes in vegetation and reduced diversity. For example, a marked decline in heather and an increased dominance of grasses have been observed throughout the Netherlands and also in the East Anglian Brecklands (see for example Bobbink and Heil (1993) (APIS, no date2).

5.2.6 Approximately half of UK NOx emissions are associated with road traffic (APIS, no date1). Nitrogen emissions from traffic generated by residential and commercial developments will therefore be the focus of this part of the assessment. The scope can be further refined by concentrating on designated sites within 200m of a road with increased traffic which feature habitats that are vulnerable to nitrogen deposition / acidification (Natural England (2018); IAQM (2020)). Guidance from Natural England (2018) advises that if there are qualifying features of a European site within 200m of a road, and proposed development results in changes in annual average daily traffic flow (AADT) which exceed Design Manual for Roads and Bridges (DMRB) screening criteria[7] (1,000 vehicles or 200 heavy duty vehicles) or contributes more than 1% of the long-term critical load or level for the qualifying feature, then appropriate assessment is required.

Critical loads and levels

5.2.7 Critical loads and levels are a tool for assessing the risk of air pollution impacts to ecosystems. Critical loads are defined as the "*a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*". Critical levels are defined as "*concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge*. Critical loads concern the quantity of pollutants deposited from the air to the ground (for example nitrogen deposition and acid deposition), whilst critical levels concern the gaseous concentration of a pollutant in the air (for example nitrogen oxides). Critical loads are assigned to habitat classes of the European Nature Information System (EUNIS) to enable consistency of habitat terminology and understanding across Europe. Critical loads are given as ranges (e.g. 10-20 kgN/ha/yr). Critical levels are not habitat specific but have been set to cover broad vegetation types (e.g. forest arable, semi-natural), often with critical values set for sensitive lichens and bryophytes. Critical levels for the different pollutants have been derived from experiments and observation that show varied effects on vegetation (APIS, no date3).

[7] The 2017 Wealden judgment has clarified that, if the DMRB screening criteria are used, they should be used to screen in-combination impacts as well as the project/plan alone.

In-combination effects

5.2.8 The following plans / projects may contribute to road traffic emissions alongside the Eastleigh strategic options and small / medium sites:

- Southampton City Vision Local Plan (emerging);
- Southampton City Centre Action Plan (adopted 2015),
- Southampton Core Strategy including the changes from the Core Strategy Partial Review (adopted 2015);
- Test Valley Borough Revised Local Plan (adopted 2016);
- Test Valley Draft Local Plan 2040 (emerging);
- Winchester District Local Plan 2020 – 2040 (emerging);
- Winchester District Local Plan Part 1 – Joint Core Strategy (adopted 2013);
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013);
- Fareham Local Plan 2037 (adopted 2023);
- Hampshire Local Transport Plan 4; and
- Partnership for South Hampshire (PfSH) Spatial Position Statement 2023.

Evidence of current or future impacts

5.2.9 Within Eastleigh Borough, there are a number of locations where the road network falls within 200m of a European site as shown on Figure 5.1 and Figure 5.2.

5.2.10 The River Itchen SACO (Natural England, 2022a) sets a target to maintain the concentrations and deposition of air pollutants to at or below the site relevant critical loads / levels for all qualifying features of the SAC. The qualifying habitats 'Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation' are considered sensitive to changes in air quality, and the supporting habitat to all qualifying species is also considered sensitive to changes in air quality.

5.2.11 The Solent Site Improvement Plan (SIP) (Natural England, 2014a) cites the impact of atmospheric nitrogen deposition as a key threat to the site. The Solent Maritime SACO (Natural England, 2023a) also sets targets to maintain the concentrations and deposition of air pollutants to at or below the site relevant critical loads / levels for five qualifying habitats[8] and Desmoulin's whorl snail. Similar targets are set for the Solent and Southampton Water (Natural England, 2023b) on account that the structure and function of habitats which support the SPA features may be sensitive to changes in air quality.

[8] Perennial vegetation of stony banks, *Salicornia* and other annuals colonising mud and sand, Spartina swards, Atlantic salt meadows and Shifting dunes along the shoreline with *Ammophila arenaria* ("White dunes")

5.2.12 Table 5.1 sets out the qualifying features for each designated site together with the applicable critical loads for deposition and critical level for airborne pollutants. The critical level for airborne NOx is set at 30 µg/m3 across all designated sites.

5.2.13 Modelled pollutant levels at three key locations where the road network comes within 200m of a European site are set out in Table 5.2. When compared to the critical levels / loads, the 2020 modelled figures suggest that critical loads for southern damselfly for nitrogen and acid deposition are currently being exceeded at the River Itchen M27 and Bishopstone Road crossings. Where the M27 crosses the Solent Maritime SAC critical loads for nitrogen deposition are currently being exceeded for six of the qualifying habitats within the SAC considered sensitive to air quality changes. At the same location there is exceedance of the lower range of the ammonia critical level for the majority of the qualifying features.

Effects associated with the Strategic Options and small / medium sites

5.2.14 There is potential for likely significant effects to the River Itchen SAC, Solent Maritime SAC and Solent and Southampton Water SPA / Ramsar associated with air pollution generated by the strategic options and the small / medium sites in-combination. The precise location of site allocations and quantum of housing taken forward into the Pre-Submission Local Plan will influence the patterns of vehicle movements and hence emissions across the Borough. However, these three European sites will be taken forward for further screening at the next plan stage. Traffic modelling will be undertaken to inform this assessment taking account of traffic generated by other PfSH local authorities in order to address the potential for in-combination effects.

Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- SAC
- Ramsar
- Roads
- Intersects between European Sites and 200m Roads Buffer
- Roads 200m Buffer

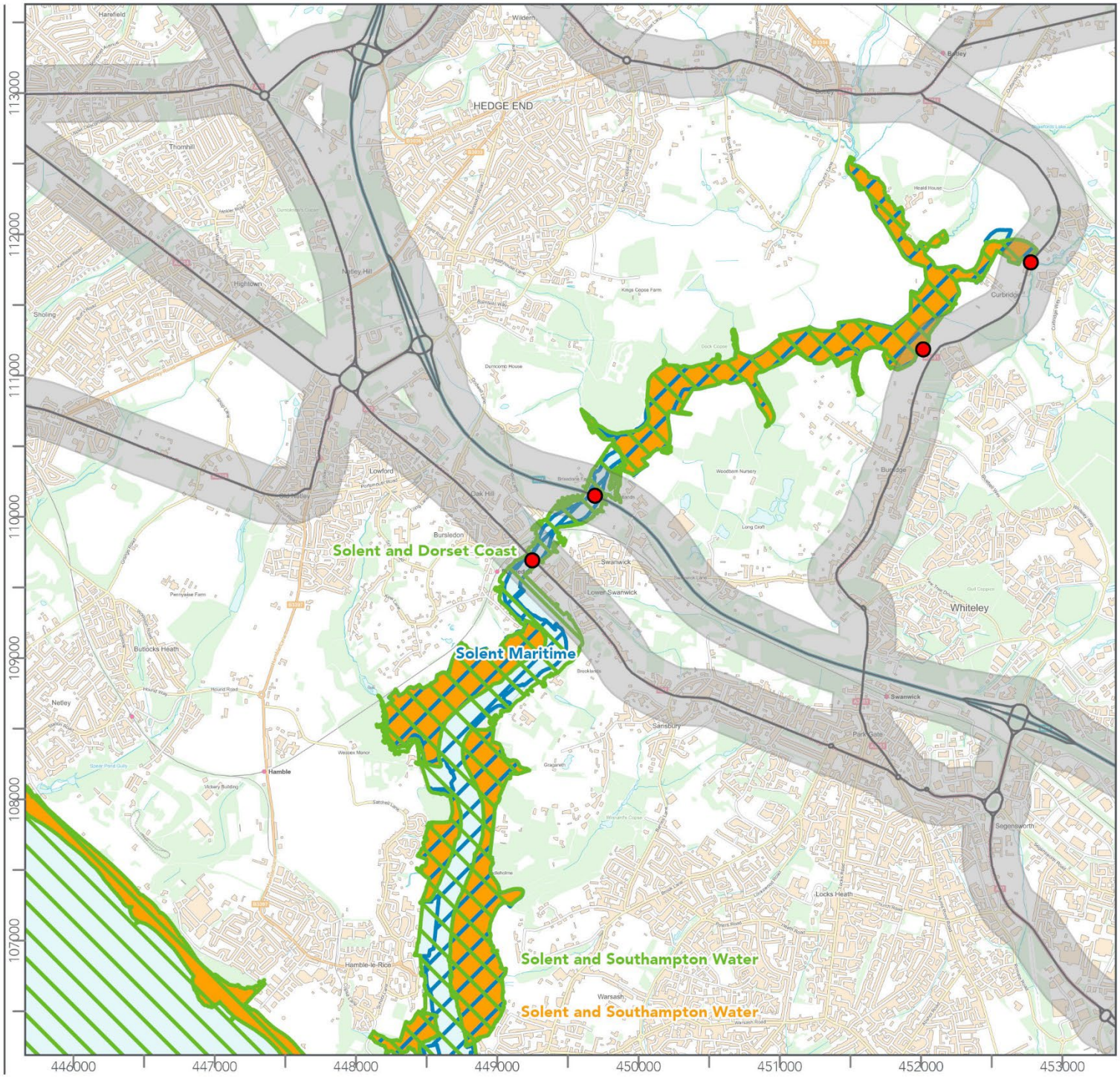

Figure 5.1: Locations where European Sites fall within 200m of the Strategic Road Network (Borough south)

0 1,000 2,000 N

Metres

Scale (at A4): 1:40,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 5.1 Roads & 200m buffer

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Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- SAC
- Ramsar
- Roads
- Intersects between European Sites and 200m Roads Buffer
- Roads 200m Buffer

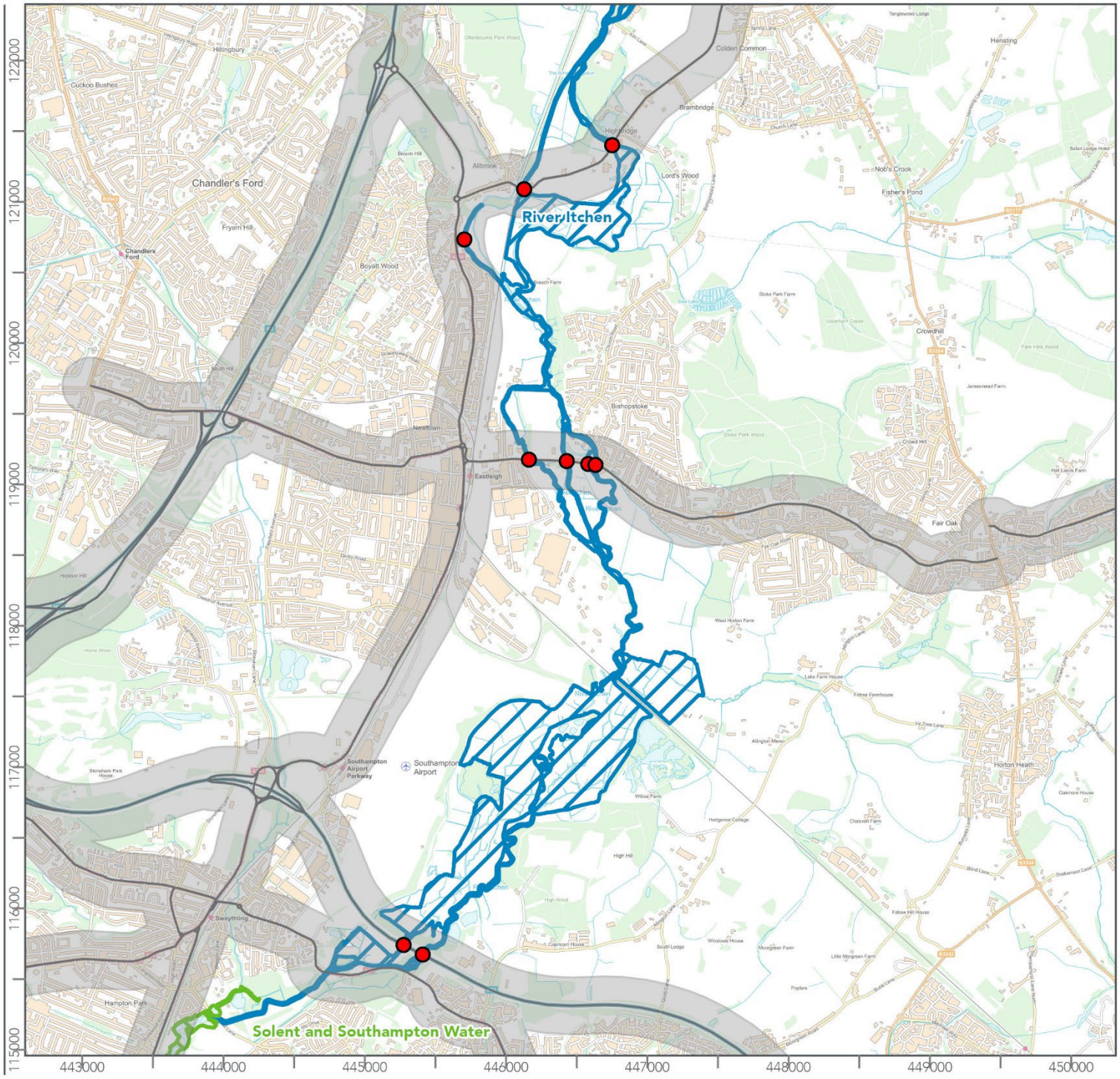

Figure 5.2: Locations where European Sites fall within 200m of the Strategic Road Network (Borough north)

0 1,000 2,000 N

Metres

Scale (at A4): 1:40,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

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Table 5.1: European Site Minimum Critical Load and Critical Level Values and Associated Sensitive Features

Qualifying Feature	**Nitrogen Deposition**	**Ammonia**	**Acid Deposition**
River Itchen SAC	**Minimum Critical Load (kgN/ha/yr)**	**Critical Level (µgm3)**	**Minimum Critical Load (MinCLMaxN, kEq/ha/yr)**
Southern damselfly *Coenagrion mercuriale*	5	No CL assigned on APIS	0.922
White-clawed (or Atlantic stream) Crayfish *Austropotamobius pallipes*	No CL provided on APIS	No CL assigned on APIS	No CL provided on APIS
Bullhead *Cottus gobio*	No CL provided on APIS	Not sensitive	No CL provided on APIS
Brook Lamprey *Lampetra planeri*	No CL provided on APIS	Not sensitive	No CL provided on APIS
Otter *Lutra lutra*	No CL provided on APIS	Not sensitive	No CL provided on APIS
Atlantic Salmon *Salmo salar*	No CL provided on APIS	Not sensitive	No CL provided on APIS
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	No CL provided on APIS	1 or 3	No CL provided on APIS
Solent Maritime SAC			
Annual vegetation of drift lines	No CL found on APIS	Not sensitive	No CL provided on APIS
Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)*	10	1 or 3	No CL provided on APIS
Coastal lagoons	10	1 or 3	No CL provided on APIS
Spartina swards	10	1 or 3	No CL provided on APIS
Estuaries	10	1 or 3	No CL provided on APIS
Mudflats and sandflats not covered by seawater at low tide	No CL found on APIS	1 or 3	No CL provided on APIS
Perennial vegetation of stony banks	5	1 or 3	No CL provided on APIS
Salicornia and other annuals colonising mud and sand	20	1 or 3	No CL provided on APIS
Sandbanks which are slightly covered by sea water all the time	No CL found on APIS	Not sensitive	No CL provided on APIS

Qualifying Feature	Nitrogen Deposition	Ammonia	Acid Deposition
Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	10	1 or 3	No CL provided on APIS
Desmoulin's Whorl Snail *Vertigo moulinsiana*	No CL provided on APIS	No CL assigned on APIS	No CL provided on APIS
Solent and Southampton Water SPA			
Mediterranean Gull *Larus melanocephalus*	10	Not sensitive	No CL provided on APIS
Little Tern *Sterna albifrons*	5	Not sensitive	4.856
Roseate Tern *Sterna dougalli*	5	Not sensitive	4.856
Common Tern *Sterna hirundo*	5	Not sensitive	4.856
Sandwich Tern *Sterna sandvicensis*	5	Not sensitive	4.856
Teal *Anas crecca*	10	Not sensitive	No CL provided on APIS
Dark-bellied Brent Goose *Branta bernicla bernicla*	No CL provided on APIS	Not sensitive	No CL provided on APIS
Ringed Plover *Charadrius hiaticula*	10	Not sensitive	No CL provided on APIS
Black-tailed Godwit *Limosa limosa islandica*	10	Not sensitive	No CL provided on APIS

Table 5.2: 2020 Modelled Pollutant Levels at three locations where European Sites fall within 200m of the Road Network (Source: APIS, 2024)

Location	Total N deposition (grid average kgN/ha/yr)	Ammonia (µgm³)	Acid deposition (grid average kEq/ha/year)	NOx (µgm³)
M27 crossing Solent Maritime SAC and the Solent and Dorset Coast SPA (449672.286, 110159.651)	12.34	1.21	1.03	21.72
M27 crossing River Itchen SAC (445355.285, 115705.215)	12.83	1.35	1.03	24.14
B3037 Bishopstoke Road crossing River Itchen SAC (446431.058, 119166.224)	13.17	1.37	1.03	17.35

5.3 Coastal Squeeze

5.3.1 Coastal habitats naturally migrate landward as sea levels rise over time and where there are no barriers preventing this. Coastal squeeze occurs when manmade structures, such as sea defences, prevent landward migration and therefore the coastal habitat is squeezed against the manmade structure and eventually lost. The European designated sites along the Solent are at risk from the loss and fragmentation of their qualifying habitats due to this phenomenon.

Evidence of current or future impacts

5.3.2 The Site Improvement Plan for the Solent (Natural England, 2014a) which covers the Solent and Southampton Water SPA / Ramsar, Portsmouth Harbour SPA / Ramsar, Chichester and Langstone Harbours SPA / Ramsar and Solent Maritime SAC, highlights coastal squeeze as a current threat to these sites resulting in the direct loss of habitats within the SAC; there is also an impact on birds due to the loss of habitat for feeding, roosting and breeding. In some areas rising sea levels will result in coastal grasslands being lost to more saline grasslands, thus losing habitat for some breeding waders of the waterbird assemblage.

5.3.3 The Eastleigh Borough coastline falls under the North Solent Shoreline Management Plan (SMP) (NFDC, 2010), and includes policy units 5c01 to 5c10 as shown on Figure 5.3. The North Solent SMP policy varies between 'Hold the Line' (HTL), 'No Active Intervention' (NAI) and Managed Realignment 'MR' (Table 5.3). A policy of NAI indicates a decision not to invest in providing or maintaining defence. A policy of HTL means the existing level of protection will be maintained and upgraded where it is economically viable to do so, in order to protect life and property along the extensively developed sections of the estuaries. A policy of MR means allowing the shoreline to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences) (NFDC, 2010).

Table 5.3: Shoreline Management Policies for Units in Eastleigh

Policy Unit	Policy Unit Name	Epoch 1	Epoch 2	Epoch 3
		0-20 yrs (up to 2025)	20-50 yrs (2025 to 2055)	50-100 yrs (2055 to 2105)
5c04	Bursledon Bridge to Curbridge to Botley to Satchell Marshes	NAI	NAI	NAI
5c05	Satchell Marshes to Hamble Common Point	NAI* (HTL the Quay and Rope Walk)	NAI* (HTL the Quay and Rope Walk)	NAI* (HTL the Quay and Rope Walk)
5c06	Hamble Common Point to Hamble Oil Terminal	NAI	NAI	NAI
5c07	Hamble Oil Terminal to Ensign Industrial Park	HTL	HTL	NAI
5c08	Ensign Industrial Park to Cliff House	NAI	NAI	NAI

Policy Unit	Policy Unit Name	Epoch 1	Epoch 2	Epoch 3
5c09	Cliff House to Netley Castle	HTL	HTL*	NAI (HTL for Netley Village
5c10	Netley Castle to Weston Point	HTL	HTL	HTL

**Requirement for more detailed study*

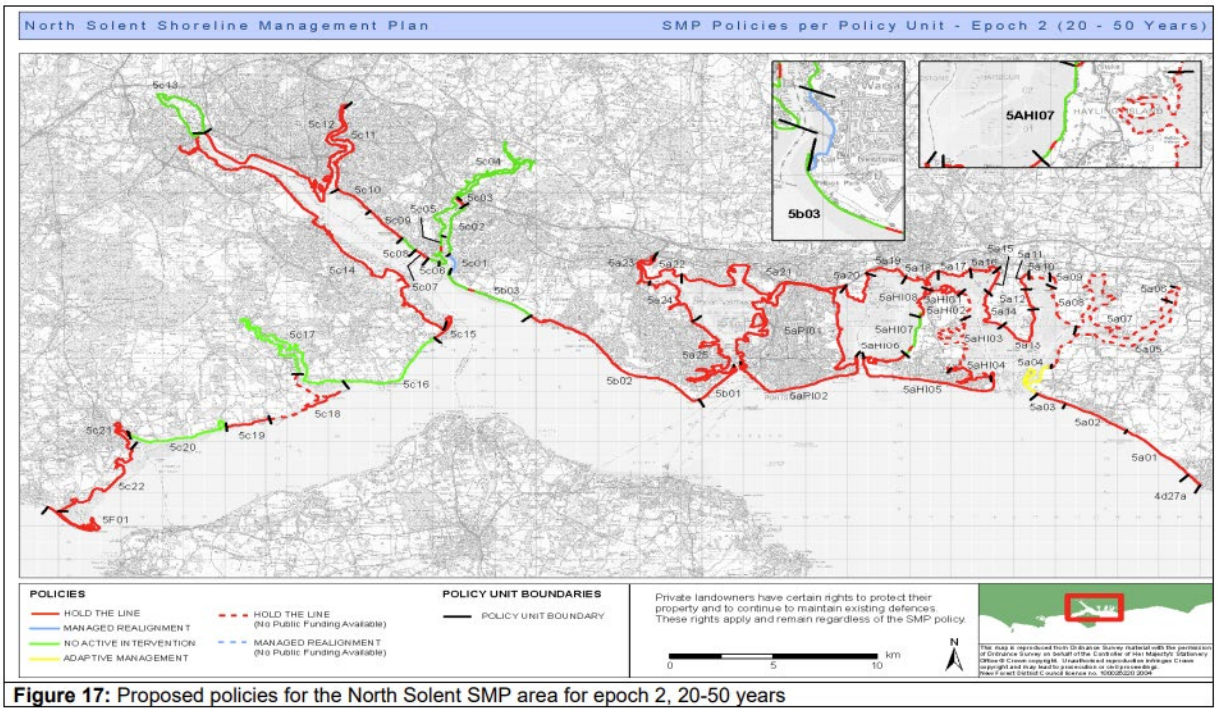

Figure 17: Proposed policies for the North Solent SMP area for epoch 2, 20-50 years

Figure 5.3: SMP Policy Units for Epoch 2 (2025 – 2055)

Effects associated with the Strategic Options and small / medium sites

5.3.4 In relation to the strategic options and small / medium sites under consideration at the Issues and Options stage, those which may affect NAI policies have the potential to contribute to coastal squeeze impacts to the Solent designated sites in-combination with other coastal development. Small / medium sites 30 and 45 are the only options which could contribute to these impacts as they share a boundary with the Solent Maritime SAC.

5.4 Recreational Disturbance

5.4.1 Population growth associated with residential development brings with it the prospect of additional visitor pressure on European sites. There is particular concern over the capacity of existing open spaces adjacent to or within European sites to accommodate additional visitor pressure resulting from planned residential development, and development and promotion of tourism (particularly along the coast), without adverse effects on European site integrity, particularly those designated for an internationally important bird assemblage.

5.4.2 Impacts associated with disturbance from recreation differ between seasons, species, and individuals. Birds' responses to disturbance can be observed as behavioural or physiological with possible effects on feeding, breeding and taking flight. Murison *et al.* (2007) noted that birds often react to human disturbance as a form of predation risk. Such a response can include elevated heart rate, heightened defensive behaviour, including evasive measures, and the avoidance of high risk areas (Murison *et al.* (2007), Liley & Sutherland (2007)). High levels of human activity in important nature conservation areas might then change the behaviour of animals to such a degree that conservation priorities become compromised. This may result from reduced breeding success, increased energetic expenditure, predation, or exposure of nests, eggs or young to trampling and the elements (Liley & Sutherland, 2007).

5.4.3 Localised disturbance within a small area of a designated site is unlikely to result in a likely significant effect; birds are highly mobile and will therefore be able to relocate to alternative nearby feeding locations. However, more chronic disturbance affecting larger areas of a designated site over longer periods will have more significant effects, reducing the availability of feeding habitat, reducing food availability and possibly increasing competition for more limited resources. In these instances the ability of a designated site to support a given number of birds is therefore compromised (Liley *et al.*, 2014).

5.4.4 Increased recreational pressure can also impact supporting habitat on which qualifying wintering bird species rely through for example, trampling resulting in soil compaction and erosion, and contamination resulting from litter, nutrient enrichment through dog fouling or spread of invasive species.

Evidence of current or future impacts in the Solent

5.4.5 The Solent Disturbance and Mitigation Project was initiated in response to concerns over the impact of disturbance on coastal designated sites and their overwintering bird assemblage. It began in 2008, and in 2009 a Phase 1 report (Literature Review and Interviews) was issued (Stillman *et al*, 2009). Phase 2 was a primary research phase, which issued reports on the results of on-site visitor surveys (Fearnley *et al*, 2010), bird disturbance fieldwork (Liley *et al*, 2010), household surveys and future visitor modelling (Fearnley *et al*, 2011) and disturbance impact modelling (Stillman *et al*, 2012). Phase 3 outlined an avoidance and mitigation strategy to prevent adverse effects on overwintering bird populations around the Solent (Liley & Tyldesley, 2013).

5.4.6 The Solent Recreation Mitigation Partnership (SRMP) was established in 2014 to implement the recommendations of the Phase 3 report. An Interim Strategy was produced in 2014, which has

now been replaced by the final strategy published in December 2017 (SRMP, 2017). The 2017 strategy proposes a series of management measures to prevent bird disturbance through recreational activities associated with new housing development planned around the Solent up to 2034. These measures include:

- a team of 5-7 coastal rangers to advise people on how to avoid bird disturbance, liaise with landowners, host school visits, etc;
- communications, marketing and education initiatives and an officer to implement them;
- initiatives to encourage responsible dog walking and an officer to implement them;
- preparation of codes of conduct for a variety of coastal activities;
- site-specific projects to better manage visitors and provide secure habitats for the birds;
- providing new/enhanced greenspaces as an alternative to visiting the coast; and
- a partnership manager to coordinate and manage all the above.

5.4.7 The strategy requires all new dwellings built within 5.6 km of the boundaries of the SPAs (the 'zone of influence' – see Figure 5.4) to contribute towards this package of measures. In order to ensure there is a mechanism for funding these mitigation measures 'in perpetuity', beyond 2034, a proportion of the money received each year from developer contributions is transferred to an investment fund, which, by 2034 will be sufficiently large to fund the mitigation measures 'in perpetuity'.

5.4.8 An updated Bird Aware Strategy was approved by PfSH on 30 September 2024. The updated strategy has been extended from 2034 to 2050, and has been prepared to mitigate approximately 147,500 new dwellings estimated to be planned between 2024 and 2050 within the 5.6km zone of influence. Further updates include:

- The strategy has also been extended to provide a proportional response to meet the needs of breeding birds;
- The core team of dedicated staff will be increased from 10 to 19;
- Increased resources allocated to our dog initiative 'Coast and Country Canines';
- Increased resources allocated to communications and engagement workstreams; and
- Increased resources allocated to monitoring.

Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- Ramsar
- SPA / Ramsar 5.6km Buffer
- Strategic Development Options
- Small / Medium Sites
- Eastleigh Borough

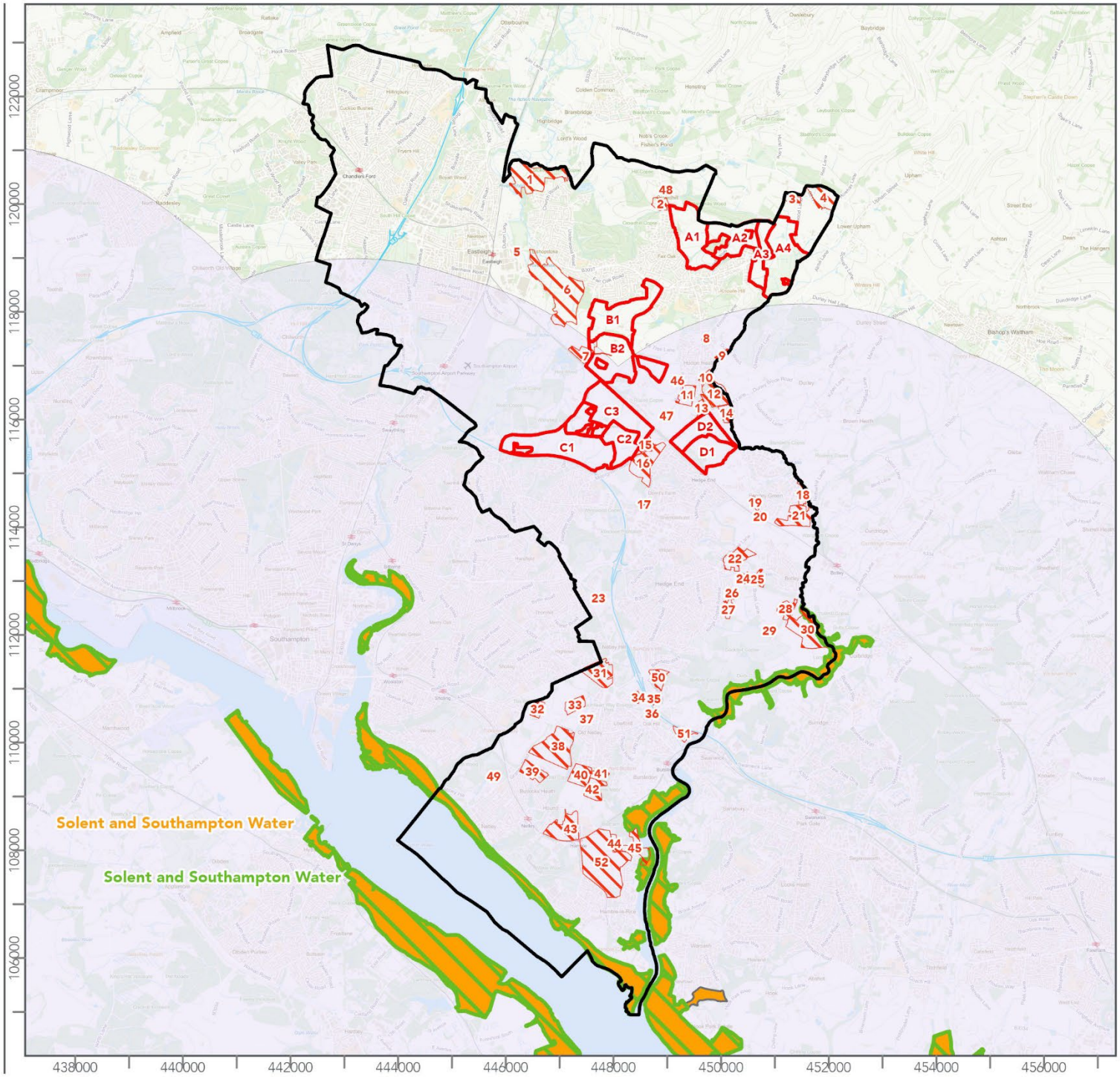

Figure 5.4: Recreational Disturbance Solent Zone of Influence (5.6km)

0 2,500 5,000 N

Metres

Scale (at A4): 1:105,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 5.4 SPAs, buffer, SDO, sm-med

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Evidence of current or future impacts in the New Forest

5.4.9 Three separate surveys addressing recreational impacts to the New Forest National Park were jointly commissioned by six local planning authorities[9] together with Natural England and Forestry England. The surveys were undertaken across the New Forest SAC / SPA / Ramsar in 2018 / 2019 and included:

- A telephone survey with residents living around the New Forest (25km radius);
- Face-face interviews and counts of people at a range of car parks and other access points across the New Forest SAC / SPA / Ramsar; and
- A series of simultaneous counts of vehicles using set parking locations across the New Forest SAC / SPA / Ramsar.

5.4.10 In February 2021 Footprint Ecology produced a follow up report providing clarification and advice relating to an appropriate 'zone of influence' or 'catchment area' within which visitors from new development are likely to have a significant impact on the New Forest SAC / SPA / Ramsar (Liley & Caals, 2021). Using the 75th percentile for visitors travelling from home (derived from the straight-line distance from the interviewee postcode to survey location) a 13.79km zone of influence was defined from the SAC / SPA / Ramsar boundary. This marks out the zone from within which most visitors originate – see Figure 5.5.

5.4.11 The report goes on to recommend that large developments just outside the zone of influence should be subject to HRA and that mitigation may be required. This could be either through the provision of very high-quality local greenspace or a reduced per dwelling contribution to the strategic mitigation scheme. The need for mitigation should be assessed on a site by site basis and should potentially be relevant for any site of around 200 or more dwellings within 15km of the SAC / SPA / Ramsar boundary (Liley & Caals, 2021).

5.4.12 In March 2022, the Council introduced an interim mitigation strategy based on developer contributions to proportionate provision of SANGs within Eastleigh borough and towards the management of recreational impacts within the New Forest protected sites.

5.4.13 It is acknowledged that alone, new or enhanced greenspace provision will not be effective in deflecting all recreational pressures on the New Forest. Natural England advise that a package of measures both within the designated sites and in the surrounding areas is required to ensure impacts are mitigated (PfSH, 2023). In October 2023, Footprint Ecology published the New Forest Strategic Access Management and Monitoring Strategy (Liley *et al.*, 2023) focussing on a package of measures within the New Forest itself. This strategy supplements those at the local authority level. Measures are divided into three broad themes:

- **Access and infrastructure:** influencing distribution of access, focussing use away from sensitive locations and increasing resilience.

[9] Test Valley Borough Council, Eastleigh Borough Council, New Forest District Council, New Forest National Park Authority, Southampton City Council and Wiltshire Council)

- **Engagement:** increased awareness of issues, influence behaviour change, deflect access (e.g. to SANGs) and direct intervention or damaging activities (e.g. BBQs).
- **Monitoring:** information to inform mitigation, early warning of change and emerging issues and increased cost effectiveness by ensuring focus.

5.4.14 Whilst the various mitigation strategies are documented here, it should be noted that, in light of the *People Over Wind* judgement, mitigation measures are not taken into account at the HRA screening stage.

New Forest recreation telephone surveys (July 2024)

5.4.15 In spring 2024 Eastleigh Borough Council commissioned telephone surveys of Eastleigh residents[10] to establish if and how often they are visiting the New Forest to further inform development of a final recreational disturbance mitigation strategy. 1,000 interviews were undertaken of residents aged 18 and over and spread across the Borough.

5.4.16 Over a half of residents (52%) visit green space for recreation or leisure at least once a week, and 69% visit at least once a month. Those living in the north of the Borough are most likely to visit green space for leisure and recreation at least once a week (71% compared to 23% in the mid areas of the Borough and 37% in the south of the Borough). The most popular greenspaces to visit for recreation and leisure are Lakeside Country Park (19%), Itchen Valley Country Park (18%), River Hamble Country Park (15%) and Fleming Park (15%).

5.4.17 Of those interviewed, 34% had visited the heaths or woodlands parts of the New Forest for leisure or recreation in the last 12 months, compared to 64% of those surveyed in the Footprint Ecology studies. 56% of the 34% resided in the north of the Borough. Of the people who had visited the New Forest, 43% visit at least once a month. The main locations visited were the towns and villages of Lyndhurst, Brockenhurst, Lymington, Beaulieu, Ashurst and Burley. Respondents were asked to estimate what proportion of visits to greenspaces were to the New Forest. Almost half (46%) stated they were 10% or less and 22% answered 'don't know'.

5.4.18 The survey presented a series of alternative options to visiting the New Forest. The most popular option was improved footpaths and cycle routes close to their home; followed by a smaller country park within the borough; smaller local greenspaces; and then a large new country park on the edge of the New Forest.

[10] Future Focus Research, July 2024. Preliminary Results

Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- SAC
- Ramsar
- 13.79km New Forest Buffer
- 15km New Forest Buffer
- Strategic Development Options
- Small / Medium Sites
- Eastleigh Borough

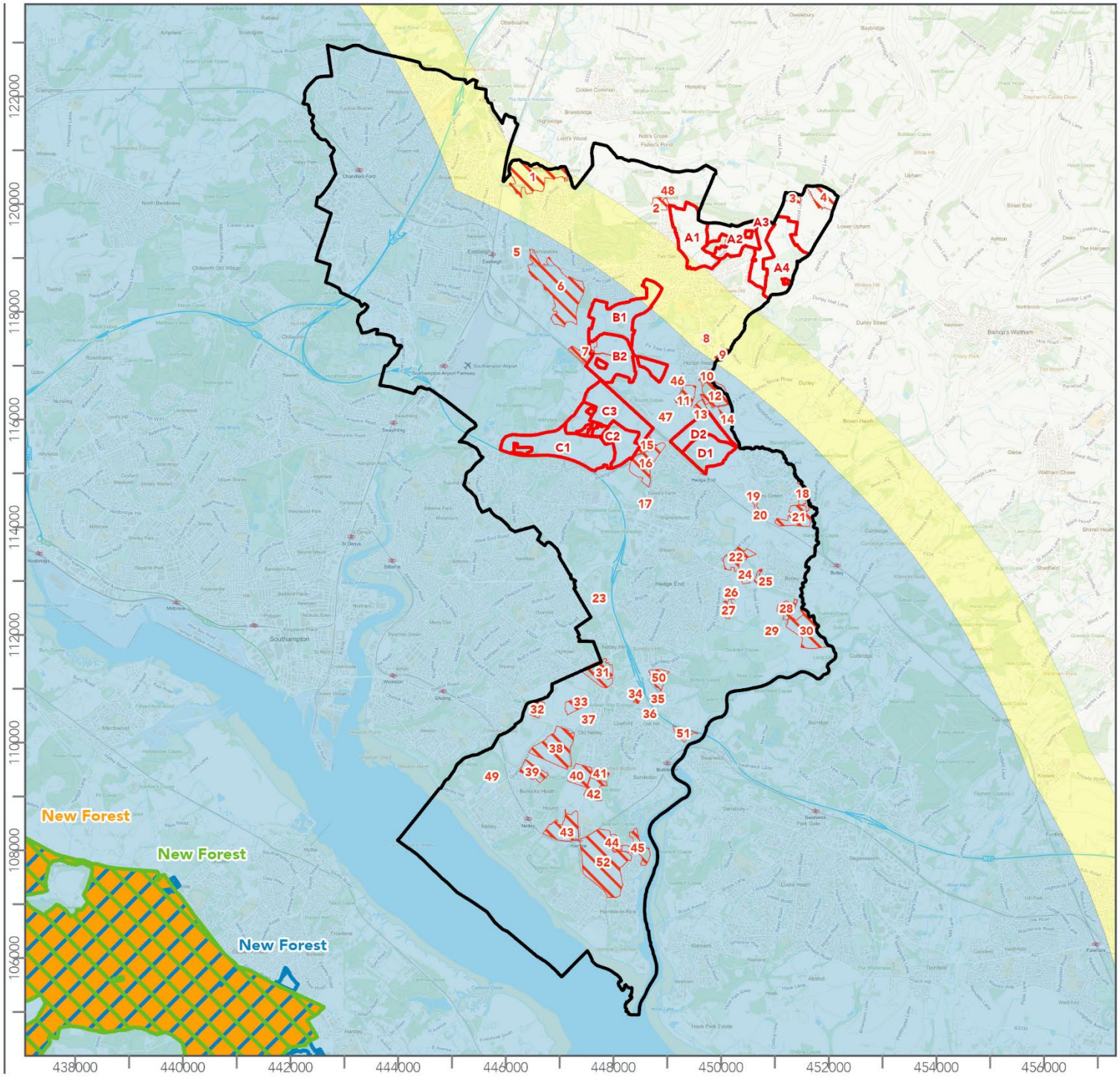

Figure 5.5: Recreational Disturbance New Forest Zone of Influence (13.79km & 15km)

0 2,500 5,000 N

Metres

Scale (at A4): 1:105,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

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UE0646HRA-Eastleigh_HRA:Fig 5.5 New Forest

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Effects associated with the Strategic Options and small / medium sites to the Solent and New Forest

5.4.19 All of the strategic options fall within the 5.6km zone of influence around the Solent SPA / Ramsars (Figure 5.4) with the exception of Option A: North East of Fair Oak. All of the small / medium sites also fall wholly or partially within the 5.6km zone with the exception of sites 1, 2, 3, 4, 5 and 48. In the absence of mitigation, residential development on these sites could contribute to likely significant effects through increased disturbance from people and their dogs visiting the Solent sites.

5.4.20 All of the strategic options fall within the 13.79km zone of influence around the New Forest SAC / SPA / Ramsar with the exception of Option A: North East of Fair Oak. This is also the case for the majority of the small / medium sites, excluding sites 1, 2, 3, 4, 8, 9 and 48 – see Figure 5.5. Residential development within these options / sites could therefore contribute to likely significant effects through increased disturbance from people and their dogs visiting the New Forest.

5.4.21 Site A1, which is included in all iterations of Option A, falls partially within 15km of the New Forest designated sites and small / medium sites 1, 8 and 9 fall between 13.79km and 15km of the New Forest and therefore residential development here will need to be subject to project HRA and hence likely significant effects cannot be ruled out.

Potential effects on the River Itchen SAC

5.4.22 High levels of recreational use can lead to trampling and erosion of river banks and marginal vegetation. This can lead to widening of river channels and consequent changes to river hydrology and result in the release of sediment and plant nutrients into the water course. These factors have the potential to cause damage to the interest features of the river, in particular siltation damages spawning habitat for a number of fish species for which the SAC is designated (Atlantic salmon and Brook lamprey). Silt deposition and nutrient enrichment can also damage both the invertebrate fauna and botanical composition of the floating *Ranunculus* vegetation and hence the ecological structure and function of the habitat. There is consequently a theoretical pathway by which increased recreational use of the River Itchen could cause damage to the SAC.

5.4.23 Otters are known to be sensitive to dogs, in particular during the daytime when resting in their holts or laying up sites and most importantly within sites used for breeding (natal sites). Otters are known to move extensively along the Itchen Valley through both urban and rural areas. However, they are mostly active at night and are therefore rarely in direct contact with people and dogs during the day. There are a number of important refugia used by otters within the River Itchen SAC both for daytime laying up and for breeding. These tend to be dense areas of wet woodland, scrub and reedbeds where there is little or no public access. Otters also disperse from the Itchen Valley into neighbouring river catchments including the Hamble and the Test. Increased development and, potentially, recreational use could inhibit these movements or lead to greater threats of road traffic casualties.

5.4.24 There is approximately 19km of main river within the River Itchen SAC in Eastleigh Borough. Most of this is on private land and is inaccessible to the public. Public Rights of way border one bank of the main river from Chickenhall Waste Water Treatment Works north to Gully Copse (approx. 2km – see Figure 5.6). This stretch forms part of the Itchen Navigation, a straightened, controlled and diverted part of the River Itchen.

5.4.25 Those site options in closest proximity to this stretch of the Itchen and with potential for higher residential yields are considered more likely to have potential to contribute to likely significant recreational disturbance effects to the River Itchen SAC in combination. This includes small / medium sites 1, 5 and 6.

Eastleigh Local Plan Habitats Regulations Assessment

- PRoW next to River Itchen
- SAC
- Strategic Development Options
- Small / Medium Sites
- Eastleigh Borough

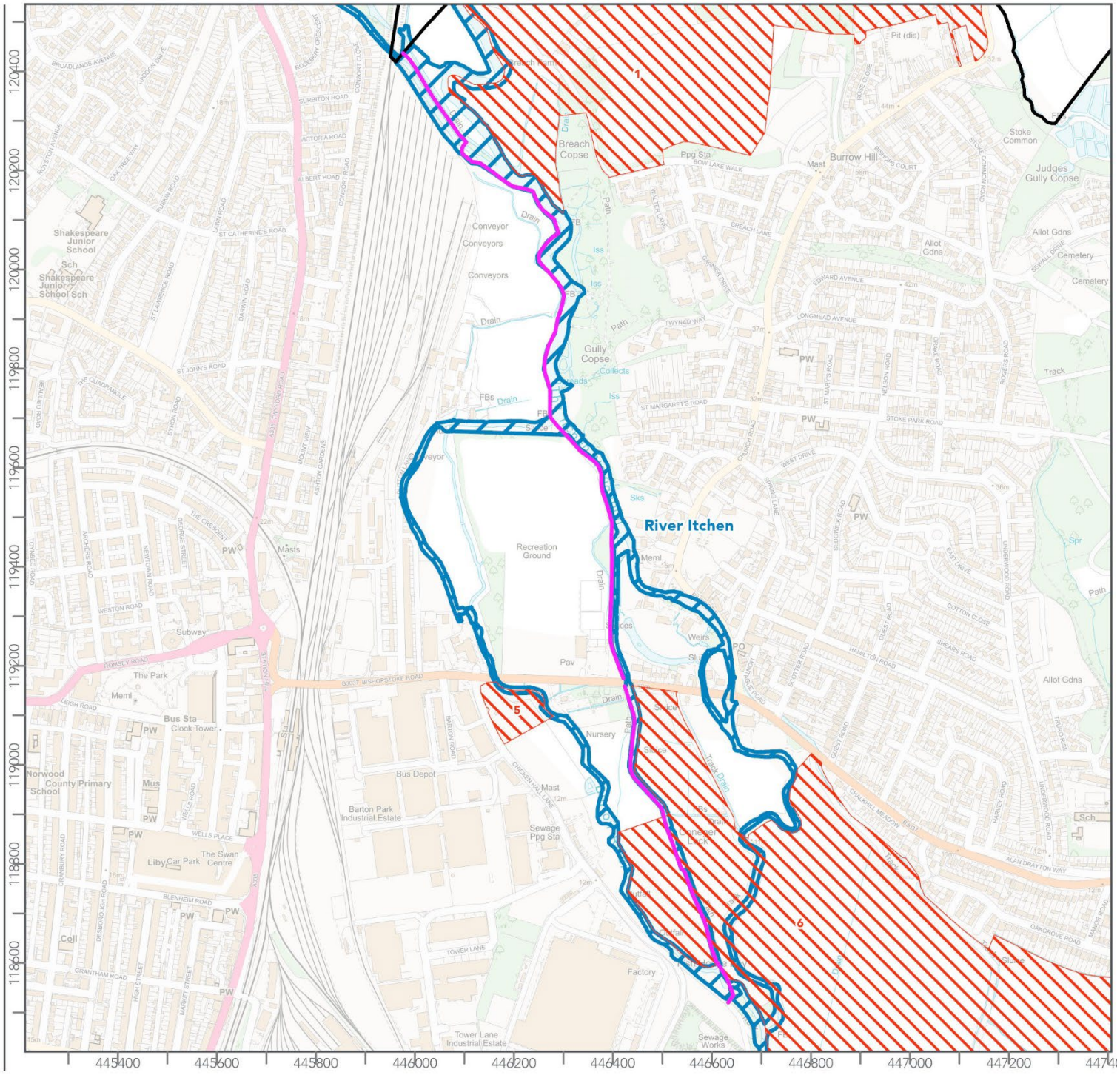

Figure 5.6: Public Access to the River Itchen

0 325 650 N

Metres

Scale (at A4): 1:11,371 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 5.6 CRoW

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5.5 Land Outside European Site Boundaries: Solent Sites

Functionally Linked Land

5.5.1 The qualifying species of designated sites are not confined to the sites' boundaries. Although not included within the formal spatial designation, surrounding areas of habitat may provide an important role for the ecology of qualifying species. For example, surrounding habitats may provide an important role in the nesting, feeding or roosting of qualifying bird species. Functionally Linked Land (FLL) can extend some distance away from the designated site's boundary. The direct loss of FLL will alter the extent of the habitats of qualifying species, thereby reducing the population or restricting the distribution of qualifying species.

Solent Waders and Brent Goose Strategy

5.5.2 Whereas the Solent Recreation Mitigation Partnership seeks to manage impacts to overwintering birds within the SPA / Ramsars, the *Solent Waders and Brent Goose Strategy* (Whitfield, 2020) aims to avoid impacts to qualifying species using land outside of the designated sites which have a functional role in supporting waders and Dark-bellied Brent Goose at high-water. The Strategy promotes the protection of areas regularly used by these species, or which may become regularly used in the future, from development and increased recreational use through the planning system.

5.5.3 Dark-bellied Brent Goose feeds mainly on beds of eelgrass and other vegetation in the intertidal zone. At high tide, and especially later in the season when intertidal vegetation has either died-back or become depleted through grazing, the birds make use of grasslands and arable fields within 5km of roost areas (Stroud *et al.*, 2016) to supplement their diet. In the south Hampshire area the availability of alternative feeding sites for Brent geese are at a premium due to a heavily urbanised landscape, while sites close to the coast which remain undeveloped are often subject to high visitor pressure, especially amenity grasslands, parkland and playing fields.

5.5.4 The Solent's intertidal habitats, its mudflats, shingle and saltmarsh provide vital feeding and roosting grounds for wading birds. Waders are adapted to feeding in wetlands, adopting a variety of tactics to feed on invertebrates such as worms and molluscs, and in some cases fish that occupy the mudflats of estuarine areas. The pattern of movement of wading bird communities is dependent on time of day, tidal water movements and weather conditions. Most species feed at low tide and roost at high tide. Natural roosting sites include saltmarsh areas, shingle banks and coastal grasslands but waders are also known to roost on built structures such as boats, wharfs, jetties and piers. Roosting sites tend to be close to the coast, often within 100m from mean high water (MHW), have good visibility and are usually situated away from sources of disturbance, such as housing and industry (Whitfield, 2020).

5.5.5 The Local Plan could have a negative effect on Brent Geese and waders overwintering in the Solent due to development in the coastal zone resulting in losses of areas of FLL used by the species for feeding or roosting at high tide. Loss of FLL to development of any kind could, unless mitigated, reduce the overall extent of habitats which support the Brent Goose and wader populations within the Solent SPAs / Ramsar. Residential development may be of greater concern

where it is of a scale or location which could increase disturbance to adjacent areas of supporting habitat, thereby reducing the suitability of land left undeveloped as well.

5.5.6 The Solent Waders and Brent Goose Strategy (Whitfield, 2020) aims to protect the network of non-designated terrestrial wader and Brent Goose sites that support the Solent SPAs. It classifies sites as Core Areas, Primary Support Areas, Secondary Support Areas, Low Use sites and Candidate sites. A framework for guidance on mitigation and off-setting requirements for each classification is proposed to achieve the long-term protection of the wider Brent Goose and wader network of sites. Those sites forming part of the network and falling within Eastleigh Borough are shown in Figure 5.7.

Effects associated with the Strategic Options and small / medium sites

5.5.7 None of the SDOs overlap wholly or partially with any Brent Goose and Wader sites. The only small / medium site which could result in the direct loss of FLL is small / medium site 39 which is designated as a secondary support area for Brent Goose and waders (site reference E16).

Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- Ramsar

Brent Goose and Wader sites

- SPA Site
- Core Area
- Primary Support Area
- Secondary Support Area
- Low Use Site
- Strategic Development Options
- Small / medium sites
- Eastleigh borough

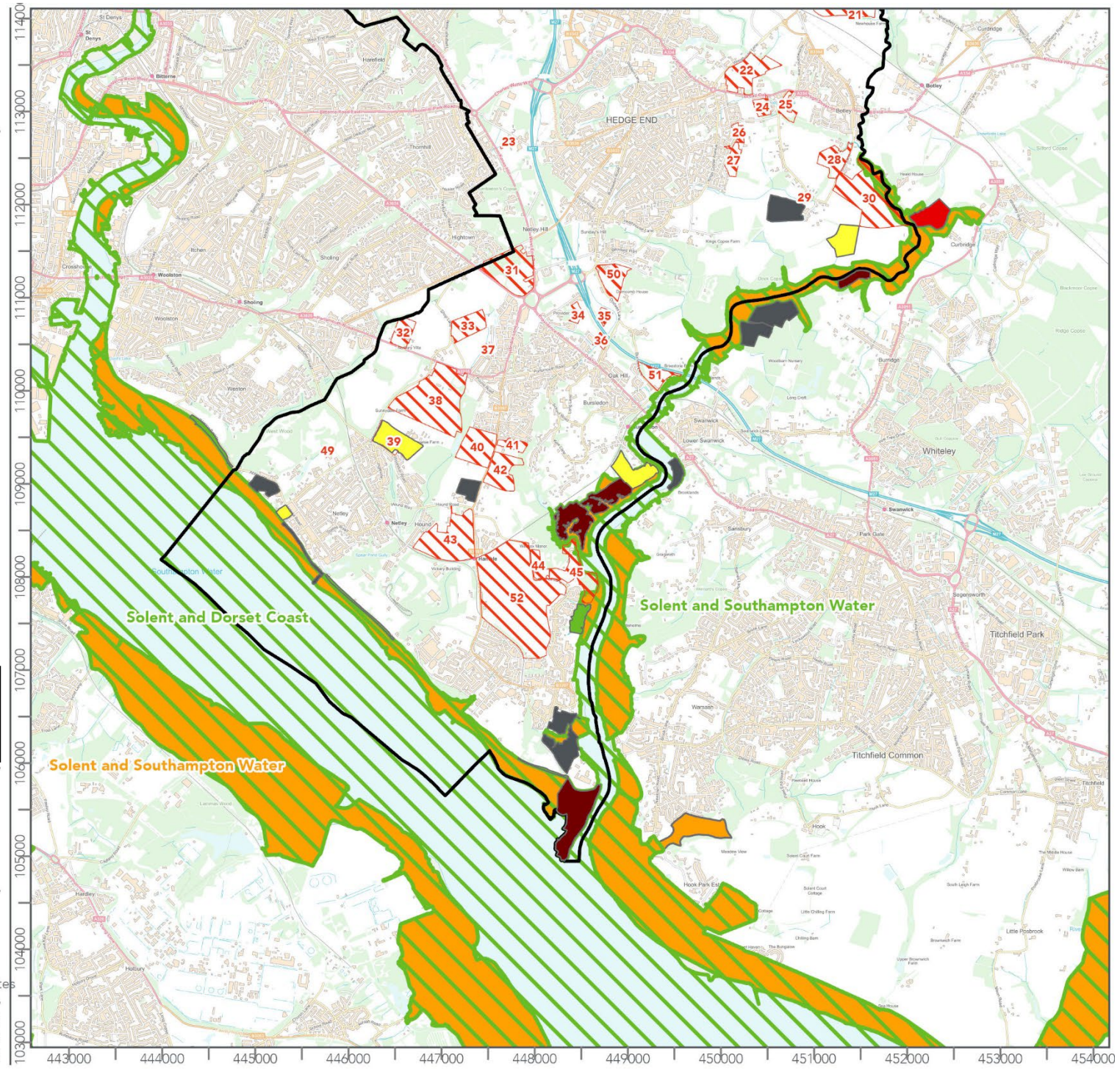

Figure 5.7: Brent Goose and Wader Sites in Eastleigh

0 1,675 3,350 N

Metres

Scale (at A4): 1:60,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 5.7 Brent Goose and Wader sites

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5.6 Displacement due to Shortened Sight Lines

5.6.1 This pathway is defined as impacts from development (of any type) which changes the distribution of a qualifying species within a European site or important supporting area (FLL) by reducing sight lines available to birds using the habitats within the site.

5.6.2 Several bird species can be displaced as a result of their specific line-of-sight requirements while foraging or roosting, whereby obstruction to sight lines (necessary for early warning of perceived predation risk) will render areas of habitat unsuitable for use by birds. For example, terns and gulls prefer open nest sites and unrestricted views while roosting, breeding and feeding. Waders, including ringed plover, black-tailed and bar-tailed godwits, redshank, curlew, turnstone, dunlin and sanderling, require views of greater than 200m when roosting or feeding. Brent Goose requires views of at least 500m (Natural England, 2023b) in order to feel sufficiently free of predation risk to feed or roost. Additionally, Whitfield (2020) highlights a number of factors which significantly correlate with the suitability of sites for waders and Brent geese, and buildings within 500m have a negative effect on the suitability of sites for both waders and Brent Geese.

Effects associated with the Strategic Options and small / medium sites

5.6.3 Table 5.4 sets out those strategic options and those small / medium sites which fall within the 200m and 500m screening distances around the Solent and Southampton Water SPA / Ramsar or Brent Goose and Wader sites and hence could result in likely significant effects through the disturbance associated with shortening of bird sight lines.

5.6.4 Whilst some site options may fall within these screening distances from European sites or Brent Goose and Wader sites, this does not necessarily mean that they will experience significant effects; for example, there may be intervening structures or vegetation which sever the potential impact pathway between the site option and the European site / Brent Goose and Wader site. This will be investigated further at the next Plan stage once the preferred strategic option and short list of small to medium sites is established.

Table 5.4: Site Options falling within Shortened Sight-Line Distances around European Sites and Brent Goose and Wader Sites

Site	Shortened Sight Lines Waders (200m)	Shortened Sight Lines – Brent Goose (500m)
Small / Medium Sites		
27	No	Yes – BGW site only
28	Yes – SSW SPA only	Yes – SSW SPA & BGW site
29	Yes – BGW site only	Yes – BGW site only
30	Yes – SSW SPA & BGW site	Yes – SSW SPA & BGW site
38	Yes – BGW site only	Yes – BGW site only
39	Yes – BGW site only	Yes – BGW site only
40	Yes – BGW site only	Yes – BGW site only
41	No	Yes – BGW site only
42	Yes – BGW site only	Yes –BGW site only
43	Yes – BGW site only	Yes – BGW site only
44	No	Yes – SSW SPA & BGW site
45	Yes – SSW SPA & BGW site	Yes – SSW SPA & BGW site
49	No	Yes – BGW site only
52	Yes – SSW SPA & BGW site	Yes – SSW SPA & BGW site

SSW SPA: Solent and Southampton Water SPA, BGW site: Brent Goose and Wader site. Strategic and small / medium sites omitted from this table do not fall within screening distances of either SPAs or BGW sites.

5.7 Site-specific Disturbance: Noise and Vibration

River Itchen SAC

5.7.1 The River Itchen is designated for several species of fish and the European otter, all of which will be more or less sensitive to noise and vibration through the water column, and in the case of the otter in close proximity to holts and other terrestrial habitat. Southern damselfly and white clawed crayfish are not considered to be sensitive to the effects of noise and vibration.

Atlantic salmon

5.7.2 Underwater noise generated by piling in close proximity to a watercourse can create an acoustic barrier to fish migration, impeding fish as they migrate up and down. Any factor that limits the ability of fish to reach spawning grounds will potentially have a catastrophic effect on recruitment for a given species in that year and thus maintenance of the population (AECOM, 2015).

5.7.3 Fish hearing varies greatly between species. For those fish species that possess a swim bladder, sensitivity to sound and vibration is related to the proximity of the swim bladder to the inner ear.

Atlantic salmon possess a large swim bladder but as it is not in close proximity to the inner ear, they are considered to be less sensitive to underwater sound and vibration (Bureau Veritas, 2009).

5.7.4 In relation to the Eastleigh Riverside Project, the Environment Agency criteria for acceptability of in-water noise levels for Atlantic salmon was for no more than 50% of the cross-sectional area of any watercourse in the vicinity of the development area, either as a consequence of construction or operational noise, to exceed a noise level of 50 dB_{ht}[11] (Bureau Veritas, 2009). It is becoming accepted practice in the UK to consider that between 0 – 50 dB_{ht} (*Species*) there is a low likelihood of disturbance to marine species.

5.7.5 Based on available data, the Bureau Veritas noise study (Bureau Veritas, 2009) made an assumption that impact piling[12] operations closer than 70m from the edge of a river may cause levels of noise greater than 50 dB_{ht} out to a range of 150m, which would cover the full width of the River Itchen SAC in most locations. 70m was taken forward as a screening distance for potential noise and vibration effects to Atlantic salmon in the adopted Local Plan HRA, and has also been applied here.

Otter

5.7.6 Otters have very acute high frequency hearing sensitivity (16kHz) but much poorer hearing sensitivity than humans at frequencies below 4kHz; this may explain why they appear to tolerate what, to humans, are perceived as 'noisy' environments (Bureau Veritas, 2009). Tolra *et al.*, (2024) found evidence that human disturbance does constrain otter (*Lutra lutra*) habitat selection; however, they found outdoor human recreational activity had a much greater impact than infrastructure, suggesting that noise plays a less important role in the disturbance.

5.7.7 Nevertheless, noise generating activities close to either the River Itchen SAC itself or to one of the many tributaries of the Itchen that may be used by otters as corridors or links to the neighbouring catchments could constrain their distribution and dispersal. Of particular importance are the links to the Hamble along the Bow Lake Stream and overland between the headwaters of the Allington Lane Stream and the Hamble catchment around Horton Heath. Equally the Monks Brook and Tadburn Stream are thought to provide important links to the Test catchment to the west.

5.7.8 Bureau Veritas (2009) suggested that a sound pressure level below 50 dB_{ht} (*Lutra lutra*) would probably result in a low likelihood of disturbance for otters as it does for humans and many marine species. The report further identifies that most construction activities involving ground penetration or noise would not result in disturbance (i.e. noise levels above 50dB_{ht} (*Lutra lutra*)) if undertaken over 30m from the watercourse but that some activities (e.g. piling) may disturb up to 80m away. The zone of influence of construction noise on potential otter disturbance could even extend to 100m from individual construction tasks if these are of a highly percussive nature

[11] Sound level above the hearing threshold (ht) of the species. The metric incorporates hearing ability by referencing the sound to the species' hearing threshold, and hence evaluates the level of sound a species can perceive, rather than its absolute level.

[12] Impact piling generates much higher levels of underwater noise than vibro-piling and therefore the assessment is considered worst-case. Unlike with impact pile driving, vibratory pile driving is a method in which the pile is vibrated into the sediment rather than being hammered in.

(e.g. driven/impact piling). To be precautionary for the purposes of this HRA a screening distance of 100m for potential noise and vibration effects has been applied here.

Effects to the River Itchen SAC associated with the Strategic Options and small / medium sites

5.7.9 None of the strategic options fall within the 70m or 100m screening distances for Atlantic salmon and otter respectively and therefore likely significant noise and vibration effects for these species are ruled out.

5.7.10 Table 5.5 below lists those small and medium proposed sites falling within the salmon and otter screening distances and therefore could result in likely significant noise and vibration effects without mitigation.

Table 5.5: Small / Medium Proposed Sites Falling Within Noise and Vibration Zones of Influence around River Itchen SAC

Site	70m Salmon ZoI	100m Otter ZoI
Small / Medium Sites		
1	Yes	Yes
5	Yes	Yes
6	Yes	Yes
7	Yes	Yes

Strategic and small / medium sites omitted from this table do not fall within screening distances.

Solent and Southampton Water SPA / Ramsar and the Solent and Dorset Coast SPA

5.7.11 Very loud (defined as greater than 70dB) and percussive noises have the potential to disturb birds, increasing time spent alert and in flight, and reducing the time available to feed (Cutts *et al.*, 2009; 2013). Peak levels of sound are most likely to occur from the impact of pneumatic drilling and concrete breaking during site preparation and piling during construction.

5.7.12 Noise levels are described on a logarithmic rather than linear scale: a noise of 70dB at the receptor can either originate from a source of approximately 90dB around 10m away, or a noise source of 120dB if 300m distant. The Waterbird Mitigation Toolkit (Cutts *et al.*, 2013), created for the Humber Estuary project, has been developed using a combination of literature review information and field observation, tailored specifically for the purpose of defining disturbance impacts to avifauna from construction-type operations on or adjacent to intertidal areas.

5.7.13 Noise disturbance to qualifying bird species within a European site or using land functionally linked to it could result in the functional loss of habitats which have a role in supporting the integrity of the designated site.

5.7.14 Three of the qualifying bird species of the Solent and Southampton Water SPA form part of the toolkit including: Dark-bellied Brent Goose, Ringed Plover and Black-tailed Godwit. Of the three species Dark-bellied Brent Goose were found to be the most sensitive to disturbance. Brent

Geese are very sensitive to noise stimuli but due to their wary nature and liability to flush, the minimum approach distance can be expected to be no less than 100m. At this distance using the noise response works noise required to create high level disturbance would be 110-115dB at source and thus not particularly prohibitive. This increases to 120-125dB at 300m. On a precautionary basis, a screening distance of 300m has been applied for the assessment of potential noise and vibration effects to the qualifying bird species within the Solent and Southampton Water SPA and the Solent and Dorset Coast SPA, and surrounding functionally linked land.

5.7.15 The Solent and Dorset Coast SPA includes the sub-tidal areas not currently encompassed in the existing SPAs, including the Solent and Southampton Water SPA. Therefore, its landward boundary is at mean low water (MLW) where it abuts any existing SPA where terns are already a feature. The site SACO lists disturbance caused by human activity as an attribute for all three qualifying tern species, and therefore the assessment of noise disturbance effects has been extended to include both the Solent and Southampton SPA / Ramsar and the Solent and Dorset Coast SPA.

Effects to the Solent sites associated with the Strategic Options and small / medium sites

5.7.16 Eleven small / medium sites as listed in Table 5.6 fall within the 300m screening distance around the Solent and Dorset Coast SPA and / or the Solent and Southampton Water SPA and its FLL and therefore could result in likely significant noise and vibration effects without mitigation.

Table 5.6: Strategic Options and Small / Medium Proposed Sites Falling Within Noise and Vibration Zone of Influence around Solent Sites and FLL

Site	300m Solent & Dorset Coast SPA ZoI	300m Solent & Southampton Water SPA / Ramsar ZoI	300m Solent & Southampton Water FLL ZoI
Small / Medium Sites			
28	No	Yes	No
29	No	No	Yes
30	No	Yes	Yes
39	No	No	Yes
40	No	No	Yes
42	No	No	Yes
43	No	No	Yes
44	Yes	Yes	Yes
45	Yes	Yes	Yes
51	Yes	No	No
52	Yes	Yes	Yes

Strategic and small / medium sites omitted from this table do not fall within screening distances.

5.8 Site Specific Disturbance: Construction and Operational Activity

5.8.1 This pathway is defined as impacts from development (construction or operation) which results in heightened activity within the development site, thereby causing changes in the distribution of qualifying species within a European site or important supporting area, displacing the species from otherwise suitable habitats, and thereby reducing individual survival rates and risking a population reduction. This could be due to the proximity of the allocation site to the European site / supporting area and/or the absence of existing topographic features, structures or vegetation which may serve to sufficiently screen the activity or attenuate the noise.

5.8.2 Stillman *et al* (2012; Table 6.1, p.61) identify median distances for Brent goose and some waders within which the birds commonly respond to human activity, thereby causing changes in behaviour or displacement from otherwise suitable habitats. This response distance, which is around 80-100m for most species analysed in the Solent area, provides some context for sites which are particularly close to a European site or Core, Primary or Secondary Support areas.

Effects to the Solent sites associated with the Strategic Options and small / medium sites

5.8.3 Table 5.7 identifies those small / medium sites which fall within 100m of the Solent & Southampton Water SPA / Ramsar or land functionally linked to it (Figure 5.7) and therefore could result in likely significant noise and vibration effects without mitigation. No SDOs fall within the 100m impact zone.

Table 5.7: Strategic Options and Small / Medium Proposed Sites Falling Within Construction and Operational Disturbance Zone of Influence around Solent and Southampton Water SPA / Ramsar and FLL

Site	100m Solent & Soton Water SPA / Ramsar	100m BGW site
Small / Medium Sites		
29	No	Yes
30	Yes	Yes
39	No	Yes
42	No	Yes
43	No	Yes
45	Yes	Yes

Strategic and small / medium sites omitted from this table do not fall within screening distances.

5.9 Impacts on Otter outside European Site Boundaries

5.9.1 The European otter *Lutra lutra* is a qualifying feature of the River Itchen SAC. The species was made extinct in the Itchen Valley by the middle of the 19th century following years of persecution. Otters returned to the Valley during the late 1970s and early 1980s supported with reintroductions in the 1990s. The Itchen Valley now supports a viable otter population but this is subject to a number of pressures. Otters are largely nocturnal spending the day in secure holts. Typically, these are provided by holes under riverside trees but can also be above ground in areas of thick undisturbed vegetation such as reed beds and dense wet woodland and scrub.

5.9.2 Otters will travel many kilometres along the river and its tributaries each night passing through the centre of urban areas such as Winchester and Eastleigh. They are particularly vulnerable to road traffic accidents where roads and motorways cross rivers. Otters are also vulnerable to certain types of disturbance, especially to their natal holts used for breeding. Although regular daily otter movements are normally within the catchment of their home river, otters also disperse to and from the Itchen Valley to neighbouring river catchments, in particular to the Test and New Forest to the west and to the Hamble and Meon to the east. Otters also move to the coast, particularly during the winter months and may move between river catchments using the coastline. These crossing points between catchments are vitally important for genetic exchange and integrity and hence long-term population sustainability.

5.9.3 Of particular importance are the links to the Hamble along the Bow Lake Stream and overland between the headwaters of the Allington Lane Stream and the Hamble catchment around Horton Heath, as shown on Figure 5.8. Equally the Monks Brook and Tadburn Stream are thought to provide important links to the Test catchment to the west.

Eastleigh Local Plan Habitats Regulations Assessment

- SPA
- SAC
- Ramsar
- Otter Links
- Strategic Development Options
- Small / Medium Sites
- Eastleigh Borough

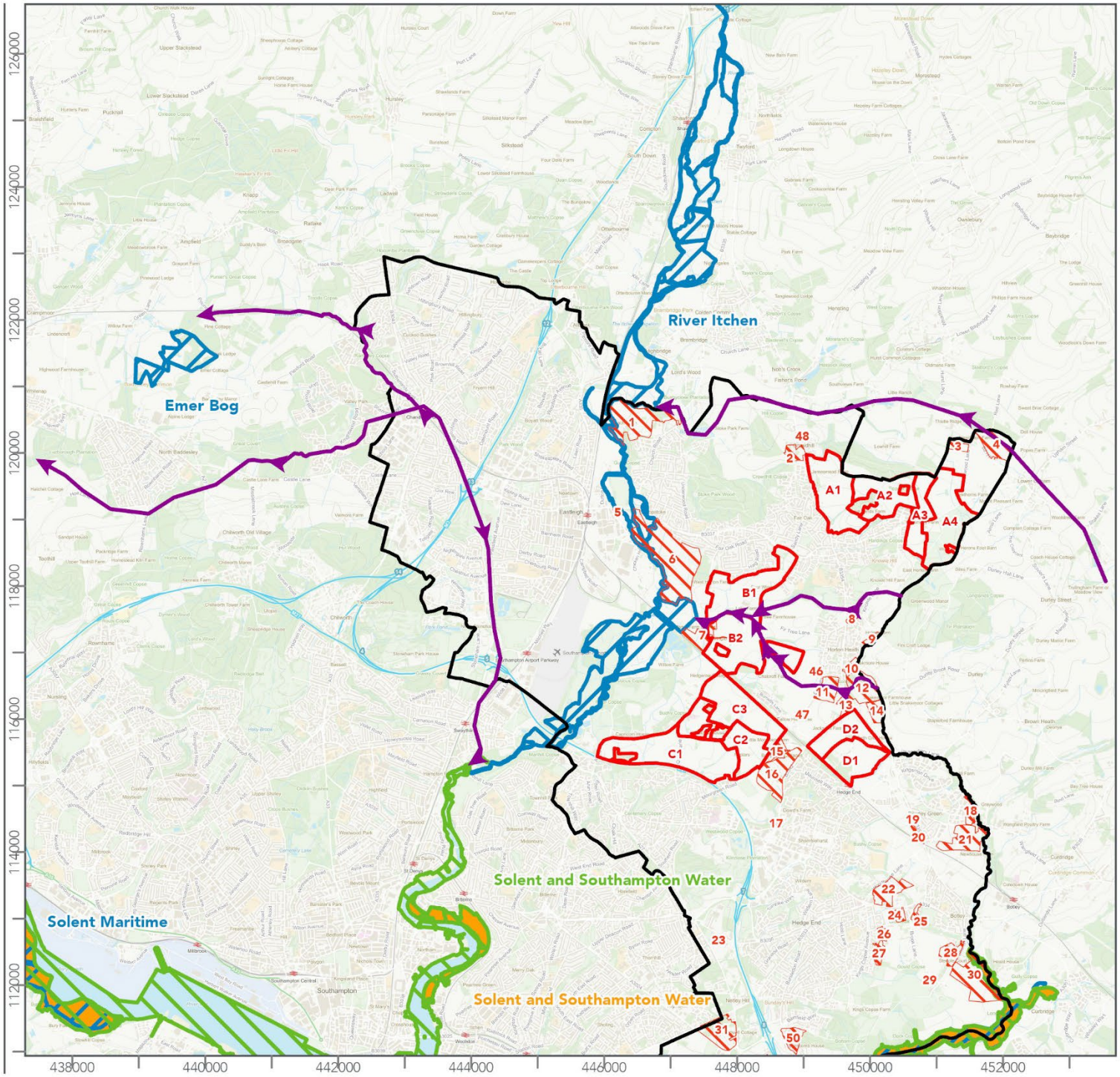

Figure 5.8: Strategic Otter Corridors Linking the River Itchen SAC with Adjacent River Catchments

0 2,000 4,000 Metres N

Scale (at A4): 1:85,000 **Created by:** EM
Date: Oct 2024 **Reviewed by:** NP
Drawing number:
UE0646HRA-Eastleigh_HRA:Fig 5.8 Otter links

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Evidence of current or future impacts

5.9.4 The worst otter road accident blackspots in Hampshire are where the A303 crosses the Anton (a tributary of the River Test) at Andover and the A31 crossing of the River Avon at Ringwood. There have been only two otter road deaths near Eastleigh in recent years (pers. comm. 2018, reconfirmed May 2024). Both were about 300m outside of the Borough, in the Bow Lake Stream catchment. One was on the B3354 near Fishers Pond the other was on the B2177 further up the Bow Lake catchment, where there are a series of fish ponds.

5.9.5 Although these dead otters were just outside of the Borough boundary they were on roads that will carry more traffic as a result of planned housing development in the Local Plan. A potential increase in road traffic accidents involving otters arising from an increase in vehicle movements in Eastleigh is considered by the Environment Agency to constitute a likely significant effect. The effect is unlikely to be discernible from individual development allocations but could be significant in combination with other proposals in the Local Plan.

Effects associated with the Strategic Options and small / medium sites

5.9.6 Strategic Options and small / medium sites in the north of the Borough are considered to have the greatest potential to contribute to likely significant effects given their proximity to the otter links between catchments shown in Figure 5.8. This impact pathway is carried forward for assessment in view of the River Itchen SAC conservation objectives.

5.10 Non-native Species and Site-specific Hydrological Impacts

5.10.1 These impact pathways relate to the direct and in combination effects of non-native species and construction-related water quality impacts on the River Itchen SAC and Solent Maritime SAC.

Non-native species

5.10.2 A frequent concern in habitat management is the control of unwanted plant species, such as non-native species that out-compete native vegetation. This is primarily an issue relating to protected habitats due to the ability of non-native species to alter habitat composition, leading to impaired species diversity. In extreme circumstances invasive species can change habitat structure, water chemistry and invertebrate diversity / abundance, and can also increase flood risk by choking drainage channels with excess vegetation.

5.10.3 Invasive plants are introduced species that can thrive in areas beyond their natural range of dispersal. These plants are characteristically adaptable, aggressive, and have a high reproductive capacity, a vigour which combines with a lack of natural graziers to lead to outbreak populations. Nationally, examples include Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum*, Himalayan balsam *Impatiens glandulifera*, floating pennywort *Hydrocotyle ranunculoides* and creeping water primrose *Ludwigia peploides*.

5.10.4 Non-native species can be introduced via naturally dispersed seeds and spores, via the aquatic environment, as escapees from domestic and ornamental gardens, ponds and aquaria, and direct

introduction via transportation networks, poor biosecurity measures, and through the dumping of garden waste. Residential developments in close proximity to river and stream corridors can significantly increase the risk of non-native species being introduced, particularly non-native plant species resulting from garden waste, soil / rhizomes and seed dispersal.

5.10.5 Non-native faunal species are also a concern; signal crayfish *Pacifastacus leniusculus* is driving native crayfish towards extinction through the spread of crayfish plague and competition for resources (refuges in particular). Signal crayfish grow faster, are more fecund, more aggressive and are tolerant of a wider range of conditions than the white-clawed crayfish, and therefore out-compete the native species[31]. They eat more than white-clawed crayfish, feeding on fish and amphibian eggs, tadpoles, juvenile fish, aquatic invertebrates, detritus and aquatic vegetation and so may reduce populations of native species and affect food webs. Signal crayfish was introduced to be farmed for food, but escaped and spread rapidly through water courses and across land; as such it is less likely to result from developments proposed by the Eastleigh Borough Local Plan.

Site-specific hydrological impacts

Contaminants

5.10.6 Construction activities on sites can lead to the mobilisation of contaminants during remediation, demolition or construction resulting in pollution of a qualifying habitat or habitat of a qualifying species, thereby limiting the function of the habitat or altering the supporting processes on which it relies. This could occur by introducing pollutants to an aquatic environment that is hydrologically connected with the designated habitat. Impacts could also occur as a result of a pollution incident during construction on a site which is hydrologically connected with a qualifying habitat or habitat of a qualifying species, regardless of whether the allocation site is thought to be contaminated.

5.10.7 The discharge and runoff from urban drainage, engineering works such as road improvement schemes, contaminated land and other industrial and domestic sources also results in pollution of groundwater and surface water. This can result in an overall deterioration of water quality locally as well as on a more widespread scale, which in turn is likely to impact the ecology within designated sites and surrounding areas.

Sediments

5.10.8 Suspended solids, including microplastics, within surface water can enter the river system during both the construction and operational phases of a development, particularly during wet weather and storm events. Depending on their composition, suspended solids can lead to changes in nutrient, organic or chemical loading. In addition, increased suspended solids can alter the flow path for the runoff as sediment becomes deposited altering natural flow paths.

5.10.9 Coarse sediment supply is essential for the stability of the River Itchen channel and for creating and sustaining key biotopes including riffles and exposed shingle banks (Natural England, 2022a). These in turn provide high quality spawning habitat for lamprey, bullhead and salmon species, maintaining river bed substrates in optimal condition for egg-laying and juvenile and adult cover.

However, excessive fine sediment supply can lead to the smothering of coarse substrates and the siltation of egg-laying sites and juvenile and adult refugia. This can prevent the flow of dissolved oxygen to eggs and prevent of the movement of waste products. In addition, elevated levels of suspended sediments can clog gill structures (Natural England, 2022a).

Evidence of current or future impacts

River Itchen SAC

5.10.10 Natural England's latest condition assessments[13] for River Itchen SSSI make specific mention of invasive species and water pollution for those management units in unfavourable condition set out in Table 5.8. 'Salmon populations at risk – egg populations and returning stock targets not met' is specifically mentioned for units 106, 107 and 108. Units 107 and 108 run the length of the main Itchen channel through Eastleigh borough.

Solent Maritime SAC

5.10.11 The latest Natural England condition assessments (2018 / 2019 / 2020) of the marine features within the Solent Maritime SAC make specific mention of invasive species and water pollution in relation to the SAC qualifying features and sub-features set out in Table 5.9.

[13]Natural England: Designated Sites View: Condition of SSSI Units for Site River Itchen - 2000227 SSSI [accessed online 15/05/2024]

Table 5.8: River Itchen Management Units in Unfavourable Condition which mention Invasives and Water Pollution in Latest Condition Assessment

Unit	Non-native Invasive species (if any)	Water pollution (if any)
015 Cheriton to Kingsworthy	Monkeyflower	
065 Winnall Moors southern fen	Japanese knotweed and Monkeyflower	
067 St Faiths Meadow	Orange Balsam and Monkeyflower	
073 Fen south of M3		Diffuse pollution (nutrient enrichment)
074 Winchester Meadows	Orange Balsam	
075 Itchen Farm South of M3	Orange Balsam	
079 (No name)	Orange Balsam	
085 Otterbourne Meadows S of Kiln Lane		Freshwater pollution, water pollution - discharge
099 (No name)	Nettles and Himalayan balsam	
105 Candover Brook		Fails on Total Reactive Phosphate (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment). No data on other pollutants. Some Diffuse Water Pollution Plan actions under way, together with recent changes to watercress farms and fish farm operations via EA permitting, although many actions still to be implemented.
106 Upper Itchen (Itchen Stoke to Easton)	Orange Balsam and Monkeyflower	Fails on Total Reactive Phosphorous (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment). Fails on other pollutants due to presence of tributyl tin – although source of this is unknown, and more likely in lower reaches. Some Diffuse Water Pollution Plan actions under way, together with recent changes to watercress farms and fish farm operations via EA permitting, although many actions still to be implemented. Salmon population at risk – egg production and returning stock targets not met. Exact reasons unknown, but likely due to degraded habitat (including siltation of spawning gravels), fish passage impeded and impacts in the marine environment.

Unit	Non-native Invasive species (if any)	Water pollution (if any)
107 Middle Itchen (Easton to Highbridge)	Orange Balsam and Monkeyflower	Fails on Total Reactive Phosphorous (growing season and annual mean). Fails on Trophic Diatom Index (indicator of nutrient enrichment). Some Diffuse Water Pollution Plan actions under way, although many actions still to be implemented. Salmon population at risk – egg production and returning stock targets not met. Exact reasons unknown, but likely due to degraded habitat (including siltation of spawning gravels), fish passage impeded and impacts in the marine environment.
108 Lower Itchen (Highbridge to Wood Mill)	Monkeyflower and Himalayan balsam	Fails on Total Reactive Phosphorous (growing season and annual mean). Fails on Trophic Diatom Index (indicator of nutrient enrichment). Some Diffuse Water Pollution Plan actions under way, although many actions still to be implemented. Salmon population at risk – egg production and returning stock targets not met. Exact reasons unknown, but likely due to degraded habitat (including siltation of spawning gravels), fish passage impeded and impacts in the marine environment.
126 South five bridges road		Diffuse pollution (nutrient enrichment)
142 River Arle	Monkeyflower	Fails on Total Reactive Phosphorous (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment). Some Diffuse Water Pollution Plan actions under way, together with recent changes to watercress farms and fish farm operations via EA permitting, although actions still to be implemented.
143 Cheriton Stream		Fails on Total Reactive Phosphorous (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment). Some Diffuse Water Pollution Plan actions under way, together with recent changes to watercress farms and fish farm operations via EA permitting, although actions still to be implemented.

Table 5.9: Solent Maritime SAC Marine Qualifying Feature Condition Assessments

Qualifying feature	Rationale for Unfavourable condition judgement	Sub-feature	Adverse condition reason relating to invasives or water quality	Condition threat pressure relating to invasives or water quality
H1110 Sandbanks which are slightly covered by sea water all the time	Feature considered to be 'Unfavourable - no change' because 1) principal attribute (Structure: species composition of component communities) and 2) secondary attributes (Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants).	Subtidal coarse sediment	Nutrient enrichment and Transition elements & organo-metal (e.g. TBT) contamination	
		Subtidal mixed sediments		Introduction or spread of invasive non-indigenous species (INIS)
		Subtidal sand		
H1130 Estuaries	Feature considered to be 'Unfavourable – no change because of one principal attribute (Structure: species composition of component communities) and two secondary attributes (Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants).	Intertidal coarse sediment	Nutrient enrichment, Transition elements & organo-metal (e.g. TBT) contamination	Introduction or spread of invasive non-indigenous species (INIS)
		Intertidal mud		
		Intertidal sand and muddy sand		
		Subtidal coarse sediment		
		Subtidal mixed sediments		
		Subtidal sand		
	Feature considered to be 'Unfavourable – no change because of two secondary attributes (Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants).	Intertidal mixed sediments		

Qualifying feature	Rationale for Unfavourable condition judgement	Sub-feature	Adverse condition reason relating to invasives or water quality	Condition threat pressure relating to invasives or water quality
	Feature considered to be 'Unfavourable - unknown' because three primary attributes (Extent and distribution, Structure: rhizome structure and reproduction and Structure: biomass) and three secondary attributes (Distribution: presence and spatial distribution of biological communities, Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants)	Intertidal sea grass		
		Subtidal seagrass beds		
H1140 Mudflats and sandflats not covered by seawater at low tide	Feature considered to be 'Unfavourable – no change because of one principal attribute (Structure: species composition of component communities) and two secondary attributes (Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants).	Intertidal coarse sediment	Nutrient enrichment, Transition elements & organo-metal (e.g. TBT) contamination	Introduction or spread of invasive non-indigenous species (INIS)
		Intertidal mud		
		Intertidal sand and muddy sand		
	Feature considered to be 'Unfavourable – no change because of two secondary attributes (Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants).	Intertidal mixed sediments		
	Feature considered to be 'Unfavourable - unknown' because three primary attributes (Extent and distribution, Structure: rhizome structure and reproduction and Structure:	Intertidal seagrass beds		

Qualifying feature	Rationale for Unfavourable condition judgement	Sub-feature	Adverse condition reason relating to invasives or water quality	Condition threat pressure relating to invasives or water quality
	biomass) and three secondary attributes (Distribution: presence and spatial distribution of biological communities, Supporting processes: water quality - nutrients and Supporting processes: water quality - contaminants)			

Effects associated with the Strategic Options and small / medium sites

5.10.12 Table 5.10 sets out those strategic options and those small / medium sites which fall within 100m of watercourses draining into each SAC (or the SAC itself) – see also Figure 5.9 and Figure 5.10; this distance is considered sufficiently precautionary to include all sites where there is a realistic possibility of contributing to a likely significant in-combination effect while excluding sites that are so far from the internationally important wildlife site that (given the limited risk and scale of non-native species and pollution associated with housing and general commercial development) an effect, while not impossible, is unlikely[14]. Sites not listed in Table 5.10 do not fall within 100m of either SAC and associated watercourses.

Table 5.10: Strategic Options and Small / Medium Sites Hydrologically Connected to River Itchen SAC / Solent Maritime SAC

Site	≤100m Itchen SAC*	≤100m Solent SAC*
Strategic Sites		
A1+A2+A3+A4	No	Yes
B1a	Yes	No
B1b	Yes	No
B1a+B1b+B2	Yes	No
C1	Yes	No
C1+C2	Yes	No
C1+C2+C3	Yes	No
D1	No	Yes
D1+D2	No	Yes
Small / Medium Sites		
1	Yes	No
2	Yes	No
4	No	Yes
5	Yes	No
6	Yes	No
7	Yes	No
9	No	Yes
10	No	Yes
12	No	Yes
14	No	Yes
16	Yes	No
17	Yes	No
18	No	Yes

[14] This does not mean that pollution control would not be required as a general principle when working near watercourses.

Site	≤100m Itchen SAC*	≤100m Solent SAC*
21	No	Yes
22	No	Yes
24	No	Yes
28	No	Yes
29	No	Yes
30	No	Yes
35	No	Yes
36	No	Yes
41	No	Yes
42	No	Yes
43	No	Yes
45	No	Yes
51	No	Yes

* Or within 100m of watercourses draining into the SAC

Further screening to inform the selection of Preferred Options

5.10.13 Prior to the selection of Preferred Options further hydrological screening of the four SDOs will be undertaken. The proposed approach includes analysis of three key indicators including:

- **Geology:** superficial and bedrock geology will be mapped to determine whether the SDOs lie over relatively permeable or impermeable geology, affecting the surface water runoff characteristics and the potential for silt mobilisation.
- **Catchment area**: the SDO site area will be compared with the catchment area of the River Itchen at the downstream extent of each SDO. A relatively large difference in area between the SDO and the catchment area at the site could be indicative of a relatively lower risk of adverse impact due to sedimentation as there should be greater potential for dilution of any silt in surface water runoff, and vice versa: an SDO nearer the headwaters of the catchment where the catchment is relatively small suggests smaller receiving watercourses and lower flows meaning silt in surface water runoff potentially poses a greater risk to the receiving watercourse.
- **Geographical location of SDOs relative to qualifying species spawning grounds**: The location of SDOs will be considered relative to information on the location of spawning grounds obtained through consultation with the Environment Agency and / or river surveys[15]. An SDO located downstream of a spawning ground should not have any adverse impact as any surface water runoff would flow downstream away from the sensitive site, and vice versa.

[15] This will depend on the nature and extent of information captured and held by the Environment Agency

Eastleigh Local Plan Habitats Regulations Assessment

- SAC
- SAC 100m Buffer
- Rivers
- River Buffer 100m
- Strategic Development Options
- Small / Medium Sites
- Eastleigh Borough

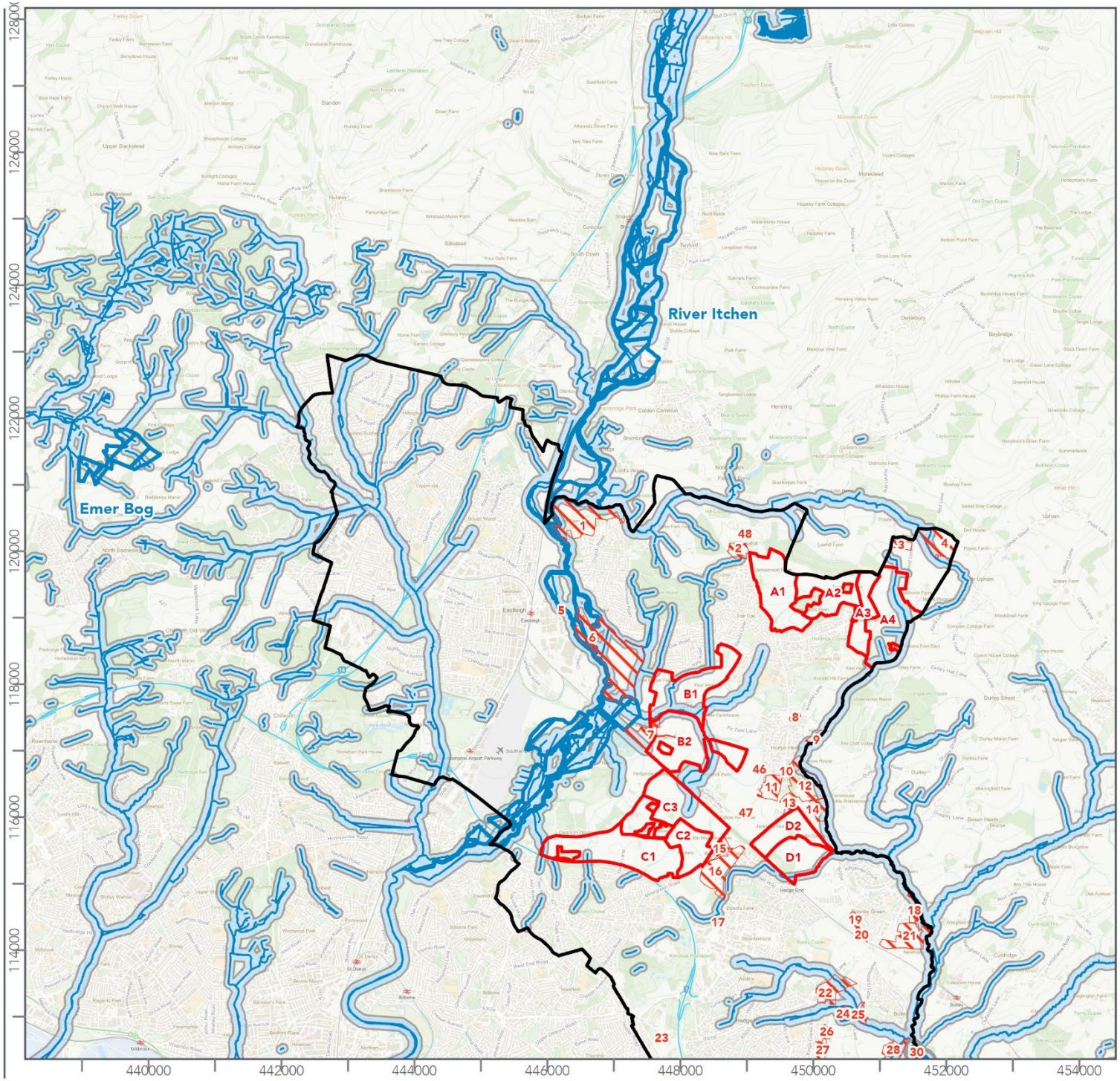

Figure 5.9: Hydrological Connectivity between Sites and the River Itchen SAC & Solent Maritime SAC - North

0 2,000 4,000 N

Metres

Scale (at A4): 1:85,000 **Created by:** EM

Date: Oct 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_HRA:Fig 5.9 River buffers

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Eastleigh Local Plan Habitats Regulations Assessment

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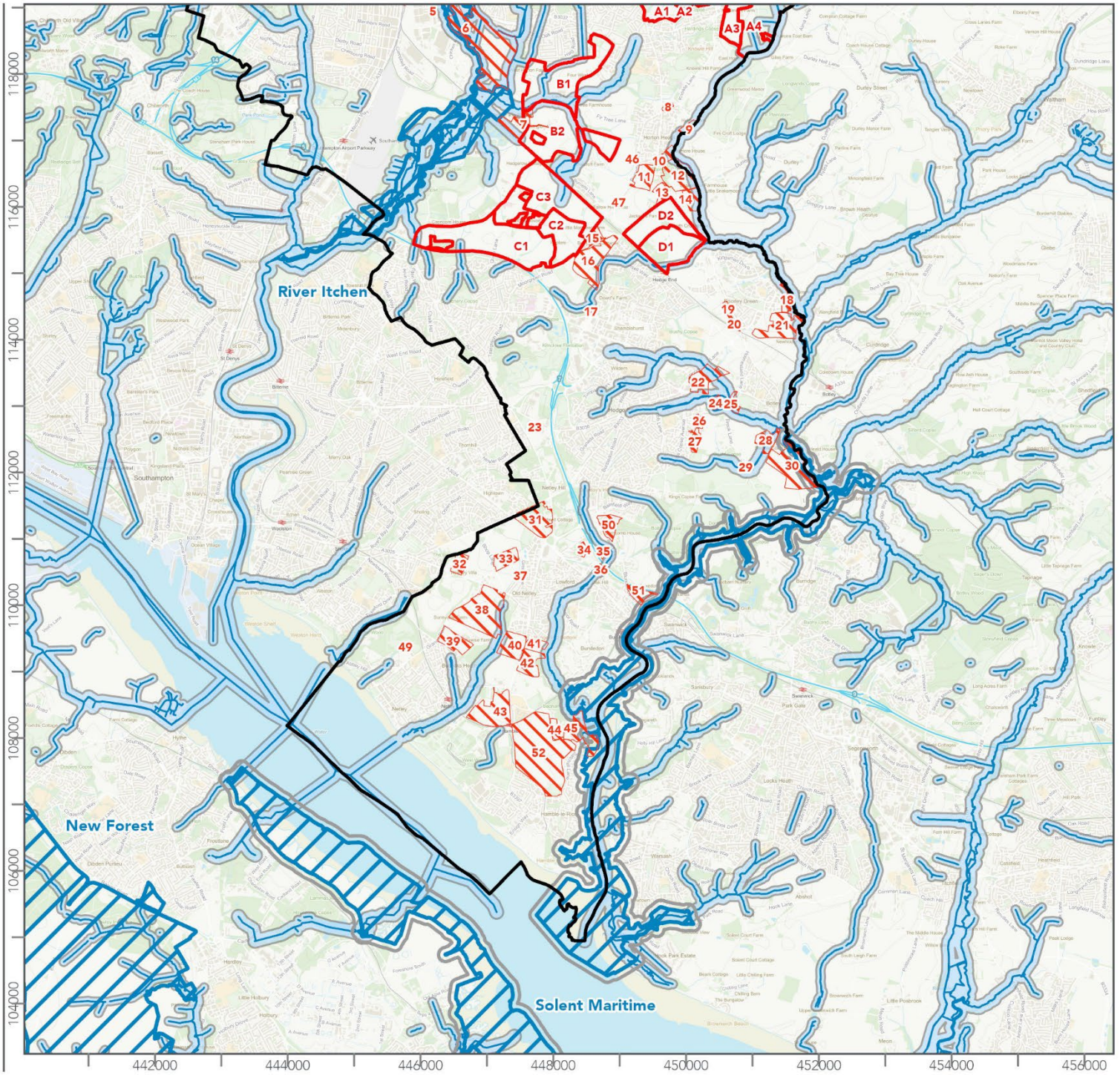

Figure 5.10: Hydrological Connectivity between Sites and the River Itchen SAC & Solent Maritime SAC - South

0 2,000 4,000 Metres N

Scale (at A4): 1:85,000 **Created by:** EM
Date: Oct 2024 **Reviewed by:** NP
Drawing number:
UE0646HRA-Eastleigh_HRA:Fig 5.10 River buffers

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5.11 Water Abstraction

5.11.1 This section draws upon Southern Water's Draft Water Resource Management Plan 2024 (WRMP; Southern Water, 2022) in understanding the sources of water supply and constraints in meeting demand. Eastleigh borough lies with Southern Water's Western Area, specifically the Hampshire Southampton East Water Resource Zone (WRZ). In this WRZ 52% of the water supply comes from the Rivers Test and Itchen and 48% comes from groundwater. Water can also be transferred from Portsmouth Water's area to South Hampshire.

5.11.2 The draft WRMP forecasts water supply and demand across its network for 2025 to 2075 for different supply-demand scenarios[16]. Nine different situations for each scenario are considered which represent different combinations of population growth, climate change and environmental ambition. Each situation creates a unique supply-demand balance. The key components of supply and demand forecasts are set out in Figure 5.12.

5.11.3 In cases where demand exceeds supply, there is a supply-demand deficit. In the Hampshire Southampton East WRZ, there is a deficit in all scenarios and situations over the lifetime of the plan as shown in Figure 5.11.

[16] NYAA (Normal Year Annual Average - This is the demand for water expected under normal conditions)

1:100 DYAA (Dry Year Annual Average - Represents a period of low rainfall and unrestricted demand and is used as the basis of a Water Resource Management Plan)

1:500 DYAA

1:500 DYCP (Dry Year Critical Period - The period(s) during the year when water resource zone supply and demand balances are at their lowest)

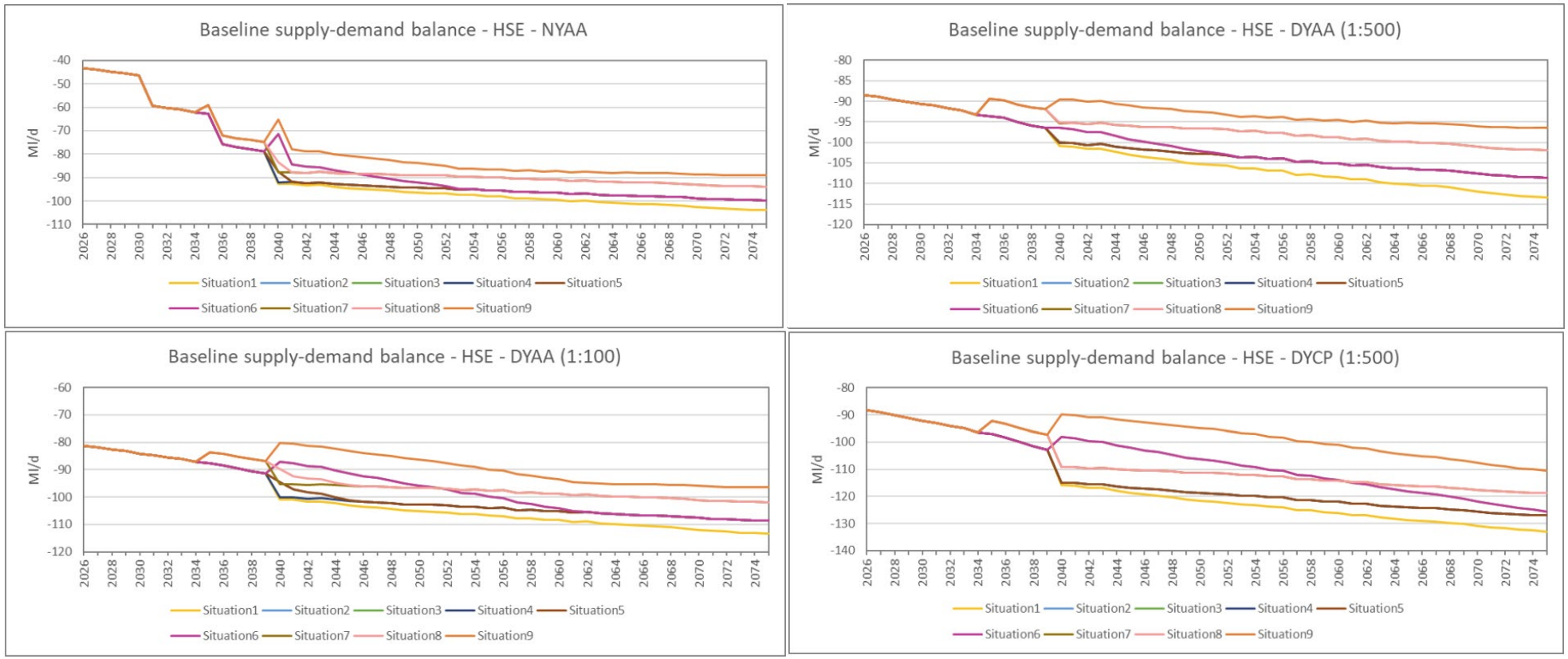

Figure 5.11: Supply-Demand Balances in the Hampshire Southampton East WRZ (Source: Southern Water, 2022)

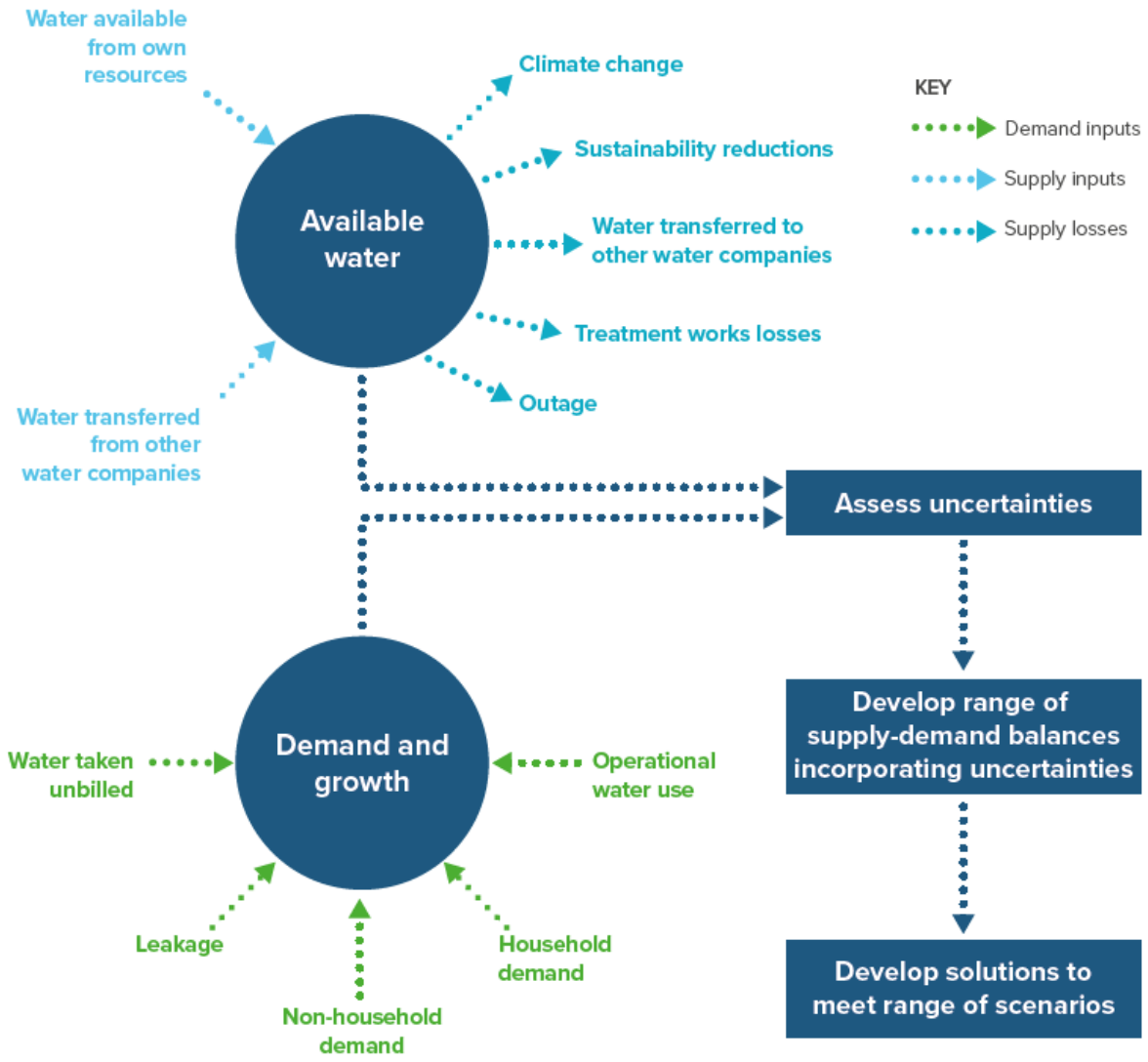

Figure 5.12: Key Components of Southern Water Draft WRMP24 Supply and Demand Forecasts (Source: Southern Water, 2022)

5.11.4 The draft WRMP identifies a series of options to address the deficit and maintain resilient supplies for Southern Water customers, incorporating an HRA of the alternatives considered. Alternatives are divided into 'supply-side' and 'demand-side' options. In the Hampshire Southampton East WRZ 'supply-side' options include:

- Import from Portsmouth Water;
- Recycling of effluent from Woolston Waste Water Treatment Works (WWTW);
- Upgrade of treatment work capacity at Otterbourne Water Supply Works (WSW); and
- Inter-zonal transfers.

5.11.5 'Demand-side' options are not geographically specific and could be applied anywhere within the network. These options include:

- Targeted programme of water audits;
- Marketing and communications campaign to promote behaviour change to reduce water consumption;
- Water efficiency products, services and innovation;
- Educational talks;
- Regulatory changes to building regulations standards;
- Smart meter rollout; and
- Leakage reduction strategies.

5.11.6 One further drought option for Hampshire Southampton East is considered within the draft WRMP to contribute to maintaining supply – the Candover Drought Permit/Order (2027-2029 only) (15.4Ml/d). In this option. abstraction would be increased over a period of several days up to the full required discharge rate so as to prevent a sudden increase in flow in the River Itchen. Abstraction and discharges will only be permitted when flows in the River Itchen at Allbrook and Highbridge are at or below a trigger flow of 220Ml/d.

5.11.7 The HRA of all options within the draft WRMP (Southern Water, 2022: Annex 20) could not discount likely significant effects to a number of European sites for a number of supply-side options which were taken forward for appropriate assessment. For many of the options there were found to be no operational effects, and potential construction effects were of a scale and type capable of mitigation using established methods such that no adverse effects to integrity were predicted. More detailed appropriate assessments were completed for those options with construction or operational effects on a site that are potentially more difficult to avoid. The appropriate assessments of these options set out mitigation measures to avoid adverse effects on the integrity of any SACs, SPAs and Ramsar sites, alone or in combination. These will have to be secured as part of the consenting processes for those options, in order for the consents to be lawfully granted. As a consequence, the HRA concluded that with that mitigation secured, the WRMP24 options will not have an adverse effect on the integrity of any SACs, SPAs and Ramsar sites, alone or in combination.

5.11.8 At this stage, the total quantum of development to be brought forward in the new Eastleigh Local Plan is not confirmed and given that this is a strategically operating impact, it is not possible to attribute water abstraction effects to individual site options. However, assuming that the total quantum of development is provided for by the scenarios considered within the WRMP, no likely significant effects are predicted with respect to water abstraction.

5.12 Water Pollution

5.12.1 This impact pathway relates to the direct and in combination effects on the River Itchen SAC and Solent Maritime SAC, and the potential for indirect in combination effects on the Solent and Southampton Water SPA/Ramsar and the Solent and Dorset Coast SPA, resulting from

deteriorating water quality due to waste water treatment discharges, combined with the impacts of background diffuse pollution (agricultural and urban surface water run-off).

5.12.2 Eastleigh borough is served by Southern Water's Chickenhall, Portswood and Peel Common Waste Water Treatment Works (WWTW). The Environment Agency's assessment of the ecological status of the receiving waterbodies is set out in Table 5.11.

Table 5.11: WFD Classifications of Receiving Waterbodies of WWTW serving Eastleigh Borough (Source: Environment Agency: 2022 cycle)

WWTW	Receiving Watercourse	WFD Catchment	WFD Waterbody	Ecological Status	Reason
Chickenhall	River Itchen	Itchen	Itchen	Good	n/a
Portswood	River Itchen Estuary	Southampton Water	Southampton Water	Moderate	Dissolved inorganic nitrogen; mitigation measures assessment
Peel Common	Solent	Solent	Solent	Moderate	Angiosperms; saltmarsh; dissolved inorganic nitrogen

Phosphate

5.12.3 Phosphate can be organic (critical in DNA/RNA and energy production) and inorganic (in minerals). Phosphate contributes to the eutrophication of receiving waters, and it is acknowledged that phosphate is more generally the problem nutrient for freshwaters. Hence additional inputs of phosphate are a principal concern in relation to the River Itchen SAC where excess phosphate may result in overgrowth by epiphytic filamentous algae that compete directly with vascular plants for light and nutrients, possibly leading to loss of nutrient-sensitive species, and reduced species composition, extent and condition of riverine plant communities.

Nitrate

5.12.4 Ammonia is a form of nitrogen which aquatic plants can absorb into proteins, amino acids and other molecules. Nitrate is the stable end product of complete nitrification (which involves the conversion of ammonia into nitrite and ultimately nitrate). Both nitrate and phosphate can contribute to the eutrophication of receiving waters, but in saline coastal waters it is acknowledged that nitrate is more generally the problem nutrient, phosphate having a lesser role. Nutrient enrichment and in particular nitrogen (N) pollution arising from wastewater discharges has been implicated in the development of dense macroalgal mats occurring in the intertidal zone, which increases biological oxygen demand (BOD) and reduces dissolved oxygen content. This in turn reduces the diversity and abundance of intertidal invertebrates (wader prey) and the productivity of sea-grass beds (Brent goose forage). The major sources of nitrogen to the Solent European marine sites are from:

- Coastal background seawater from the English Channel;
- Direct rivers and streams discharging into the sites;
- Indirect rivers and streams discharging elsewhere in the Solent; and
- Effluent discharges permitted by the EA.

Nutrient neutrality

5.12.5 Condition assessments undertaken by Natural England have identified some interest features of the Solent designated sites to be in unfavourable condition. For the Solent Maritime SAC, qualifying features including estuaries, subtidal sandbanks, and intertidal mudflats and sandflats were found to be in unfavourable condition based on a number of attributes failing, including nutrient water quality (see Table 5.9). Currently the site condition assessment does not include the saltmarsh feature which has not yet been assessed. However preliminary analysis of data shows that there was a loss of extent of saltmarsh across the Solent between 2008 and 2016. Condition assessments for the Solent SPAs and Ramsar sites have yet to be undertaken, but a number of bird features are declining as highlighted by recent Wetland Bird Survey alerts (Appendix I). While the cause of these site specific declines in the Solent area are largely unknown there are possible links to the elevated nutrient loading (Natural England, 2020a).

5.12.6 In light of the ongoing uncertainty in relation to the ability of the Solent region to accommodate future housing growth without having a further detrimental effect upon the water environment, Natural England's current advice (Natural England, 2022c) is that all new development resulting in any net increase in dwellings or overnight accommodation uses should achieve nutrient neutrality. By ensuring that new development does not add to existing nutrient burdens this provides certainty that the project / plan is deliverable in line with the Habitats Regulations. This position takes into account recent case law including the CJEU judgements on People over Wind and the case known as the Dutch case[17].

5.12.7 Natural England's guidance is accompanied by a nutrient budget calculator which calculates any nutrient surplus associated with development, taking account of nutrient inputs from additional wastewater and land use changes. A nutrient budget for the Local Plan will be produced at the next Plan Stage once a shortlist of proposed site allocations has been agreed by the Council.

5.12.8 In 2023 the Government made changes to the Levelling Up and Regeneration Act. The Act now provides for the Secretary of State to designate as 'sensitive catchment areas' the catchment areas of European sites which are in unfavourable condition due to nutrient pollution. The Act introduces a statutory requirement for wastewater treatment works within these sensitive catchment areas (nutrient significant plants) to be upgraded to the highest technically achievable levels of nutrient removal by April 2030.

5.12.9 Eastleigh borough is served by Southern Water's Chickenhall, Portswood and Peel Common Waste Water Treatment Works (WWTW). Chickenhall and Portwood discharge into the lower reaches of the River Itchen which is a phosphorus sensitive catchment area, and ultimately into

[17] Joined Cases C-293/17 and C-294/17, CJEU (2018): *Coöperatie Mobilisation for the Environment UA and Others v College van gedeputeerde staten van Limburg and Others.*

the Solent which is a nitrogen sensitive catchment area. Peel Common discharges into the Solent. Peel Common already operates to a reasonably high standard, therefore the biggest benefits will be felt at Portswood and Chickenhall WWTW.

Effects associated with the Strategic Options and small / medium sites

5.12.10 As a strategically operating impact it is assumed that all proposed allocations with residential use will contribute to the effect in-combination.

5.13 Preliminary Screening Summary

5.13.1 A summary of the preliminary screening assessment is provided in Table 5.12. SDOs and small / medium sites listed underneath a European site are predicted to result in likely significant effects as a result of those impact pathways identified in Table 5.12. If no specific SDO sub-options (see Table 4.1) are listed, then this means that all sub-options are screened in. At the next plan stage, any SDOs and small / medium sites taken forward into the Preferred Options Plan, together with any new sites / options, will be subject to further screening.

Table 5.12: SDO and Small / Medium Sites Screening Summary

	New Forest SAC	New Forest SPA	New Forest Ramsar	River Itchen SAC	Solent Maritime SAC	Solent and Soton Water SPA	Solent and Soton Water Ramsar	Solent and Dorset Coast SPA
Strategic Development Options Screening								
Air Pollution				All SDOs	All SDOs	All SDOs	All SDOs	
Coastal Squeeze								
Recreational Disturbance	All except SDO A	All except SDO A	All except SDO A		All except SDO A	All except SDO A	All except SDO A	
Functionally Linked Land								
Shortened Sight Lines								
Site Specific Disturbance: Noise & Vibration								
Site Specific Disturbance: Cons & Op Activity								
Otter outside European Site Boundaries				SDO A,B,C,D				
Non-native Species and Site-specific Hydrological Impacts				SDO B,C,D	SDO A (variant A1+A2+A3+ A4 only), SDO D			
Water Abstraction								
Water Pollution				All SDOs	All SDOs	All SDOs	All SDOs	All SDOs
Small & Medium Sites Screening								
Air Pollution				All sites	All sites	All sites	All sites	

	New Forest SAC	New Forest SPA	New Forest Ramsar	River Itchen SAC	Solent Maritime SAC	Solent and Soton Water SPA	Solent and Soton Water Ramsar	Solent and Dorset Coast SPA
Coastal Squeeze					Sites 30 & 45			
Recreational Disturbance	All except sites 1,2,3,4,8,9,48	All except sites 1,2,3,4,8,9,48	All except sites 1,2,3,4,8,9,48	Sites 1,5,6	All except sites 1,2,3,4,5,48	All except sites 1,2,3,4,5,48	All except sites 1,2,3,4,5,48	
Functionally Linked Land						Site 39	Site 39	
Shortened Sight Lines						Sites 27,28,29,30,38,39,40,41,42,43,44,45,49,52	Sites 27,28,29,30,38,39,40,41,42,43,44,45,49,52	
Site Specific Disturbance: Noise & Vibration				Sites 1,5,6,7		Sites 28,29,30,39,40,42,43,44,45,52	Sites 28,29,30,39,40,42,43,44,45,52	Sites 44,45,51,52
Site Specific Disturbance: Cons & Op Activity						29,30,39,42,43,45	29,30,39,42,43,45	
Otter outside European Site Boundaries				1,2,3,4,5,6,7,8,9,10,11,12,13,14,46,47,48				
Non-native Species and Site-specific Hydrological Impacts				Sites 1,2,5,6,7,16,17	Sites 4,9,10,11,12,14,18,21,22,24,28,29,30,35,36,41,42,43,45,51			

	New Forest SAC	New Forest SPA	New Forest Ramsar	River Itchen SAC	Solent Maritime SAC	Solent and Soton Water SPA	Solent and Soton Water Ramsar	Solent and Dorset Coast SPA
Water Abstraction								
Water Pollution				All sites	All sites	All sites	All sites	All sites

6 Summary and Conclusions

6.1 Summary

6.1.1 This document sets out a screening assessment under the Habitats Regulations for the Eastleigh Local Plan Review. The report accompanies the Issues and Options consultation and forms part of the evidence base upon which it is based. Four Strategic Development Options (SDOs) and 52 small / medium sites have been assessed for likely significant effects to European sites either alone or in combination not taking account of any mitigation.

6.2 Scope of the Assessment

6.2.1 Acknowledging that the Local Plan is not directly connected with or necessary to management of the sites for nature conservation, the HRA considers the following European sites for likely significant or adverse effects on integrity:

- Emer Bog SAC
- New Forest SAC
- River Itchen SAC
- Solent Maritime SAC
- Solent and Dorset Coast SPA
- New Forest SPA
- New Forest Ramsar
- Solent and Southampton Water SPA
- Solent and Southampton Water Ramsar

6.3 Conclusions

6.3.1 There is potential for all SDOs and small / medium sites to contribute to likely significant air pollution effects to a European site in combination at a strategic scale. The precise location of site allocations and quantum of housing taken forward into the Pre-Submission Local Plan will influence the patterns of vehicle movements and hence emissions across the Borough. Traffic modelling will be undertaken to inform a further assessment at the next plan stage.

6.3.2 Three small / medium sites which share a boundary with the Solent Maritime SAC have the potential to contribute to likely significant effects to this European site through the process of coastal squeeze.

6.3.3 All of the strategic options, except option A, and the majority of small / medium sites could contribute to likely significant effects to the Solent European sites and the New Forest SAC / SPA / Ramsar through increased disturbance from people and their dogs visiting. Those site options in closest proximity to the publically accessible stretch of the River Itchen within Eastleigh Borough also have potential to contribute to likely significant recreational disturbance effects to the SAC in combination.

6.3.4 Only one small / medium site could result in likely significant effects to the Solent and Southampton Water SPA / Ramsar through the direct loss of functionally linked land.

6.3.5 A number of small / medium sites in the southern parts of the Borough have the potential to result in likely significant effects to the Solent European sites and land functionally linked to them via site specific disturbance impacts including shortened sight lines, construction noise and, construction and operational activity. A small number of small / medium sites in close proximity to the River Itchen SAC could also result in likely significant noise and vibration effects without mitigation through impacts to noise-sensitive qualifying species including salmon and otter.

6.3.6 SDOs and small / medium sites in the north of the Borough have the greatest potential to contribute to likely significant effects to the River Itchen SAC given their proximity to the otter links between river catchments and potentially impacting otter movements outside of European site boundaries.

6.3.7 SDOs and small / medium sites within 100m of watercourses draining into River Itchen SAC and the Solent Maritime SAC (or the SACs themselves) could contribute to a likely significant in-combination effects through the spread of aquatic non-native species, or through contamination with pollutants and / or suspended solids, including microplastics.

6.3.8 No likely significant effects are predicted for any of the site options assessed associated with water abstraction.

6.3.9 All sites with proposed residential use could contribute to likely significant water pollution effects to the Solent European sites and the River Itchen SAC as a result of deteriorating water quality due to waste water treatment discharges, combined with the impacts of background diffuse pollution (agricultural and urban surface water run-off). A nutrient budget in line with the latest Natural England guidance will be produced at the next plan stage for the Preferred Option(s).

6.4 Consultation Arrangements

6.4.1 This screening report is being made available for consultation as part of the Issues and Options consultation during December 2024 and January 2025 and can be viewed here.

6.4.2 Details of how to respond can also be found at the same web address. Alternatively, responses can be emailed to: Local.plan@eastleigh.gov.uk.

6.4.3 Responses should be received by 5pm on 29 January 2025.

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Appendix I: European Sites Qualifying Features Characterisation

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URBAN EDGE ENVIRONMENTAL CONSULTING

NATURAL PROGRESSION

Eastleigh Local Plan
Habitats Regulations Assessment

Appendix I: European Sites Qualifying Features Characterisation

Client:	Eastleigh Borough Council	
Report No.:	UE0646HRA_EastleighLP_ScreeningApp1_0_240911	
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Contents

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1 Introduction

1.1 Purpose of the Appendix

1.1.1 This appendix serves to provide additional detail as to the qualifying features of those European Sites considered within the scope of the Eastleigh Local Plan Review Habitats Regulations Assessment (HRA). Summaries of the Special Protection Area (SPA) qualifying bird species together with qualifying species counts are provided.

2 European Site Characterisation

2.1 SPA Bird Populations and Ecology

2.1.1 The following summaries have been adapted from the UK SPA Review, published by the Joint Nature Conservancy Committee (JNCC; Stroud *et al.*, 2016), together with a review of other available literature on the behaviour and ecology of these species[1]. Where available species accounts have been supplemented by core count data presented in the Wetlands Bird Survey (WeBS) report for 2022/23 (Woodward *et al.*, 2024) and earlier years. The data have been obtained from the Southampton Water survey area (Figure 2.1). This area does not exactly correspond with the boundaries of European designated sites, but provides an insight to species population trends throughout the area.

2.1.2 Where data for a particular species are available, predicted impacts of climate change to particular bird species are adapted from the UK SPA Review and are based on two models, the Climatic Atlas of European Breeding Birds (Climatic Atlas)[2] and the Climate Change Impacts on Avian Interests of Protected Area Networks (CHAINSPAN)[3]. Where relevant species are included, additional information relating to the impacts of climate change have also been adapted from Natural England's Climate Change Adaptation Manual (Natural England, 2020) and from other literature on the ecology of the species.

[1] https://www.iucnredlist.org/, http://www.bto.org/about-birds, https://datazone.birdlife.org/species/search

[2] The Climatic Atlas of European Breeding Birds (Climatic Atlas) (Huntley *et al.* 2007) models current distributions against current climate and then projects these to reflect models of future climatic change to predict the distribution of European breeding birds at and beyond the end of the 21st century. However, it does not take into account how bird habitats will change and move.

[3] The Climate Change Impacts on Avian Interests of Protected Area Networks (CHAINSPAN) project (Pearce-Higgins *et al.* 2011) modelled future abundance as well as presence/absence. Here, impacts are shown against a medium emissions scenario for 2050. The medium emissions scenario is derived from the UK Climate Projections 2009 (UKCP09) and describes a future world of very rapid economic growth, population growth peaking at nearly 9 billion in 2050 and the continued use of fossil fuels, but with substitution of renewable energy sources for some fossil fuel use.

Eastleigh Local Plan

Southampton Water

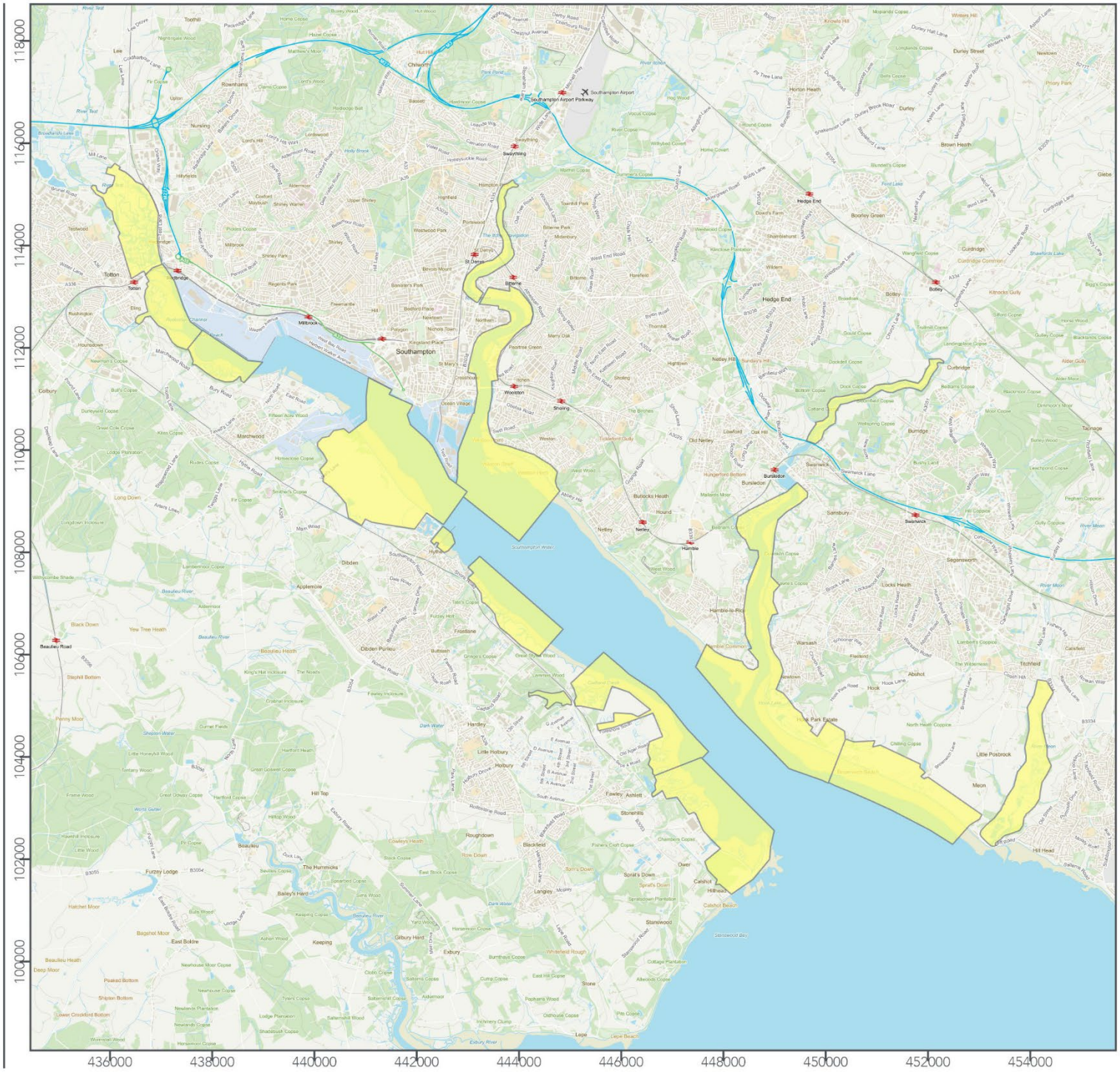

Figure 2.1: Southampton Water WeBS Survey Area

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Metres

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Scale (at A4): 1:110,000 **Created by:** EM

Date: Aug 2024 **Reviewed by:** NP

Drawing number:

UE0646HRA-Eastleigh_WeBS_240807: WeBS Survey Area

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Nightjar

2.1.3 The Nightjar's *Caprimulgus europaeus* global distribution lies in the Palearctic where it breeds from North Africa and western Europe, widely across temperate regions of Eurasia as far as central Asia and western China.

2.1.4 In the UK, Ireland and central Europe its distribution tends to be sporadic, reflecting the scattered availability of good breeding habitats (Cramp, 1985; Hagemeijer & Blair, 1997). Nightjars breeding in the UK are concentrated in southern and south-eastern England and East Anglia, with much smaller numbers and lower densities occurring in Wales, the Midlands, north-east England and south-west Scotland. There may be less than 30 pairs throughout the whole of Ireland.

2.1.5 The GB breeding population of Nightjar is estimated to be 4,600 calling males (Conway *et al.* 2007) which represents 2.3% of the biogeographic population (202,000; Cramp, 1985; BirdLife International, 2024b). Of the GB population, 46.2% (2,124 pairs; Stroud *et al.,* 2016) are found within SPA sites for which this species is a qualifying feature. The species is of conservation concern in Europe, but has moved from Red to an Amber listed Bird of Conservation Concern in the UK due to a recent moderate decline in breeding range (>25% and <50%) between 1968-71 and 2007-11 (Stanbury *et al.*, 2021).

2.1.6 Nightjar breeding habitats include heathland, often with scattered pine or birch, woodland edges and clearings, young forestry plantations and, particularly in south-east England, coppiced woodland. Forestry plantations are used up to 15–20 years after planting. In clear-felled areas of Thetford Forest, nests have been found in a variety of habitats, including extensive, non-vegetated areas and sparse bracken. Birds forage over a variety of habitats including deciduous or mixed woods, orchards, gardens, riparian habitats and freshwater wetlands, heathland and young plantations.

2.1.7 The main threats to this species are the reduction in insect availability due to pesticide use as well as habitat loss or degradation generally caused by grazing on heathlands and pastoral woodlands and conversion of habitats to agricultural lands, vineyards, commercial forestry and urban areas. Disturbance from recreational use of heathlands and road deaths may also contribute to its decline. The species also has numerous predators, especially of eggs and chicks, including domestic dogs. Nitrogenous pollutants in rain may lead to eutrophication of dry-land breeding areas and unsuitable vegetation structure. Climate change may affect the species' geographic range in the future (BirdLife International, 2024b).

2.1.8 The National Nightjar Survey recorded 781 churring males in Hampshire in 2004. This represents a 52% increase in numbers for the county since the previous survey was carried out in1992 (Conway et al., 2007). Table 2.1 shows the percentage of Nightjars which were supported by the New Forest SPA in the 2000s compared to the 1990s. The 2018 New Forest Nightjar survey recorded a breeding population of 435 in 2018 which represents 9.3% of the British population. This is a reduction of 109 from 544 in 2013 (Jackson, 2018).

Table 2.1: Distribution of Nightjars within SPA in Britain (Stroud et al., 2016)

Site Name	Site Total 1990s	Site Total 2000s
Ashdown Forest	35	85
Breckland	415	349
Dorset Heathland	386	438
East Devon Heaths	83	58
Minsmere – Walberswick	24	39
New Forest	300	667
Sandlings	109	81
Thames Basin Heaths	264	301
Thorne and Hatfield Moors	66	39
Wealden Heaths	103	67

Woodlark

2.1.9 Woodlark *Lullula arborea* is widely distributed across Europe from Iberia to the Russian steppes but has a generally southern distribution, occurring only in the southernmost parts of Scandinavia and Britain. In the UK, breeding is confined to southern England with most birds occurring in Dorset, Hampshire (especially the New Forest), Surrey, Sussex, Breckland and the Suffolk Coast.

2.1.10 The GB population of breeding Woodlark is estimated at 3,100 pairs (Conway *et al.* 2009) which represents 0.2% of the biogeographic population (1,556,000; Cramp 1985; BirdLife International, 2024c). Of the GB population, 31% (960 pairs; Stroud *et al.*, 2016) are found within SPA sites for which this species is a qualifying feature. The species is not considered as a species of conservation concern in Europe and is a Green listed Bird of Conservation Concern in the UK (Stanbury *et al.*, 2021).

2.1.11 Favoured breeding habitat is dependent on location, with birds in the southwest using agricultural land, whilst those in the south are typically found on heathland such as that present in the New Forest. Migratory behaviour also varies across the species' English distribution. East Anglian birds largely desert their breeding grounds in the winter, although a greater proportion of the birds in southern England remain on breeding areas throughout the year.

2.1.12 The main threat to this species is habitat loss and degradation which in northern Europe is being lost to agricultural intensification and afforestation. Winter weather can also cause fluctuations in population numbers (BirdLife International, 2024c). Within the New Forest SPA, inappropriate scrub control and land management, atmospheric nitrogen deposition, public disturbance also threaten this species (Natural England, 2014).

2.1.13 The Climatic Atlas predicts a wide distribution of Woodlark across southern areas of the UK at and beyond the end of the 21st century. By 2050, under a medium emissions scenario, numbers

of Woodlark within SPA sites are anticipated, with moderate confidence, to increase by at least 50%.

2.1.14 Table 2.2 shows the percentage of Woodlarks which were supported by the New Forest SPA in the 2000s compared to the 1990s.

Table 2.2: Distribution of Woodlarks within SPA in Britain (Stroud et al., 2016)

Site Name	Site Total 1990s	Site Total 2000s
Breckland	430	365
Dorset Heathland	60	78
Minsmere – Walberswick	20	30
New Forest	184	163
Sandlings	154	73
Thames Basin Heaths	149	200
Wealden Heaths	105	51

Honey Buzzard

2.1.15 The global breeding distribution of the Honey Buzzard *Pernis apivorus* is largely restricted to the Western Palearctic. The UK is at the edge of the European breeding range and the species has probably always been a rare, but scattered breeder.

2.1.16 The GB population of breeding Honey Buzzard is estimated at 33 pairs (Batten, 2001; Ogilvie, 2003), representing only 0.05% of the biogeographic population (64,000; BirdLife International, 2024d). Of the GB population, 12.1% (4 pairs; Stroud *et al.*, 2016) are found within SPA sites for which this species is a qualifying feature. The species is not considered of conservation concern in Europe, but is an Amber listed Bird of Conservation Concern in the UK due to its small breeding population (Stanbury *et al.*, 2021).

2.1.17 In the UK, Honey Buzzards occur in three broad habitat types: high-quality mixed deciduous forests in the lowlands of southern England, central hill country with mixed farmland/woodland, and upland, even-aged coniferous plantations. These habitats are also preferred elsewhere in Europe. Beech *Fagus sp.* forests with sandy, light soils have been favoured in the New Forest, traditionally regarded as the species stronghold, largely thought to be due to the association of this habitat with an abundance of social wasps on which the species selectively feeds its young. However, breeding performance is not adversely affected by the temporary unavailability of wasps, as amphibians, and pigeon and passerine nestlings are taken in inclement weather.

2.1.18 Population declines in northern Europe have resulted from deforestation, forest conversion and shooting. Human disturbance is also a threat. The species is very highly vulnerable to the effects of potential wind energy development (BirdLife International, 2024d). Within the New Forest SPA, atmospheric nitrogen deposition and public disturbance also threaten this species (Natural England, 2014).

2.1.19 The Climatic Atlas predicts an expanded distribution of Honey Buzzards over the southern half the UK at and beyond the end of the 21st century.

2.1.20 Table 2.3 shows the percentage of Honey Buzzards which were supported by the New Forest SPA in the 2000s compared to the 1990s.

Table 2.3: Distribution of Honey Buzzards within SPA in Britain (Stroud et al., 2016)

Site Name	Site Total 1990s	Site Total 2000s
New Forest	2	4

Dartford Warbler

2.1.21 The global breeding range of the Dartford Warbler *Sylvia undata* is largely restricted to the western part of the Mediterranean region and almost the entire world population breeds in Europe, with more than 75% thought to breed in Spain and large numbers also occurring in southern and western France, southern Italy and Portugal. Southern England is at the northern limit of the species world range. Here the main concentrations occur in Dorset, Hampshire and Surrey with smaller numbers in the south-west and East Anglia.

2.1.22 The GB population of breeding Dartford Warbler is estimated at 3,200 pairs (Wotton *et al.*, 2009), representing 0.5% of the biogeographic population (654,000; BirdLife International, 2024e). Of the GB population, 51.7% (1,654 pairs; Stroud *et al.*, 2016) are found within SPA sites for which this species is a qualifying feature. The species is depleted in Europe and considered of most conservation concern; it is an Amber listed Bird of Conservation Concern in the UK due to its localised breeding population (Stanbury *et al.*, 2021).

2.1.23 In Britain, the species is almost exclusively found on lowland dry heathland with Heather *Calluna vulgaris* and Gorse *Ulex spp*. Large areas of heathland typically hold higher densities of breeding birds than fragmented and isolated habitats, with up to 10-15 pairs/km2 present in the best areas. Territories containing Gorse *Ulex spp*. tend to be more productive (Catchpole & Phillips, 1992), most likely due to the greater abundance of invertebrate prey and increased shelter during the winter. Birds generally remain on the breeding grounds throughout the year, although there is a partial migration of adults, notably in October.

2.1.24 In the UK the population was reduced to 11 pairs after the severe winter of 1962-1963 and again significantly reduced in 2008 and 2010 following two cold winters. Current and future climate change is expected to alter the species distribution in the north of its range. There is also evidence to show that the species is adversely affected by disturbance from people and dogs, particularly when nesting in heather (BirdLife International, 2024e; Murison *et al.*, 2007, cited in Natural England, 2019c). Its sensitivity to human disturbance may also be important if warmer summers lead to increased recreational use of their breeding grounds.

2.1.25 The Dartford warbler is vulnerable to the loss or degradation of habitat due to wildfire and inappropriate fire management regimes (Regos *et al.*, 2015, cited in Natural England, 2019c). The species is also sensitive to the impact of drought impacting the food supply of juveniles (Bibby, 1979, cited in Natural England, 2019c); a threat likely to become more prevalent,

especially on sites in the south and east of England. Within the New Forest SPA atmospheric nitrogen deposition and inappropriate land management also threaten this species (Natural England, 2014).

2.1.26 The Climatic Atlas predicts a wide distribution of Dartford Warbler across the southern half of the UK. By 2050, under a medium emissions scenario, numbers of Dartford Warbler within SPA sites is anticipated by CHAINSPAN, with moderate confidence, to increase by at least 50%.

2.1.27 Table 2.4 shows the percentage of Dartford Warblers which were supported by the New Forest SPA in the 2000s compared to the 1990s.

Table 2.4: Distribution of Dartford Warblers within SPA in Britain (Stroud et al., 2016)

Site Name	Site Total 1990s	Site Total 2000s
Ashdown Forest	29	38
Dorset Heathland	418	613
East Devon Heathlands	128	69
New Forest	538	419
Thames Basin Heaths	445	376
Wealden Heaths	123	139

Hen Harrier

2.1.28 Hen Harriers *Circus cyaneus* have a widespread global distribution. In the Palearctic, migrants winter in southern parts of Europe, the Middle East and through southern areas of central and eastern Asia, although hen harriers breeding in Europe tend to be more sedentary. In the UK, breeding is now confined to Northern Ireland, and northern and western Britain, especially Scotland.

2.1.29 The winter distribution of Hen Harriers in the UK significantly differs from that during the breeding season. In autumn, birds disperse from many moorland nesting areas and move to winter in lowlands, especially around the coast. There are significant concentrations on the south and east coast of England, especially within the East Anglia estuaries, the Greater Thames estuary and Solent area.

2.1.30 The GB population of non-breeding Hen Harrier is estimated at 1,710 individuals (Holling *et al.*, 2012), representing approximately 3.7% of the biogeographic population (46,500; BirdLife International, 2024f). Of the GB population, 14.6% (249; Stroud *et al.*, 2016) are found within SPA sites for which this species is a qualifying feature. The New Forest population is considered to be non-breeding. The species is considered a depleted species of most conservation concern in Europe and is a Red listed Bird of Conservation Concern in the UK due to historical population decline (Stanbury *et al.*, 2021).

2.1.31 Hen Harriers hunt especially over salt-marshes taking small passerines, small mammals and waders. Hen Harriers also occur in lowland heaths and on chalk downland, with significant

winter concentrations in Hampshire and Dorset, on downland in Oxfordshire, Berkshire and Wiltshire, as well as in the East Anglia Brecks. During winter, Hen Harriers gather at communal roost sites at night. These can hold significant numbers of individuals (sometimes over 20) and are usually located in wetlands such as carr woodland, marshes and reedbeds, although they sometimes occur on heather moorland, lowland heath and conifer plantations.

2.1.32 The main threat to this species is the transformation of habitat owning to intensified agriculture, disappearance of marshes and reafforestation. Persecution is severe locally, for example on managed grouse moors of Scotland and in 2013 not a single pair successfully nested in England despite the fact that there is estimated habitat to accommodate more than 300 pairs (BirdLife International, 2024f). Within the New Forest SPA atmospheric nitrogen deposition also threatens this species (Natural England, 2014).

2.1.33 Hen Harrier were not included in Climatic Atlas or modelled by CHAINSPAN.

2.1.34 Table 2.5 shows the percentage of Hen Harriers which were supported by the New Forest SPA in the 2000s compared to the 1990s.

Table 2.5: Distribution of Non-Breeding Hen Harriers within SPA in Britain (Stroud et al., 2016)

Site Name	Site Total 1990s	Site Total 2000s
Blackwater Estuary	4	4
Broadland	22	22
Colne Estuary	4	4
Dengie	5	5
Dorset Heathlands	20	20
Foulness	6	6
Humber Flats, Marshes & Coast	20	20
Loch of Inch and Torrs Warren	8	8
Minsmere - Walberswick	15	15
Muirkirk & North Lowther Uplands	10	4
New Forest	15	15
North Norfolk Coast	16	16
Orkney Mainland Moors	13	31

Hobby

2.1.35 The Hobby *Falco Subbuteo* is a migratory species with western birds wintering in Africa and others in southern Asia (del Hoyo *et al.*, 1994). Birds leave their breeding grounds between August and October, arriving at wintering quarters from late October onwards. The return journey begins in March and April, and breeding territories are occupied again in May and June

(BirdLife International, 2024n). The species is a Green listed Bird of Conservation Concern in the UK (Stanbury et al., 2021).

2.1.36 Hobbies almost always nest in trees, using abandoned nests of other raptors or corvids (del Hoyo *et al.*, 1994). Hobbies prefer to hunt over open, damp ground, especially in spring because their favoured food at that time of year is dragonflies (New Forest National Park Authority, 2020).

2.1.37 The New Forest is a stronghold for hobbies in Hampshire, and the heathlands and wet river valleys of southern England are where the majority of hobbies occur. They are widespread but uncommon in most of England and are mostly absent from Wales and Scotland (New Forest National Park Authority, 2020).

2.1.38 Within the New Forest SPA the species is threatened by public disturbance and atmospheric nitrogen deposition (Natural England, 2014).

Wood Warbler

2.1.39 The Wood Warbler *Phylloscopus sibilatrix* is a migratory species overwintering in sub-Saharan Africa and returning to their breeding grounds from May to July. As the name suggests, wood warblers are woodland inhabitants, most at home amongst broad-leaved trees and, in particular, oaks and beeches of the New Forest's ancient, unenclosed woodlands. This species breeds in lowlands, in moist and shady deciduous woods, with closed canopy and sparse undergrowth (BirdLife International, 2024o).

2.1.40 The species is a Red listed Bird of Conservation Concern in the UK due to severe breeding population decline in the UK (>50%) over 25 years (Stanbury et al., 2021). Within the New Forest SPA the species is threatened by public disturbance and atmospheric nitrogen deposition (Natural England, 2014).

Mediterranean Gull

2.1.41 The global distribution of Mediterranean Gull *Larus melanocephalus* is highly restricted, with breeding limited to just a few localities in Europe, particularly along the northern coast of the Black Sea. In the UK, which is at the north-western limit of the species' world range, breeding is extremely localised.

2.1.42 The GB population of breeding Mediterranean Gull is estimated at 600 pairs (Holling *et al.*, 2012) which represents just 0.7% of the biogeographic population (81,000; Parsons, 2004). Of the GB population, 24.2% (145 pairs; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is not considered a species of European conservation concern but is an Amber listed Bird of Conservation Concern in the UK because of its small breeding population (Stanbury et al., 2021).

2.1.43 It nests near water on flood-lands, fields and grasslands and on wet or dry areas of islands favouring sparse vegetation but generally avoiding barren sand. Outside of the breeding season the species becomes entirely coastal favouring estuaries, harbours, saline lagoons and other sheltered waters. It is not known where the birds that breed in England spend the non-

breeding season, but it seems likely that they use coastal areas near to the nesting colonies in south-east and south England.

2.1.44 This species sustains heavy losses as a result of tourist disturbance at breeding colonies. The species may also be threatened by habitat loss resulting from tourism development, and by marine pollution (IUCN, 2024).

2.1.45 The Climatic Atlas predicts extinction in the UK for the breeding Mediterranean Gull at and beyond the end of the 21st century.

2.1.46 Table 2.6 shows that Southampton Water is not currently maintaining internationally important numbers of Mediterranean Gull (over 2,400 individuals); however, it does exceed the threshold set for sites of national importance (40 individuals) in most years.

Table 2.6: WeBS Core Count data for Non-Breeding Mediterranean Gulls

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	873	92	135	(28)	219	330
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	(68)	(5)	(40)	14	36	40

Little Tern

2.1.47 The Little Tern *Sterna albifrons* has a widely scattered global distribution. The European breeding distribution is discontinuous, but extends from the Gulf of Bothnia to the coasts of the Mediterranean and North Africa. Through much of this area, the species is restricted to the coast, although it breeds along a number of major river systems.

2.1.48 The GB population of Little Tern is estimated at 1,900 pairs (Pickerill, 2004), representing 9.7% of the biogeographic population (19,500 pairs; Pickerill, 2004). Of the GB population, 60.8% (1,156 pairs; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is a declining species of European conservation concern and an Amber listed Bird of Conservation Concern in the UK with a localised breeding population which has suffered a moderate decline in its breeding range (>25% but <50%) between 1968-71 and 2007-11 (Stanbury *et al.*, 2021).

2.1.49 Little terns are found predominantly on low lying, soft coasts in southern and eastern England, with a concentration in East Anglia. There is a large colony in North Wales which is also a post breeding staging post and there is a population in south Cumbria. In Scotland, the population is less well monitored but is well distributed over south and west Scotland, with just a few known colonies in North and East Scotland. The most northerly colony is on Orkney (Natural England, 2019c). Feeding takes place close to the colony, to a maximum distance of 6 km, but not more than 1.5 km offshore (Cramp *et al.* ,1974).

2.1.50 The species is threatened by habitat destruction such as the development and industrial reclamation of coastal breeding habitats (e.g. for the development of new harbour facilities). The species is threatened by habitat loss and degradation through the development of the

foreshore as well as relative sea level rise predicted due to climate change which threatens beach nesting habitats. The risk of habitat loss will be exacerbated by sea level rise which, together with more frequent storm events, could mean that nesting sites become more vulnerable to inundation.

2.1.51 The Red Fox *Vulpes vulpes* is a constant threat at various protected colonies in the UK. The population of Red Fox in the UK has increased in size and range due to changing game-keeping practices meaning they are likely to be an increased threat. It is also highly vulnerable to human disturbance (including birdwatchers) at coastal and inland nesting sites which can lead to nest failures. Egg collection is also an ongoing threat (BirdLife International, 2024g). Pesticide pollution and artificially induced water-level fluctuations in saltmarshes may also pose a threat to the species' reproductive success.

2.1.52 The Climatic Atlas predicts a scattered distribution of the Little Tern, mainly in England and northern Scotland at and beyond the end of the 21st century. By 2050, under a medium emissions scenario, numbers of breeding Little Tern are anticipated by CHAINSPAN, with moderate confidence, to increase by at least 50%. Although little terns may become more abundant in the north of their range, with climate change food availability could limit any potential expansion. Little terns could be affected by the impact of rising sea temperatures on populations of sand eels and clupeid fish (Natural England, 2019c).

2.1.53 Table 2.7 shows that Southampton Water did not meet internationally important population numbers for Little Tern in the WeBS counts for any of the last ten years. Little Tern was not recorded in Southampton Water in any of the last five years' available data (last record was in 2015 of 4 birds).

Table 2.7: WeBS Core Count data for Little Tern

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	(10)	0	4	(0)	0	4
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	0	0	0	(0)	0	0

Roseate Tern

2.1.54 The global distribution of Roseate Tern *Sterna dougallii* comprises a number of discrete ranges, with breeding occurring around the edges of the North Atlantic, Indian and south-west Pacific Oceans. In Europe, the breeding population is confined to Britain, Ireland and France (Brittany), as well as the Azores.

2.1.55 The GB population of breeding Roseate Terns is estimated at 86 pairs (Holling *et al.*, 2012), representing just 4% of the biogeographic population (2,150 pairs; Newton, 2004). Of the GB population, 94% (81 pairs; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is listed as a rare species of conservation concern in Europe and a Red listed Bird of Conservation Concern in the UK due to severe decline in the UK breeding population size, of more than 50%, over 25 years and the longer term and a severe decline in

the UK breeding range, of more than 50%, between the breeding bird atlases of 1968-71 and 2007-11 (Stanbury *et al.*, 2021).

2.1.56 Breeding takes place on the coast, with colonies established on sand-spits and dunes, shingle beaches and low rocky islets. Its diet consists predominantly of small pelagic fish, particularly sand eel (which are particularly important during chick rearing).

2.1.57 At the northern European breeding grounds, the most significant threats are human disturbance (e.g. from habitat development, off-road vehicles and recreation) and predation from both natural and introduced avian and ground predators (IUCN, 2024).

2.1.58 The Climatic Atlas predicts a westerly and northerly distribution of breeding Roseate Tern in the UK with virtual absence from the coasts across England and Wales at and beyond the end of the 21st century.

2.1.59 Table 2.8 shows that not a single individual was recorded in Southampton Water over the last ten years. The most recent record was one individual in 2011.

Table 2.8: WeBS Core Count data for Non-Breeding Roseate Tern

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	0	0	0	0	0	0
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	0	0	0	(0)	0	0

Common Tern

2.1.60 The Common Tern *Sterna hirundo* is a common and widespread breeding species of both coastal and inland regions in the northern hemisphere. It is a long-distance migrant and winters mainly in the southern hemisphere.

2.1.61 The GB population of breeding Common Tern is estimated at 10,000 pairs (Ratcliffe, 2004b), representing just 3.6% of biogeographic population (280,000; Ratcliffe, 2004b). Of the GB population, 45.6% (4,555; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is not considered a species of European conservation concern but is an Amber listed Bird of Conservation Concern in the UK because of its localised breeding population (Stanbury *et al.*, 2021).

2.1.62 Common Terns breed around coasts and beside inland freshwater bodies. Coastal sites are mainly small rocky islets, shingle beaches, sand-spits and dunes, as well as among short vegetation (occasionally more scrubby growth). Inland sites include shingle banks in rivers, islands in lakes and gravel pits, marshes and shallow lagoons. More artificial sites, including waste ground, specially made floating rafts and even gravel-covered flat-roofs, are occasionally used.

2.1.63 A significant proportion of the British population breeds in Scotland, particularly in the northern and western Isles and on the west coast, but with sizeable colonies also along the east coast firths. Common Terns also commonly breed inland on riverine shingle and islands, not only in

Scotland but also in England. Coastal colonies in England are mainly concentrated in the north-east, East Anglia, at a few localities along the south coast, and in the north-west. The only Welsh colonies are on Anglesey. Inland breeding takes place mainly in eastern Scotland and in central, eastern and southern England. Colonies in Ireland are well spread around the coasts, with scattered inland breeding through the midlands.

2.1.64 During the breeding season the species is vulnerable to human disturbance at nesting colonies (e.g. from off-road vehicles, recreation, motor-boats, personal watercraft and dogs), and to the flooding of nest sites as a result of naturally fluctuating water levels. On its breeding grounds the species is also threatened by habitat loss as a result of coastal development, erosion and vegetation overgrowth (rapid vegetation succession encroaching upon nesting habitats (BirdLife International, 2024h).

2.1.65 For Common Terns the Climatic Atlas predicts a patchy westerly and northerly distribution within the UK at and beyond the end of the 21st century.

2.1.66 Table 2.9 shows Southampton Water is currently not maintaining internationally important numbers of Common Tern (over 1,800 individuals). There are currently no British thresholds set for this species. However, none of the sites met the threshold suggested by Holt *et al.* (2012) for a nationally important population (over 200 individuals) in recent years. It should be noted that at the current time the recording of terns during WeBS surveys is optional.

Table 2.9: WeBS Core Count data for Common Tern

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	(24)	(35)	(3)	(94)	(4)	94
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	(6)	(5)	(68)	17	(59)	48

Sandwich Tern

2.1.67 The European breeding distribution of Sandwich Tern *Sterna sandvicensis* stretches from north-west Europe from western France to the Baltic as well as scattered traditional localities around the coasts of the northern Mediterranean, Black and Caspian Seas.

2.1.68 The GB population of breeding Sandwich Tern is estimated at 11,000 pairs (Ratcliffe, 2004a) which represents 14.9% of the biogeographic population (74,000; Ratcliffe, 2004a). Of the GB population, 72.1% (7,932 pairs; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is not considered a species of European conservation concern but is an Amber listed Bird of Conservation Concern in the UK due to a moderate decline in the UK breeding population size (>25% but <50%) over 25 years (Stanbury *et al.*, 2021).

2.1.69 British colonies of Sandwich Tern are very scattered and generally confined to coastal shingle beaches, sand dunes and offshore islets. In a few areas, small islets in coastal freshwater bodies are used. As only a few colonies exist each year this tern is highly vulnerable to anthropogenic disturbance and is known to abandon eggs en masse. The species has also suffered declines as

a result of egging and hunting which are locally significant in some areas of its range (BirdLife International, 2024i).

2.1.70 The Climatic Atlas predicts a westerly and northerly distribution of the breeding Sandwich tern in the UK with virtual absence from the south and eastern coasts of England at and beyond the end of the 21st century. By 2050, under a medium emissions scenario, numbers of autumn passage Sandwich Tern within SPA sites are anticipated by CHAINSPAN, with poor confidence, to increase by up to 25%.

2.1.71 Southampton Water did not meet internationally important population levels during 2014 to 2019 either, with a peak count of 24 Sandwich Tern in 2016.

2.1.72 Table 2.10 shows Southampton Water did not meet internationally important population levels for Sandwich Tern (1,700 individuals) in the WeBS counts for 2012 to 2021, the peak count being 36 in 2021.

Table 2.10: WeBS Core Count data for Sandwich Tern

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	(15)	(2)	(5)	(24)	(15)	24
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	(23)	(19)	(10)	(36)	(40)	40

Teal

2.1.73 In Europe, Teal *Anas crecca* breed discontinuously from Iceland, Britain, Ireland, and France eastward to Russia. In winter, the species occurs across much of Europe, wherever there are suitable wetland habitats, including inland and coastal wetlands. Most non-breeding Teal in the UK, as elsewhere in Europe, originate from the east and north, including Iceland, Fennoscandia, and Russia. Winter flocks also contain locally breeding birds that, within Europe, are of a more sedentary or dispersive nature.

2.1.74 The GB population of Teal is estimated at 210,000 individuals (Musgrove *et al.*, 2011) which represents 42% of the biogeographic population (500,000; Wetlands International, 2012). Of the GB population, 35.1% (73,809; Stroud *et al.*, 2016) are found within SPA sites for which this species is a qualifying feature. The species is not considered to be of conservation concern in Europe but is an Amber listed Bird of Conservation Concern in the UK due to its important non-breeding population (Stanbury *et al.*, 2021).

2.1.75 Non-breeding Teal are widespread throughout Britain and Ireland, favouring areas of shallow water on estuarine coastal lagoons, coastal and inland marshes, and flooded pastures and ponds. They are absent only from mountainous areas, coastal stretches with high cliffs and inland areas which lack suitable freshwater habitats. Within the Solent and Southampton Water SPA, their important feeding grounds include Southampton Water and Newtown Harbour (Frost *et al.*, 2017 cited in Natural England, 2024b).

2.1.76 This species is threatened by lowland habitat loss and degradation and by upland habitat loss due to afforestation and other land-use changes. It is also threatened by disturbance from human recreational activities and construction work. The species is susceptible to avian botulism and avian influenza so may be threatened by future outbreaks of the disease (BirdLife International, 2024j).

2.1.77 By 2050, under a medium emissions scenario, spring passage numbers of non-breeding Teal within SPA sites are anticipated by CHAINSPAN, with poor confidence, to increase by over 50%.

2.1.78 Southampton Water is not currently maintaining nationally (4,300 individuals) or internationally (5,000 individuals) important numbers of Teal.

2.1.79 Table 2.11 shows Southampton Water is not currently maintaining nationally (4,300 individuals) or internationally (5,000 individuals) important numbers of Teal.

Table 2.11: WeBS Core Count data for Teal

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	798	1,352	1,139	(1,333)	1,238	1,172
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	1,173	877	868	971	1,656	1,109

Dark-bellied Brent Goose

2.1.80 Brent Geese have a circumpolar distribution breeding in the extreme high Arctic in all northern countries. The Dark-bellied Brent Goose *Branta bernicla* breeds in the Russian high Arctic. The main wintering areas of Dark-bellied Brent Geese in the UK are in England, along the North Sea and Channel coasts, from The Wash south to Poole Harbour. Important concentrations are found around The Wash, along the Norfolk, Essex and north Kent coasts, and in the natural harbours of the south coast.

2.1.81 The GB population of Dark-bellied Brent Geese is estimated at 91,000 individuals (Musgrove *et al.*, 2011), representing 37.9% of the biogeographic population (240,000; Wetlands International, 2012). Of the GB population, 80.8% (73,532; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is a vulnerable species of European conservation concern and an Amber listed Bird of Conservation Concern in the UK, due to being a species of European Concern with a localised and important non-breeding population (Stanbury *et al.*, 2021).

2.1.82 The traditional wintering habitat is mostly shallow coasts and estuaries with extensive mudflats and intertidal areas, as Dark-bellied Brent Geese rarely occur far from the sea and feed on intertidal plants such as *Zostera, Enteromorpha* and a small range of littoral plants. In recent years the species has taken to grazing on coastal cultivated grasslands and winter cereal fields. An investigation carried out in one of the species' wintering areas (UK) found that it was most likely to forage on dry, improved grasslands that had high abundances of the grass *Lolium perenne*, were between 5 and 6 ha in area, and were at a distance of up to 1.5 km inland or 4-5 km along the coast from coastal roosting sites (BirdLife International, 2024k).

2.1.83 This species is considered to be susceptible to disturbance from vehicles in the UK, although it is relatively tolerant of human disturbance, e.g. walkers, compared to other species. In its winter range the species may be persecuted by farmers, as in recent years it has increasingly taken to grazing on cultivated grasslands and winter cereal fields near the coast (BirdLife International 2024k).

2.1.84 By 2050, under a medium emissions scenario, numbers of Dark-bellied Brent Goose within SPA sites are anticipated by CHAINSPAN, with moderate confidence, to increase by over 50%.

2.1.85 Table 2.12 shows the average numbers recorded for Southampton Water in the 2012-2021 period fluctuated around the threshold for an internationally important population (over 2,100 individuals), although still remaining within the limits set for a nationally important population (980 individuals).

Table 2.12: WeBS Core Count data for Dark-bellied Brent Goose

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	2,395	3,355	1,893	1,592	2,174	2,282
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	2,100	1,618	2,762	1,421	1,223	1,825

Ringed Plover

2.1.86 The Ringed Plover *Charadrius hiaticula* is an arctic and northern temperate breeding wader. Through much of its range it is an essentially high Arctic breeding bird, but the range extends to the temperate coasts of north-western Europe, including the UK as well as a few inland areas of Europe. The UK supports both breeding and non-breeding individuals.

2.1.87 The non-breeding GB population of Ringed Plover is estimated at 34,000 individuals (Musgrove *et al.*, 2011), representing 46.6% of the biogeographic population (73,000; Stroud *et al.*, 2004; Wetlands International, 2012). Of the wintering GB population, 12.4% (4,206; Stroud *et al.*, 2016) occur within SPA sites for which the species is a qualifying feature. The species is not considered a species of European conservation concern but is a UK Red listed Bird of Conservation Concern due to a severe decline in the UK non-breeding population size, of more than 50%, over 25 years (Stanbury *et al.*, 2021).

2.1.88 Ringed Plovers have a wide breeding distribution around the coast of Britain and Ireland. In England, the extensive sandy and shingle beaches between the Thames and the Humber hold most of the population, but the islands off western Scotland are also very important for the population. Southerly populations, such as those in Britain and Ireland, breed mainly on coastal sand, gravel and shingle beaches, upper saltmarshes and artificial habitats such as the shores of gravel pits and reservoirs; although short-grazed coastal pastures, Outer Hebridean machair and arable fields in eastern England may also be frequently used. Breeding Ringed Plovers are highly site faithful.

2.1.89 The species is susceptible to avian botulism so may be threatened by future outbreaks of the disease and suffers predation from feral American mink *Neovison vison* in some regions (BirdLife International 2024l).

2.1.90 By 2050, under a medium emissions scenario, autumn passage and wintering numbers of Ringed Plovers within SPA sites are anticipated by CHAINSPAN, with moderate confidence, to increase by over 50% and spring passage numbers are anticipated, with moderate confidence, to increase by up to 25%.

2.1.91 Table 2.13 shows that Southampton Water has not supported an internationally important population of Ringed Plover (over 540 individuals) in ten years.

Table 2.13: WeBS Core Count data for Ringed Plover

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	172	(112)	205	149	115	160
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	110	144	(123)	(93)	81	115

Black-tailed Godwit

2.1.92 The Icelandic population of Black-tailed Godwit *Limosa limosa islandica* breeds mainly in Iceland and sporadically in the Faeroes, Britain and Ireland. This sub-species winters mainly in Britain, Ireland and western France, and south to Morocco, with the main concentrations on the muddy estuaries of the south coasts of Ireland and England.

2.1.93 The GB population of Black-tailed Godwit is estimated at 43,000 individuals (Musgrove *et al.*, 2011), representing 70.5% of the biogeographic population (61,000; Gill *et al.*, 2007; Wetlands International 2012). Of the GB population, 67.4% (Stroud *et al.* 2016) occur within SPA sites for which the species is a qualifying feature. The species is a vulnerable species of European conservation concern and a Red listed Bird of Conservation Concern in the UK, due to being a species of European Concern which has undergone a severe decline in the UK breeding population range, of more than 50%, between 1988-91 and 2007-11 (Stanbury *et al.*, 2021).

2.1.94 Overwintering Black-tailed Godwits often winter in brackish habitat (such as sheltered estuaries and lagoons with large intertidal mudflats) and roost on damp pasture, often inland. Black-tailed Godwits feed mostly on worms whilst the tide is out.

2.1.95 This species is threatened by the loss of nesting habitat owing to wetland drainage and agricultural intensification. Detrimental activities include the conversion of wet meadows to arable land, increased fertilisation and drainage of grassland, artificial flooding of nesting habitats, earlier and more frequent cutting as farmers adapt to climate change, spring burning, overgrowing by scrub, land claiming by businesses and developers, the construction of roads and parks, and disturbance by walkers. Habitat fragmentation may cause particular problems for this species, which nests in dispersed colonies and sub-colonies as protection against predators and may be unlikely to breed successfully in small areas of habitat (BirdLife International, 2024m).

2.1.96 By 2050, under a medium emissions scenario, spring passage numbers of non-breeding Black-tailed Godwit within SPA sites are anticipated by CHAINSPAN, with poor confidence, to increase by over 50%.

2.1.97 Table 2.14 shows the average numbers recorded for Portsmouth Harbour and Southampton Water fall below the threshold for an internationally important population (1,100 individuals), although they are still within the limits set for a nationally important population (over 390 individuals) in most years.

Table 2.14: WeBS Core Count data for Black-tailed Godwit

Survey Area	13/14	14/15	15/16	16/17	17/18	5 yr Avg
Southampton Water	420	571	443	(416)	750	546
	18/19	**19/20**	**20/21**	**21/22**	**22/23**	**5 yr Avg**
Southampton Water	392	412	340	446	384	395

2.2 Qualifying Species of Special Areas of Conservation

2.2.1 The following summaries have been adapted from the descriptions published by the Joint Nature Conservancy Committee[4] together with Natural England's Supplementary Advice on Conserving and Restoring Site Features[5] and a review of other available literature on the behaviour and ecology of these species.

Barbastelle Bat

2.2.2 The Barbastelle bat *Barbastella barbastellus* is one of the rarest species of mammal in the UK and is a distinctive looking species, with a flattened face and pug like nose. The ears are broad and joined across its head by skin. It is a medium sized bat so the species reaches 4-5cm in length, with a wingspan of around 26cm. Relatively little is known about the mating of barbastelles, but it seems to take place in the autumn with baby bats being born in July or sometimes august. Females reach sexual maturity in their second year but have been known to mate in their first. Juveniles can fly at three weeks old and can forage on their own at six weeks.

2.2.3 The Barbastelle is very rare, found sparsely across southern and central England and Wales. They are absent from Scotland and Ireland. Very few breeding sites are currently known in the UK and it is important that surrounding environments of these, as well as winter hibernation sites, are maintained. It is thought that they prefer pastoral landscapes with deciduous woodland, wet meadows, and water bodies, such as woodland streams and rivers. The extensive loss of deciduous woodland in the UK may be a significant factor in the rarity of the barbastelle. One estimate from 1995 (Harris *et al.*, 1995) puts the population of barbastelles at around 5,000 individuals.

[4] http://jncc.defra.gov.uk/ProtectedSites/SACselection/SAC_species.as

[5] http://publications.naturalengland.org.uk/category/6528471664689152

2.2.4 There are seven sites designated as Special Areas of Conservation (SACs) purely for their importance to the maintenance of populations of barbastelle. Mottisfont Bats SAC is an example of this and is the only one located in Hampshire. The site contains a mixture of woodland types including hazel coppice with standards, broadleaved plantation and coniferous plantation which bats use for breeding, roosting, commuting, and feeding (Natural England 2019d).

2.2.5 Warmer winters may lead to changes in the hibernation behaviour of the barbastelle, which prefers to hibernate at lower temperatures. The species is also known to exhibit large annual fluctuations in the number of wintering individuals. It is thought that species who hibernate at low temperatures, such as the barbastelle, could modify their behaviour by occupying shallower, smaller roosts (e.g., free standing bunkers which offer lower temperatures than roosts situated deeper underground). Hibernating at warmer temperatures can lead to increased energy expenditure, decreasing survival and reproductive chances (Gottfried *et al*, 2020).

2.2.6 The overall vulnerability of the Mottisfont Bats SAC to climate change has been assessed by Natural England (2015) as being low, taking into account the sensitivity, fragmentation, topography and management of its supporting habitats. This means that this site is considered to be vulnerable overall but are a lower priority for further assessment and action. Individual species may be more or less vulnerable than their supporting habitat itself.

Great Crested Newt

2.2.7 The Great Crested Newt *Triturus cristatus* is the largest native British newt, reaching up to around 17cm length. Adult males have jagged crests running along the body and tail. Newts require aquatic habitats for breeding. Eggs are laid singly on pond vegetation in spring, and larvae develop over summer to emerge in August – October, normally taking 2–4 years to reach maturity. Juveniles spend most time on land, and all terrestrial phases may range a considerable distance from breeding sites.

2.2.8 The Great Crested Newt is widespread throughout much of England and Wales, but occurs only sparsely in south-west England, mid Wales and Scotland. It is absent from Northern Ireland. The total UK population is relatively large and is distributed over sites that vary greatly in their ecological character. One estimate has put the national population at around 400,000 animals in 18,000 breeding sites. Many of the largest populations are centred on disused mineral-extraction sites, but lowland farmland forms the majority of great crested newt habitat in the UK.

2.2.9 Approximately 45 breeding populations are known within Hampshire, and these are concentrated along the south coast and eastern border of the county. Although the New Forest ponds are relatively well known, a comprehensive survey of ponds and their species has never been carried out across most of Hampshire. Thus, further populations may exist elsewhere (Hampshire Biodiversity Partnership, 2000).

2.2.10 Milder winters associated with climate change may reduce the viability of newt populations with mild and wet winters associated with lower survival rates as a result of waterlogged soils or depletion of individual energy reserves during the hibernation period. Hot dry summers have

been shown to have an adverse impact on populations, reducing the availability of aquatic habitat and prey. Extreme rainfall events leading to an increased incidence of pollution could also adversely impact local population viability (Natural England, 2019c).

2.2.11 The overall vulnerability of the New Forest SAC to climate change has been assessed by Natural England as moderate taking into account the sensitivity, fragmentation, topography and management of its habitats (Natural England, 2019b). Changes in habitat location, size and quality may impact on the species' survival.

Southern Damselfly

2.2.12 The southern damselfly is a small, weak flying damselfly – a relative of the dragonflies. It is at the northern edge of its global range in the UK, which is reflected in its southern and western distribution and in the narrow range of habitat types in which it occurs in the UK (Purse, 2002; Rouquette, 2005). These are found in two distinct landscape types: base-rich lowland heathland and calcareous streams and fens (Rouquette, 2005). The former is characterised by the heathland streams and valley mires found in the New Forest and Preseli Hills and the latter most commonly by the historic water meadow systems associated with the rivers Itchen and Test in Hampshire.

2.2.13 The Southern Damselfly *Coenagrion mercuriale* has very specialised habitat requirements, being confined to shallow, well-vegetated, base-rich runnels and flushes in open areas or small side-channels of chalk rivers. Most sites are on wet heath. The larvae live in flushes and shallow runnels, often less than 10cm deep, with slow-flowing water. Adults fly from June to August. Females lay eggs onto submerged plants, and the predatory aquatic larvae probably take two years to mature.

2.2.14 Strong populations of southern damselfly occur in the River Itchen SAC, estimated to be in the thousands of individuals. The site in central southern England represents one of the major population centres in the UK. It also represents a population in a managed chalk-river flood plain, an unusual habitat for this species in the UK, rather than on heathland.

2.2.15 The New Forest SAC in central southern England is an outstanding locality for Southern Damselfly, with several population centres and strong populations estimated to be in the hundreds or thousands of individuals. The heathland habitat on which it occurs is more typical for the species.

2.2.16 Climate change is driving increases in river temperatures which will create stress for a range of characteristic riverine species (Natural England, 2019a). However, given that the southern damselfly is living on the extreme northern edge of its global range in the UK, the species is unlikely to be affected by increasing river and air temperatures associated with climate change. The primary impact of climate change on this species will be through changes to the hydrology of a site (Natural England, 2019a).

Stag Beetle

2.2.17 The stag beetle *Lucanus cervus* is the UK's largest terrestrial beetle, and amongst the most spectacular, reaching 7cm in length. Larvae develop in decaying tree stumps and fallen timber

of broad-leaved trees in contact with the ground, especially of apple *Malus spp.*, elm *Ulmus spp.*, lime *Tilia spp.*, beech *Fagus sylvatica* and oak *Quercus spp.* Such timber is an essential feature for conservation of structure and function of the habitat for this species.

2.2.18 Development takes around 3-4 years. Adults are active on warm evenings, but probably only the males fly regularly and come readily to lights. Adults have been recorded from May to September or even October, though they are most abundant in early summer.

2.2.19 The New Forest represents stag beetle in its Hampshire/Sussex population centre, and is a major stronghold for the species in the UK. The forest is one of the most important sites in the UK for fauna associated with rotting wood, and was identified as of potential international importance for its saproxylic invertebrate fauna by the Council of Europe (Speight, 1989).

2.2.20 The overall vulnerability of the habitats supporting the stag beetle within the New Forest SAC to climate change has been assessed by Natural England as moderate (Natural England, 2019b) taking into account the sensitivity, fragmentation, topography and management of its habitats.

Atlantic Salmon

2.2.21 The Atlantic salmon *Salmo salar* is an anadromous species (i.e. adults migrate from the sea to breed in freshwater). Spawning takes place in shallow excavations called redds, found in shallow gravelly areas in clean rivers and streams where the water flows swiftly. The young that emerge spread out into other parts of the river. After a period of 1-6 years the young salmon migrate downstream to the sea as 'smolts'. Salmon have a homing instinct that draws them back to spawn in the river of their birth after 1-3 years in the sea. This behaviour has resulted in genetically distinct stock between rivers and even within individual rivers, with some evidence of further genetic distinctiveness in the tributaries of large rivers.

2.2.22 Salmon rivers vary considerably in their ecological and hydrological characteristics and in the life-cycle strategies adopted by the salmon within them. There are particularly strong contrasts between southern and northern rivers, and the UK's varied climate, geology and terrain means that high diversity can be found within some of the large rivers. The cool and wet climate in the north, often with harder, more resistant rocks and steeper slopes, results in salmon rivers that are sparsely vegetated, nutrient-poor and prone to sudden increases in flow ('spates') in response to heavy downfalls or sudden snow-melt. As a result, salmon may take several years to reach the smolt stage and migrate to sea. In the south, rivers flow across gentler terrain and softer rocks, in a warmer, drier climate. Here, salmon often grow sufficiently quickly to smolt as yearlings.

2.2.23 The species is subject to many pressures in Europe, including pollution, the introduction of non-native salmon stocks, physical barriers to migration, exploitation from netting and angling, physical degradation of spawning and nursery habitat, and increased marine mortality.

2.2.24 Increasing water temperatures as a result of climate change can affect egg development, fish survival, feeding and growth. The salmon is considered particularly vulnerable to increasing temperatures in the southern part of its English range, most notably in chalk streams (Natural England, 2019a).

Brook Lamprey

2.2.25 The Brook Lamprey *Lampetra planeri* is a primitive, jawless fish resembling an eel, and is the smallest of the lampreys found in the UK. It is a non-migratory freshwater species, occurring in streams and occasionally in lakes in north-west Europe. Like other lamprey species, the brook lamprey requires clean gravel beds for spawning and soft marginal silt or sand for the larvae. It spawns mostly in parts of the river where the current is not too strong.

2.2.26 The brook lamprey has declined in parts of the UK, although it is still widespread. This species is the most abundant and widespread of the British lampreys and is often found in the absence of the other two species, for example above a barrier that precludes the presence of the migratory species.

2.2.27 The River Itchen is an extensive river systems, including important tributaries, which provides conservation of the range of habitat features, such as suitable areas of gravels, silt or sand required for spawning, required by the species.

2.2.28 Climate change is driving increases in river temperatures which will create stress for a range of characteristic riverine species, particularly those on the southern limit of their range which is not the case for brook lamprey whose range extends south to central Europe. The overall vulnerability of the River Itchen SAC to climate change has been assessed by Natural England as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats and supporting habitats (Natural England, 2019a).

Bullhead

2.2.29 The bullhead *Cottus gobio* is a small bottom-living fish that inhabits a variety of rivers, streams and stony lakes. It appears to favour fast-flowing, clear shallow water with a hard substrate (gravel/cobble/pebble) and is frequently found in the headwaters of upland streams. However, it also occurs in lowland situations on softer substrates so long as the water is well-oxygenated and there is sufficient cover. It is not found in badly polluted rivers.

2.2.30 The Itchen is a classic chalk river that supports high densities of bullhead throughout much of its length. The river provides good water quality, extensive beds of submerged plants that act as a refuge for the species, and coarse sediments that are vital for spawning and juvenile development.

2.2.31 Bullheads spawn from February to June and up to four times. The male excavates a nest under a suitable large stone to attract a female. Part of this may be achieved by emission of acoustic 'knocking' sounds by the males. The female lays a batch of up to 400 eggs (2–2.5 mm in diameter), which adhere to the underside of the stone. In situations without suitable stones, bullheads may use other media, such as woody material or tree roots. The male then defends the brood against egg predators such as caddis larvae and manages the nest by fanning the eggs with his pectoral fins. The eggs hatch after 20 to 30 days, depending on water temperature. The newly hatched larvae (6–7mm in length) are supplied by a large yolk sac, which is absorbed after 10 days, after this time they leave the nest.

2.2.32 Generally, bullheads attain a length of 40–50 mm after their first year, 60 mm after their second and 70– 90 mm after their third. They do not generally live for more than three or four years, although fish of over 10 years old have been recorded

2.2.33 Climate change is driving increases in river temperatures which will create stress for a range of characteristic riverine species, particularly those on the southern limit of their range which is not the case for bullhead whose range extends south into southern Europe. The overall vulnerability of the River Itchen SAC to climate change has been assessed by Natural England as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats and supporting habitats (Natural England, 2019a).

Otter

2.2.34 Otters are semi aquatic, living mainly along rivers. They mainly eat fish, though crustaceans, frogs, voles and aquatic birds may also be taken. Being at the top of the food chain, an otter needs to eat up to 15% of its body weight in fish daily.

2.2.35 Otters are solitary shy animals, usually active at dusk and during the night. Otters can travel widely over large areas. Some are known to use 20 km or more of river habitat. Otters tend to live alone as they are very territorial. Otters deposit faeces in prominent places along a watercourse (known as spraints) which have a characteristic sweet musky odour. These mark their range which may help neighbouring animals keep in social contact with one another.

2.2.36 Before 1960, otters utilised most river catchments in Hampshire. Yet a comprehensive survey in 1989/901 revealed the presence of otters on only three river catchments in the county. Additional surveys and monitoring have identified otters on the River Avon, scant evidence within the New Forest particularly the lower Lymington River and Keyhaven Marshes and a breeding population in the River Itchen catchment (Hampshire Biodiversity Partnership, 2000).

2.2.37 The Itchen otter population follows the release of three captive-bred animals in 1993 to the River Itchen to boost its natural and isolated remnant population, this catchment continues to support the strongest otter population in Hampshire (Hampshire Biodiversity Partnership, 2000).

2.2.38 Climate change is driving increases in river temperatures which will create stress for a range of characteristic riverine species, which may impact prey abundance and composition for otters. The overall vulnerability of the River Itchen SAC to climate change has been assessed by Natural England as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats and supporting habitats (Natural England, 2019a).

White-clawed Crayfish

2.2.39 The white-clawed crayfish *Austropotamobius pallipes* (also known as the Atlantic Stream Crayfish), lives in a diverse variety of clean aquatic habitats but especially favours hard-water streams and rivers.

2.2.40 In Britain the most significant threats to the survival of this species are posed by non-native crayfish species such as the North American Signal Crayfish *Pacifastacus leniusculus*, which out-competes, White-clawed crayfish and by crayfish plague Crayfish plague which can be

introduced into a waterbody by entry of signal crayfish and also by water, fish or equipment that has been in contact with signals.

2.2.41 White-clawed crayfish can grow up to 12cms long and live in rivers and streams about 1 metre deep where they hide in rocks and submerged wood. They can live up to 12 years and they usually have their first young when they are 3 years old. Females carry their eggs for 7-9 months until they hatch, once hatched the young hitch-hike on their mothers for a further 2 weeks. There appear to be differences in life history between northern and southern populations, for example crayfish in the Itchen are thought to hold young for a shorter time than in more northern populations.

2.2.42 In Hampshire there are few records prior to the 1980s. The River Itchen, formerly believed to be a stronghold for the species, was still supporting white-clawed crayfish along much of its length up until the mid- 1990s. However, the future of this species in Hampshire is very uncertain; it is believed to be critically endangered and is unlikely to survive in the county unless factors responsible for its decline can be addressed (Hampshire Biodiversity Partnership, 2000).

2.2.43 Climate change is driving increases in river temperatures which will create stress for a range of characteristic riverine species, particularly those on the southern limit of their range which is not the case for white-clawed crayfish whose range extends south to southern Europe. The overall vulnerability of the River Itchen SAC to climate change has been assessed by Natural England as being high, taking into account the sensitivity, fragmentation, topography and management of its habitats and supporting habitats (Natural England, 2019a).

Desmoulin's Whorl Snail

2.2.44 Desmoulin's whorl snail *Vertigo moulinsiana* is the largest Vertigo species, with a shell height up to about 2.6 mm. It is restricted to calcareous wetlands, usually bordering lakes or rivers, or in fens. High humidity appears to be important in determining local distribution within sites. It normally lives on reed-grasses and sedges, such as reed sweet-grass *Glyceria maxima* and tussocks of greater pond-sedge *Carex riparia* and lesser pond-sedge *C. acutiformis*, where it feeds on the microflora, and in autumn it may ascend taller reeds and scrub. Like all Annex II *Vertigo* species, it is highly dependent on maintenance of existing local hydrological conditions.

2.2.45 When the Solent Maritime SAC was designated in 2005 the site supported a small population of Desmoulin's whorl snail in the freshwater fen and brackish reedbeds at the top of Fishbourne Channel in Chichester Harbour. This is the only recorded site for Desmoulin's whorl snail within the Solent Maritime SAC and the species was last recorded here in 2005. No individuals were found during surveys in 2009 and 2010. The population in Fishbourne Channel is likely to have been a small relict population that was originally more widespread prior to development of housing and infrastructure in the area (Natural England, 2024a).

2.3 Qualifying Habitats of Special Areas of Conservation

2.3.1 The following accounts are adapted from the Natural England's Supplementary Advice on Conserving and Restoring Site Features for the five SACs (New Forest, Butser Hill, River Itchen, Solent and Isle of Wight Lagoons and Solent Maritime), which are considered in the HRA.

Transition Mires and Quaking Bogs

2.3.2 The term 'transition mire' relates to vegetation that in floristic composition and general ecological characteristics is transitional between acid bog and Alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich. The vegetation normally has intimate mixtures of species considered to be acidophile and others thought of as calciphile or basophile. In some cases the mire occupies a physically transitional location between bog and fen vegetation, as for example on the marginal lagg of raised bog or associated with certain valley and basin mires. In other cases these intermediate properties may reflect the actual process of succession, as peat accumulates in groundwater-fed fen or open water to produce rainwater-fed bog isolated from groundwater influence. Many of these systems are very unstable underfoot and can therefore also be described as 'quaking bogs'.

Alkaline Fens

2.3.3 Alkaline fens consist of a complex assemblage of vegetation types characteristic of sites where there is tufa and/or peat formation with a high water table and a calcareous base-rich water supply. There is considerable variation between sites in the associated communities and the transitions that may occur. Such variation can be broadly classified by the geomorphological situation in which the fen occurs, namely: flood plain mire, valley mire, basin mire, hydroseral fen (i.e. as zones around open waterbodies) and spring fen.

Alluvial Forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) Priority Feature

2.3.4 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) comprises woods dominated by alder *Alnus glutinosa* and willow *Salix spp.* on flood plains in a range of situations from islands in river channels to low-lying wetlands alongside the channels.

2.3.5 The habitat typically occurs on moderately base-rich, eutrophic soils subject to periodic inundation. Many such woods are dynamic, being part of a successional series of habitats. Their structure and function are best maintained within a larger unit that includes the open communities, mainly fen and swamp, of earlier successional stages. On the drier margins of these areas other tree species, notably ash *Fraxinus excelsior* and elm *Ulmus spp.*, may become abundant. In other situations the alder woods occur as a stable component within transitions to surrounding dry-ground forest, sometimes including other Annex I woodland types. These transitions from wet to drier woodland and from open to more closed communities provide an important facet of ecological variation.

2.3.6 The ground flora is correspondingly varied. Some stands are dominated by tall herbs, reeds and sedges, for example common nettle *Urtica dioica*, common reed *Phragmites australis*, greater tussock-sedge *Carex paniculata*, and meadowsweet *Filipendula ulmaria*, while others have lower-growing communities with creeping buttercup *Ranunculus* repens, common marsh bedstraw *Galium palustre*, alternate-leaved golden-saxifrage *Chrysosplenium oppositifolium* and marsh-marigold *Caltha palustris*.

2.3.7 The New Forest contains many streams and some small rivers that are less affected by drainage and canalisation than those in any other comparable area in the lowlands of England. Associated with many of the streams, particularly those with alkaline and neutral groundwater, are strips of alder *Alnus glutinosa* woodland which, collectively, form an extensive resource with a rich flora. In places there are examples of transitions from open water through reed swamp and fen to alder woodland. The small rivers show natural meanders and debris dams, features that are otherwise rare in the lowlands, with fragmentary ash *Fraxinus excelsior* stands as well as the alder strips.

Asperulo-Fagetum Beech Forests

2.3.8 This habitat occurs on circumneutral to calcareous soils. UK stands of *Asperulo-Fagetum* beech forest belong to the central and northern European associations of the habitat but with correspondingly more Atlantic species, including holly *Ilex aquifolium* and bluebell *Hyacinthoides non-scripta*. Rare plants associated with this form of woodland in the UK include red helleborine *Cephalanthera rubra*, wood barley *Hordelymus europaeus*, coral-root *Cardamine bulbifera* and box *Buxus sempervirens*. While many sites have a core of ancient woodland, planting of beech *Fagus sylvatica* and its natural spread on to adjacent grassland under reduced grazing pressures have led in places to an expansion of this habitat over the 20th century. Sites therefore often have a complicated history. The beech dominance in particular has often been emphasised by past silvicultural treatment.

2.3.9 The New Forest is the largest area of mature, semi-natural beechen *Fagus sylvatica* woodland in Britain; much of it is a form of W14 *Fagus sylvatica – Rubus fruticosus* woodland that conforms to the Annex I type *Asperulo-Fagetum* beech forests. The mosaic with other types of woodland and heath has allowed unique and varied assemblages of epiphytic lichens and saproxylic invertebrates to be sustained, particularly in situations where the woodlands are open and the tree trunks receive plenty of light. The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system.

Atlantic Acidophilous Beech Forests with Ilex and sometimes also Taxus in the Shrub Layer (Quercion robori-petraeae or Ilici-Fagenion)

2.3.10 This habitat comprises beech *Fagus sylvatica* forests with holly *Ilex*, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak *Quercus spp*. was common. This is known to prolong the life of these trees. Typical species include holly *Ilex aquifolium*, bracken *Pteridium aquilinum* and bramble *Rubus fruticosus*, with wavy hair-grass *Deschampsia flexuosa* in the most acidic areas. Epiphyte richness can be a key factor in defining hyper-Atlantic forms of this habitat type.

2.3.11 The New Forest is the largest area of mature, semi-natural beech *Fagus sylvatica* woodland in Britain and represents Atlantic acidophilous beech forests in the most southerly part of the habitat's UK range. The mosaic with other types of woodland and heath has allowed unique and varied assemblages of epiphytic lichens and saproxylic invertebrates to be sustained, particularly in situations where the woodland is open and the tree trunks receive plenty of light.

The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system.

Bog Woodland *Priority Feature

2.3.12 Under certain combinations of physical circumstances in the UK, scattered trees can occur across the surface of a bog in a relatively stable ecological relationship as open woodland, without the loss of bog species. This true Bog woodland is a much rarer condition than the progressive invasion of bogs by trees, through natural colonisation or afforestation following changes in the drainage pattern which leads eventually to the loss of the bog community. The habitat type has not previously been well described in the UK, and consequently knowledge of its ecological characteristics is limited.

2.3.13 Within the New Forest, in southern England, birch – willow *Betula – Salix* stands occur over valley bog vegetation, with fringing alder *Alnus – Sphagnum* stands where there is some water movement. These stands appear to have persisted for long periods in stable association with the underlying *Sphagnum* bog-moss communities. The rich epiphytic lichen communities and pollen record provide evidence for the persistence of this association. The Bog woodland occurs in association with a range of other habitats for which the site has also been selected.

Depressions on Peat Substrate of the Rhynchosporion

2.3.14 Depressions on peat substrates of the *Rhynchosporion* occur in complex mosaics with lowland wet heath and valley mire vegetation, in transition mires, and on the margins of bog pools and hollows in both raised and blanket bogs. The vegetation is typically very open, usually characterised by an abundance of white beak-sedge *Rhynchospora alba*, often with well-developed algal mats, the bog moss *Sphagnum denticulatum*, round-leaved sundew *Drosera rotundifolia* and, in relatively base-rich sites, brown mosses such as *Drepanocladus revolvens* and *Scorpidium scorpioides*. The Nationally scarce species brown beak-sedge *Rhynchospora fusca* and marsh clubmoss *Lycopodiella inundata* also occur in this habitat.

2.3.15 The New Forest, one of three sites selected in southern England, is considered to hold the largest area in England of Depressions on peat substrates of the *Rhynchosporion*, in complex habitat mosaics associated primarily with the extensive valley bogs of this site. The habitat type is developed in three situations: in natural bog pools of patterned bog surfaces, in flushes on the margins of valley mires and in areas disturbed by peat-digging, footpaths, tracks, ditches etc. In places the habitat type is rich in brown mosses *Cratoneuron spp.* and *Scorpidium scorpioides*, suggesting flushing by mineral-rich waters. The mosaics in which this habitat type occurs are an important location for bog orchid *Hammarbya paludosa*.

European Dry Heaths

2.3.16 European dry heaths typically occur on freely-draining, acidic to circum-neutral soils with generally low nutrient content. Ericaceous dwarf-shrubs dominate the vegetation. The most common is heather *Calluna vulgaris*, which often occurs in combination with gorse *Ulex spp.*, bilberry *Vaccinium spp.* or bell heather *Erica cinerea*, though other dwarf-shrubs are important

locally. Nearly all dry heath is seminatural, being derived from woodland through a long history of grazing and burning.

2.3.17 The New Forest represents European dry heaths in southern England and is the largest area of lowland heathland in the UK. It is particularly important for the diversity of its habitats and the range of rare and scarce species which it supports. The New Forest is unusual because of its long history of grazing in a traditional fashion by ponies and cattle. The dry heaths of the New Forest are of the H2 Calluna vulgaris – Ulex minor heath type, and H3 Ulex minor – Agrostis curtisii heath is found on damper areas. There are a wide range of transitions between dry heath and wet heath, Molinia grassland, fen, acid grassland and various types of scrub and woodland. Both the New Forest and the two Dorset Heath SACs are in southern England. All three areas are selected because together they contain a high proportion of all the lowland European dry heaths in the UK. There are, however, significant differences in the ecology of the two areas, associated with more oceanic conditions in Dorset and the continuous history of grazing in the New Forest.

Molinia Meadows on Calcareous, Peaty or Clayey-silt-laden Soils (Molinion caeruleae)

2.3.18 *Molinia* meadows are found mainly on moist, moderately base-rich, peats and peaty gley soils, often with fluctuating water tables. They usually occur as components of wet pastures or fens, and often form mosaics with dry grassland, heath, mire and scrub communities. This habitat type includes the most species-rich *Molinia* grasslands in the UK, in which purple moor-grass *Molinia caerulea* is accompanied by a wide range of associated species, including rushes, sedges and tall-growing herbs. The New Forest represents *Molinia* meadows in southern England.

2.3.19 The site supports a large area of the heathy form of M24 Molinia *caerulea–Cirsium dissectum* fen-meadow. This vegetation occurs in situations of heavy grazing by ponies and cattle in areas known locally as 'lawns', often in a fine-scale mosaic with 4010 Northern Atlantic wet heaths and other mire and grassland communities. These lawns occur on flushed soils on slopes and on level terrain on the floodplains of rivers and streams. The New Forest *Molinia* meadows are unusual in the UK in terms of their species composition, management and landscape position. The grasslands are species-rich, and a particular feature is the abundance of small sedges such as carnation sedge *Carex panicea*, common sedge *C. nigra* and yellow-sedge *C. viridula ssp. oedocarpa*, and the more frequent occurrence of mat-grass *Nardus stricta* and petty whin *Genista anglica* compared to stands elsewhere in the UK.

Northern Atlantic Wet Heaths with Erica Tetralix

2.3.20 Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils on impeded drainage. The vegetation is typically dominated by mixtures of cross-leaved heath *Erica tetralix*, heather *Calluna vulgaris*, grasses, sedges and *Sphagnum* bog-mosses.

2.3.21 The New Forest contains the most extensive stands of lowland northern Atlantic wet heaths in southern England, mainly of the M16 *Erica tetralix – Sphagnum compactum* type. M14 *Schoenus nigricans– Narthecium ossifragum* mire is also found on this site. The wet heaths are important for rare plants, such as marsh gentian *Gentiana pneumonanthe* and marsh clubmoss

Lycopodiella inundata, and a number of dragonfly species, including the scarce blue-tailed damselfly and small red damselfly *Ceriagrion tenellum*. There is a wide range of transitions between wet heath and other habitats, including dry heath, various woodland types, *Molinia* grasslands, fen, and acid grassland. Wet heaths enriched by bog myrtle *Myrica gale* are a prominent feature of many areas of the Forest. Unlike much lowland heath, the New Forest heaths continue to be extensively grazed by cattle and horses, favouring species with low competitive ability.

Old Acidophilous Oak woods with Quercus Robur on Sandy Plains

2.3.22 This habitat type comprises ancient lowland oak woodland on acidic, sandy or gravelly substrates. Veteran trees are relatively abundant in UK stands compared to examples in continental Europe, and are often associated with assemblages of notable lichens, fungi and invertebrates.

2.3.23 The New Forest is representative of old acidophilous oak woods in the southern part of its UK range. It is the most extensive area of active wood-pasture with old oak *Quercus spp*. and beech *Fagus sylvatica* in north-west Europe and has outstanding invertebrate and lichen populations. This site was preferred over other sites that lack a succession of age-classes because, although scattered over a wide area, the oak stands are found within a predominantly semi-natural landscape with a more balanced age-structure of trees. The traditional common grazing in the Forest by cattle and ponies provides opportunities to explore the impact of large herbivores on the woodland system. The New Forest has been identified as of potential international importance for its saproxylic invertebrate fauna by the Council of Europe (Speight, 1989).

Oligotrophic to Mesotrophic Standing Waters with Vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea

2.3.24 The clear soft water which characterises this habitat type contains low to moderate levels of plant nutrients and supports a characteristic assemblage of plant species. The vegetation community is characterised by amphibious short perennial vegetation, with shoreweed *Littorella uniflora* being considered as the defining component. This species often occurs in association with water lobelia *Lobelia dortmanna*, bog pondweed *Potamogeton polygonifolius*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus*, needle spike-rush *Eleocharis acicularis*, alternate water milfoil *Myriophyllum alterniflorum* and floating water bur-reed *Sparganium angustifolium*. Yellow water-lily *Nuphar lutea*, amphibious bistort *Persicaria amphibia*, stoneworts *Chara spp*., least bur-reed *Sparganium natans* and other pondweeds *Potamogeton spp*. may be present in more mesotrophic conditions.

2.3.25 In the New Forest vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* occurs on the edge of large temporary ponds, shallow ephemeral pools and poached damp hollows in grassland, which support a number of specialist species in a zone with toad rush *Juncus bufonius*. These include the two nationally scarce species coral-necklace *Illecebrum verticillatum* and yellow centaury *Cicendia filiformis*, often in association with allseed *Radiola linoidesand* chaffweed *Anagallis minima*. Heavy grazing pressure is of prime importance in the maintenance of the outstanding flora of these temporary pond communities. Livestock maintain

an open habitat, controlling scrub ingress, and trampling the surface. Commoners' animals also transport seed in their hooves widely from pond to pond where suitable habitat exists. Temporary ponds occur throughout the Forest in depressions capable of holding water for part of the year. Most ponds are small (between 5-10m across) and, although great in number, amount to less than 10ha in total area.

Oligotrophic Waters containing very Few Minerals of Sandy Plains (Littorelletalia uniflorae)

2.3.26 This type of waterbody is restricted to sandy plains that are acidic and low in nutrients, and are therefore very scarce. The water is typically very clear and moderately acid. Destruction of lowland heaths, land drainage and nutrient enrichment have contributed to the scarcity of the habitat type. The habitat type is characterised by the presence of *Littorelletalia*-type vegetation. Such vegetation is characterised by the presence of water lobelia *Lobelia dortmanna*, shoreweed *Littorella uniflora*, or quillwort *Isoetes lacustris*.

2.3.27 Hatchet Pond in the New Forest in the south of England is in fact three ponds, one of which is an example of an oligotrophic waterbody amidst wet and dry lowland heath developed over fluvial deposits. It contains shoreweed *Littorella uniflora* and isolated populations of northern species such as bog orchid *Hammarbya paludosa* and floating bur-reed *Sparganium angustifolium*, alongside rare southern species such as Hampshire-purslane *Ludwigia palustris*. Hatchet Pond is therefore important as a southern example of this lake type where northern species, more common in the uplands of the UK, co-exist with southern species.

Water Courses of Plain to Montane Llevels with the Ranunculion fluitantis and Callitricho-Batrachion Vegetation

2.3.28 This habitat type is generally characterised by the abundance of water-crowfoots *Ranunculus spp*. Floating mats of these white-flowered species are characteristic of river channels in early to midsummer. They help to vary water flow, promote fine sediment deposition, and provide shelter and food for fish and invertebrate animals.

2.3.29 There are several variants of this habitat in the UK, depending on geology and river type, and at each site, the *Ranunculus* species will be associated with a different assemblage of other aquatic plants. The River Itchen is dominated throughout by aquatic *Ranunculus spp*. The headwaters contain pond watercrowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream watercrowfoot *R. penicillatus ssp. pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

2.3.30 The habitat type is widespread in rivers in the UK, especially on softer and more mineral-rich substrates. It is largely absent from areas underlain by acid rock types (principally in the north and west). It has been adversely affected by nutrient enrichment, mainly from sewage inputs and agriculture, and where agriculture has caused serious siltation. It is also vulnerable to artificial reductions in river flows and to unsympathetic channel engineering works. Consequently, the habitat has been reduced or has disappeared from parts of its range in Britain.

Annual Vegetation of Drift Lines

2.3.31 This habitat type occurs on deposits of shingle lying at or above mean high-water spring tides. The types of deposits involved are generally at the lower end of the size range of shingle (2-200 mm diameter), with varying amounts of sand interspersed in the shingle matrix. These shingle deposits occur as fringing beaches that are subject to periodic displacement or overtopping by high tides and storms. The distinctive vegetation, which may form only sparse cover, is therefore ephemeral and composed of annual or short-lived perennial species.

2.3.32 In the UK this habitat type is not always easy to classify using the NVC because it is highly variable between sites and from year to year at the same site. It can include NVC types SD2 *Honkenya peploides –Cakile maritime* strandline community and SD3 *Matricaria maritima – Galium aparine* strandline community on stony substrates. MC6 *Atriplex prostrata – Beta vulgaris ssp.* Maritime sea-bird cliff community and other vegetation with abundant orache Atriplex *spp.* may also occur on shingle shores.

Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae)

2.3.33 Atlantic salt meadows develop when halophytic vegetation colonises soft intertidal sediments of mud and sand in areas protected from strong wave action. This vegetation forms the middle and upper reaches of saltmarshes, where tidal inundation still occurs but with decreasing frequency and duration. A wide range of community types is represented and the saltmarshes can cover large areas, especially where there has been little or no enclosure on the landward side. The vegetation varies with climate and the frequency and duration of tidal inundation. Grazing by domestic livestock is particularly significant in determining the structure and species composition of the habitat type and in determining its relative value for plants, for invertebrates and for wintering or breeding waterfowl.

2.3.34 The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. Solent Maritime is a composite site composed of a large number of separate areas of saltmarsh. The salt meadows at this site are notable as being representative of the ungrazed type and support a different range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. As a whole the site is less truncated by man-made features than other parts of the south coast and shows rare and unusual transitions to freshwater reedswamp and alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass *Spartina spp.*

Coastal Lagoons *Priority Feature

2.3.35 The Solent on the south coast of England encompasses a series of Coastal lagoons, including percolation, isolated and sluiced lagoons. The site includes a number of lagoons in the marshes in the Keyhaven – Pennington area, at Farlington Marshes in Chichester Harbour, behind the sea-wall at Bembridge Harbour and at Gilkicker, near Gosport. The lagoons show a range of salinities and substrates, ranging from soft mud to muddy sand with a high proportion of shingle, which support a diverse fauna including large populations of three notable species: the nationally rare foxtail stonewort *Lamprothamnium papulosum*, the nationally scarce lagoon

sand shrimp *Gammarus insensibilis*, and the nationally scarce starlet sea anemone *Nematostella vectensis*. The lagoons in Keyhaven – Pennington Marshes are part of a network of ditches and ponds within the saltmarsh behind a sea-wall. Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a sea-wall, receives sea water during spring tides. The lagoon holds a well-developed low-medium salinity insect-dominated fauna. Gilkicker Lagoon is a sluiced lagoon with marked seasonal salinity fluctuation and supports a high species diversity. The lagoons at Bembridge Harbour have formed in a depression behind the sea-wall and sea water enters by percolation. Species diversity in these lagoons is high and the fauna includes very high densities of *N. vectensis*.

Spartina Swards (Spartinion maritimae)

2.3.36 Cord-grass *Spartina spp*. colonises a wide range of substrates, from very soft muds to shingle, in areas sheltered from strong wave action. It occurs on the seaward fringes of saltmarshes and creek-sides and may colonise old pans in the upper saltmarsh.

2.3.37 Solent Maritime is the only site for smooth cord-grass *Spartina alterniflora* in the UK and is one of only two sites where significant amounts of small cord-grass *S. maritime* are found. It is also one of the few remaining sites for Townsend's cord-grass *S.*x *townsendii* and holds extensive areas of common cord-grass *Spartina anglica*, all four taxa thus occurring here in close proximity. It has additional historical and scientific interest as the site where *S. alterniflora* was first recorded in the UK (1829) and where *S.* x *townsendii* and, later, *S. anglica* first occurred

Estuaries

2.3.38 The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries (Yar, Medina, King's Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The site is the only one in the series to contain more than one physiographic sub-type of estuary and is the only cluster site. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass Zostera *spp*. and green algae, sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy 'reef' of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour.

Mudflats and Sandflats not Covered by Water at Low Tide

2.3.39 Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide. They form a major component of the qualifying habitats Estuaries and Large shallow inlets and bays in the UK but also occur extensively along the open coast and in lagoonal inlets. The physical structure of the intertidal flats ranges from mobile, coarse-sand beaches on wave-exposed coasts to stable, fine-sediment mudflats in estuaries and other marine inlets. This habitat type can be divided into three broad categories (clean sands, muddy sands and muds); although in

practice there is a continuous gradation between them. Within this range the plant and animal communities present vary according to the type of sediment, its stability and the salinity of the water.

Perennial Vegetation of Stony Banks

2.3.40 Shingle structures develop when a sequence of foreshore beaches is deposited at the limit of high tide. More permanent ridges are formed as storm waves throw pebbles high up on the beach, from where the backwash cannot remove them. Several beaches may be piled against each other and extensive structures can form. The ecological variation in this habitat type depends on stability, the amount of fine material accumulating between pebbles, climatic conditions, width of the foreshore, and past management of the site. The ridges and lows formed also influence the vegetation patterns, resulting in characteristic zonations of vegetated and bare shingle.

Salicornia and Other Annuals Colonising Mud and Sand

2.3.41 This pioneer saltmarsh vegetation colonises intertidal mud and sandflats in areas protected from strong wave action and is an important precursor to the development of more stable saltmarsh vegetation. It develops at the lower reaches of saltmarshes where the vegetation is frequently flooded by the tide, and can also colonise open creek sides, depressions or pans within saltmarshes, as well as disturbed areas of upper saltmarshes.

2.3.42 There is little variation within this habitat type, which typically comprises a small number of species. The following NVC types are represented: SM7 *Arthrocnemum perenne* stands, SM8 Annual *Salicornia* salt-marsh community, SM9 *Suaeda maritime* salt-marsh community, SM27 Ephemeral salt-marsh vegetation with *Sagina maritime*. The first three communities include open stands of perennial glasswort *Sarcocornia perennis*, glasswort *Salicornia spp.*, or annual seablite *Suaeda maritima*. The density of these plants can vary and may be lower on sites with sandier substrates. Other species that may be found include common saltmarsh-grass *Puccinellia maritima*, common cord-grass *Spartina anglica* and sea aster *Aster tripolium*. *Sarcocornia perennis* is absent from Scotland. A further form of the habitat (SM27) consists of ephemeral vegetation colonising open pans in upper saltmarshes. Characteristic plants of this vegetation type include sea pearlwort *Sagina maritime* and knotted pearlwort *S. nodosa.*

Sandbanks which are Slightly Covered by Sea Water all the time

2.3.43 Sandbanks which are slightly covered by sea water all the time consist of sandy sediments that are permanently covered by shallow sea water, typically at depths of less than 20m below chart datum (but sometimes including channels or other areas greater than 20m deep). The habitat comprises distinct banks (i.e. elongated, rounded or irregular 'mound' shapes) which may arise from horizontal or sloping plains of sandy sediment.

2.3.44 Shallow sandy sediments are typically colonised by a burrowing fauna of worms, crustaceans, bivalve molluscs and echinoderms. Mobile epifauna at the surface of the sandbank may include shrimps, gastropod molluscs, crabs and fish. Sand-eels *Ammodytes spp.*, an important food for birds, live in sandy sediments. Where coarse stable material, such as shells, stones or maerl is

present on the sediment surface, species of foliose seaweeds, hydroids, bryozoans and ascidians may form distinctive communities. Shallow sandy sediments are often important nursery areas for fish, and feeding grounds for seabirds (especially puffins *Fratercula arctica*, guillemots *Uria aalge* and razorbills *Alca torda*) and sea-duck (e.g. common scoter *Melanitta nigra*).

Shifting Dunes along the Shoreline with Ammophila Arenaria (`white dunes`)

2.3.45 This habitat type encompasses most of the vegetation of unstable dunes where there is active sand movement. Under these conditions sand-binding marram *Ammophila Arenaria* is always a prominent feature of the vegetation and is usually dominant. In the UK the majority of such vegetation falls within NVC type SD6 *Ammophila Arenaria* mobile dune community. This is a dynamic vegetation type maintained only by change. It can occur on both accreting and eroding dunes, but will rapidly change and disappear if stability is imposed.

3 Qualifying Feature Counts

3.1 Introduction

3.1.1 This section sets out the qualifying species counts for each of the Special Protection Areas (SPAs) considered within the HRA to supplement Table 3.2 of the main HRA report. The information is taken from the Citation document for each SPA, available on the Natural England European sites website[6]. The Citation document represents the legal basis for the designation of a site.

[6] https://designatedsites.naturalengland.org.uk/

Site Name	Qualifying Features
New Forest SPA	Wild Birds Directive Article 4.1 Qualification: Annex I Species - Nightjar *Caprimulgus europaeus* (Breeding), 300 pairs representing at least 15% of the GB breeding population; - Woodlark *Lullula arborea* (Breeding), 51-54 pairs representing about 24% of the GB breeding population; - Honey Buzzard *Pernis apivorus* (Breeding), 454 pairs representing 75% of the GB breeding population; - Dartford Warbler *Sylvia undata* (Breeding), 2 pairs representing 7% of the GB breeding population; - Hen Harrier *Circus Cyaneus* (Non-breeding), 15 individuals representing at least 2% of the wintering population in GB. Wild Birds Directive Article 4.2 Qualification: Migratory Species not listed in Annex I - Hobby *Falco Subbuteo* (Non-breeding), in summer up to 25 pairs representing 3% of the GB breeding population at the time of SPA classification; and - Wood Warbler *Phylloscopus sibilatrix* (Non-breeding), in excess of 350 pairs representing at least 3% of the GB breeding population at the time of SPA classification.
Solent and Southampton Water SPA	Wild Birds Directive Article 4.1 Qualification: Annex I Species - Mediterranean Gull *Larus melanocephalus* (Breeding), 2 pairs representing 8.2-13.9% of the GB breeding population (5 year peak mean 1994-1998); - Little Tern *Sterna albifrons* (Breeding), 49 pairs representing 2% of the GB breeding population (5 year peak mean 1993-1997); - Roseate Tern *Sterna dougalli* (Breeding), 2 pairs representing 3.1% of the GB breeding population (5 year peak mean 1993-1997); - Common Tern *Sterna hirundo* (Breeding), 267 pairs representing 2.2% of the GB breeding population (5 year peak mean 1993-1997); and - Sandwich Tern *Sterna sandvicensis* (Breeding), 231 pairs representing at least 1.7% of the GB breeding population (5 year peak mean 1993-1997). Wild Birds Directive Article 4.2 Qualification: Migratory Species not listed in Annex I - Teal *Anas crecca* (Non-breeding), 4,400 individuals representing 1.1% of the wintering Northwestern Europe population (5 year peak mean 1992/3-1996/7); - Dark-bellied Brent Goose *Branta bernicla bernicla* (Non-breeding), 7,506 individuals representing 2.5% of the wintering Western Siberian / Western European (5 year peak mean 1992/3-1996/7); - Ringed Plover *Charadrius hiaticula* (Non-breeding), 552 individuals representing 1.1% of the wintering Europe / Northwest African (5 year peak mean 1992/3-1996/7); and - Black-tailed Godwit *Limosa limosa islandica* (Non-breeding), 1,125 individuals representing 1.6% of the wintering Icelandic population (5 year peak mean 1992/3-1996/7).
Solent and Dorset Coast SPA	Wild Birds Directive Article 4.1 Qualification: Annex I Species - Little Tern *Sterna albifrons* (Breeding), 63 pairs (2009 – 2014) representing 3.31% of the GB breeding population; - Sandwich Tern *Sterna sandvicensis* (Breeding), 441 pairs (2008 – 2014) representing 4.01% of the GB breeding population; and

Site Name	Qualifying Features
	- Common Tern *Sterna albifrons* (Breeding), 492 pairs (2009 – 2014) representing 4.77% of the GB breeding population.

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