URBAN EDGE ENVIRONMENTAL CONSULTING

NATURAL PROGRESSION

Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036

HRA Report for the Proposed Main Modifications

May 2021

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Client:	Eastleigh Borough Council	
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List of Tables and Figures

Abbreviations

µg/l	Micrograms per litre
µg/m^3	Micrograms per cubic metre
AOD	Above Ordnance Datum
APIS	Air Pollution Information System
Bgl	Below ground level
BOD	Biochemical Oxygen Demand
CJEU	Court of Justice of the European Union
CL	Critical Load/Level
CP	Critical Period
dBht	Decibels above the hearing threshold
DWF	Dry Weather Flow
EBLP	Eastleigh Borough Local Plan
Ha	Hectare
HRA	Habitats Regulations Assessment
IWMS	Integrated Water Management Study
IVCP	Itchen Valley Country Park
kg N/ha/yr	Kilograms nitrogen per hectare per year
LSE	Likely significant effect
Ml/d	Megalitres per day
MDO	Minimum Deployable Output
N	Nitrogen
NDep	Nitrogen deposition
NH_3	Ammonia

nm^2	Square nautical miles
NBLR	North of Bishopstoke Link Road
NO_X	Nitrogen oxides
NVC	National Vegetation Classification
DO	Dissolved Oxygen
P	Phosphorous
PC	Process Contribution
PEC	Predicted Environmental Concentration
SPA	Special Protection Area
PfSH	Partnership for South Hampshire
rCSMG	revised Common Standards Monitoring
SAC	Special Area of Conservation
SD	Southern damselfly
SGO	Strategic Growth Option
SPA	Special Protection Area
SRMP	Solent Recreation Mitigation Partnership
SRP	Soluble Reactive Phosphorous
ST	Sensitivity Test
TAL	Technically Achievable Limit
WWTW	Waste Water Treatment Works
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRZ	Water Resource Zone
WeBS	Wetland Bird Survey

0 Executive Summary

0.1 Introduction

0.1.1 Eastleigh Borough Council is preparing a Local Plan to guide strategic and site-specific development across the borough for the period 2016 – 2036. As an integral part of this process, the Council has undertaken a Habitats Regulations Assessment.

0.1.2 Habitats Regulations Assessment (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 To date the HRA for the Eastleigh Borough Local Plan (EBLP) has been comprised of the following documents:

- AECOM (November 2015): *Issues and Options Eastleigh Borough Local Plan – Habitats Regulations Assessment Screening Report;*
- AECOM (May 2016): *Air Quality Analysis to Support Habitats Regulations Assessment – Eastleigh Borough Local Plan 2011-2036;*
- Urban Edge Environmental Consulting (UEEC; June 2018): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: HRA Report for the Proposed Submission Plan (June 2018);*
- UEEC (October 2018): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: Revised HRA Report following representations on the Proposed Submission Plan (October 2018);* and
- UEEC (June 2019): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: HRA Report for the Submission Plan (June 2019).*

0.1.4 The current HRA Report presents an assessment of whether the EBLP, with Main Modifications agreed with the Inspector following Examination in Public, is likely to have a significant effect on or adversely affect the integrity of European sites within the scope of assessment, either alone or in combination with other plans and projects.

0.1.5 The HRA incorporates evidence on likely impact pathways and conducts an Appropriate Assessment in view of European site conservation objectives. Where adverse effects are identified, either alone or in combination with other plans and projects, the report defines a mitigation strategy capable of preventing adverse effects on ecological integrity. 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 European sites considered within the scope of this assessment include:

- Emer Bog Special Area of Conservation (SAC)
- Mottisfont Bats SAC
- New Forest SAC
- River Itchen SAC
- Solent Maritime SAC
- New Forest Special Protection Area (SPA)
- Solent & Southampton Water SPA
- Solent & Dorset Coast potential SPA
- New Forest Ramsar site
- Solent & Southampton Water Ramsar

0.2.2 Acknowledging that the EBLP is not directly connected with or necessary to the management of any of these sites for nature conservation, the HRA screening report (AECOM, 2015) considered that Emer Bog SAC and Mottisfont Bats SAC could be screened-out of the assessment process. This was on the basis of their reasons for designation and distance from Eastleigh borough, reasons which remain valid for the current HRA. Chapters 3 and 4 present information about the remaining sites, including their qualifying features and conservation objectives.

0.3 Impact Pathways

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

- Atmospheric pollution;
- Coastal squeeze;
- Disturbance;
- Hydrological impacts (flow & quality) on the River Itchen SAC and Solent Maritime SAC, including their headwaters.
- Impacts on land outside European site boundaries (including non-designated terrestrial sites used by waders and dark-bellied Brent goose *Branta bernicla bernicla*, and otter *Lutra lutra* foraging and dispersal routes);
- Noise and vibration;
- Non-native species;
- Water abstraction; and
- Water pollution.

0.3.2 Chapter 6 describes the available evidence about these impact pathways in relation to the European sites.

0.4 Summary of Findings

0.4.1 In summary, the assessment of the EBLP finds that:

- No likely significant effects were identified in relation to Emer Bog SAC, Mottisfont Bats SAC, New Forest SAC/Ramsar or Solent and Dorset Coast SPA, either alone or in combination with other plans and projects.
- Significant effects through coastal squeeze are not likely for Solent Maritime SAC or Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects.
- Significant effects through atmospheric pollution are not likely for Solent Maritime SAC or Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects.
- Significant effects through impacts to land outside the boundary of Solent and Southampton Water SPA/Ramsar (non-designated terrestrial wader and Brent goose sites) are not likely, either alone or in combination with other plans and projects.
- Significant effects resulting from recreation are not likely for River Itchen SAC, either alone or in combination with other plans and projects.
- There will be no adverse effect on the integrity of River Itchen SAC as a result of atmospheric pollution, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of River Itchen SAC as a result of noise and vibration, hydrological impacts, impacts to land outside the SAC boundary (otter dispersal corridors), non-native species, water abstraction or water pollution, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of Solent Maritime SAC as a result of non-native species, site-specific hydrological impacts or water pollution, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of New Forest SPA as a result of disturbance, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of Solent and Southampton Water SPA/Ramsar as a result of disturbance, noise and vibration or water pollution, either alone or in combination with other plans and projects.

0.4.2 Full details can be found in Chapters 7 and 9, while the mitigation strategy is presented in Chapter 8.

0.5 Conclusion

0.5.1 The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations with regards to: Emer Bog SAC, Mottisfont Bats SAC, New Forest SAC/SPA/Ramsar; River Itchen SAC; Solent Maritime SAC; Solent & Dorset Coast SPA; and Solent & Southampton Water SPA/Ramsar.

1 Introduction

1.1 Purpose of this Report

1.1.1 This report has been prepared for Eastleigh Borough Council as part of the Habitats Regulations Assessment (HRA) for the Eastleigh Borough Local Plan 2016-2036 (EBLP). The report accompanies the Proposed Main Modifications to the Local Plan following the Examination in Public, and forms part of the evidence upon which it is based.

1.2 The Eastleigh Borough Local Plan

1.2.1 The Eastleigh Borough Local Plan 2016-2036 will set the planning strategy for the borough and address housing and employment needs for a period of 20 years up to 2036. The plan sets out proposed strategic and development management policies, development allocations and actions to meet the environmental, social and economic challenges facing the borough. When adopted the Local Plan 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 successful implementation of the plan.

1.2.2 The spatial development strategy proposed by the EBLP includes provision for approximately 14,580 new dwellings over the plan period across a range of strategic sites and smaller greenfield allocations, together with 103,500m^2 of new employment floorspace. Employment development will be focused on existing urban areas, Eastleigh Riverside and other allocations. The version of the EBLP submitted for Examination included a Strategic Growth Option (SGO) to the north of Bishopstoke and Fair Oak. However, as a result of the independent Planning Inspector's recommendations the main modifications delete the SGO from the Local Plan, and the Council will review the options for longer term strategic growth in the Borough in a review of the Local Plan.

1.2.3 Figure 1.1 shows the proposed Key Diagram for the EBLP.

1.3 Habitats Regulations Assessment

1.3.1 Habitats Regulations Assessment 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'). Now that the UK has 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 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; MHCLG, 2019a) 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 To date the HRA for the EBLP has been comprised of the following documents:

- AECOM (November 2015): *Issues and Options Eastleigh Borough Local Plan – Habitats Regulations Assessment Screening Report;*
- AECOM (May 2016): *Air Quality Analysis to Support Habitats Regulations Assessment – Eastleigh Borough Local Plan 2011-2036;*
- Urban Edge Environmental Consulting (UEEC; June 2018): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: HRA Report for the Proposed Submission Plan (June 2018);*
- UEEC (October 2018): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: Revised HRA Report following representations on the Proposed Submission Plan (October 2018);* and
- UEEC (June 2019): *Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036: HRA Report for the Submission Plan (June 2019).*

1.3.4 The October 2018 HRA Report presented certain revisions to the June 2018 HRA in response to representations made on the Proposed Submission Plan. The June 2019 HRA Report responded to case law decisions issued by the Court of Justice of the European Union (CJEU) in late 2018 and changes in Natural England's position in relation to nutrient neutral development. Appendix VI presents an analysis of implications for the HRA resulting from the CJEU *Holohan* judgment[3].

1.3.5 The current HRA Report presents an assessment of whether the EBLP, with Main Modifications agreed with the Inspector following Examination in Public, is likely to have a significant effect on or adversely affect the integrity of European sites within the scope of assessment, either alone or in combination with other plans and projects.

[1] Defra (2021): *Changes to the Habitats Regulations Assessment 2017.* Accessed online [09/04/2021] 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.

[3] Case C-461/17 Court of Justice of the European Union (2018): *Holohan v An Bord Pleanala.*

1.4 Scope and Structure of this Document

1.4.1 The remainder of this document is structured around the following sections:

- Chapter Two: HRA methodology;
- Chapter Three: European sites, qualifying features, conservation objectives, condition status;
- Chapter Four: European site characterisation;
- Chapter Five: Information about the Eastleigh Borough Local Plan at the Proposed Main Modifications stage, including incorporated mitigation measures;
- Chapter Six: Evidence relating to the pathways of impacts to European sites;
- Chapter Seven: Impact assessment against the sites' conservation objectives;
- Chapter Eight: Mitigation strategy;
- Chapter Nine: Determining adverse effects on European site integrity; and
- Chapter Ten: Summary and conclusions.

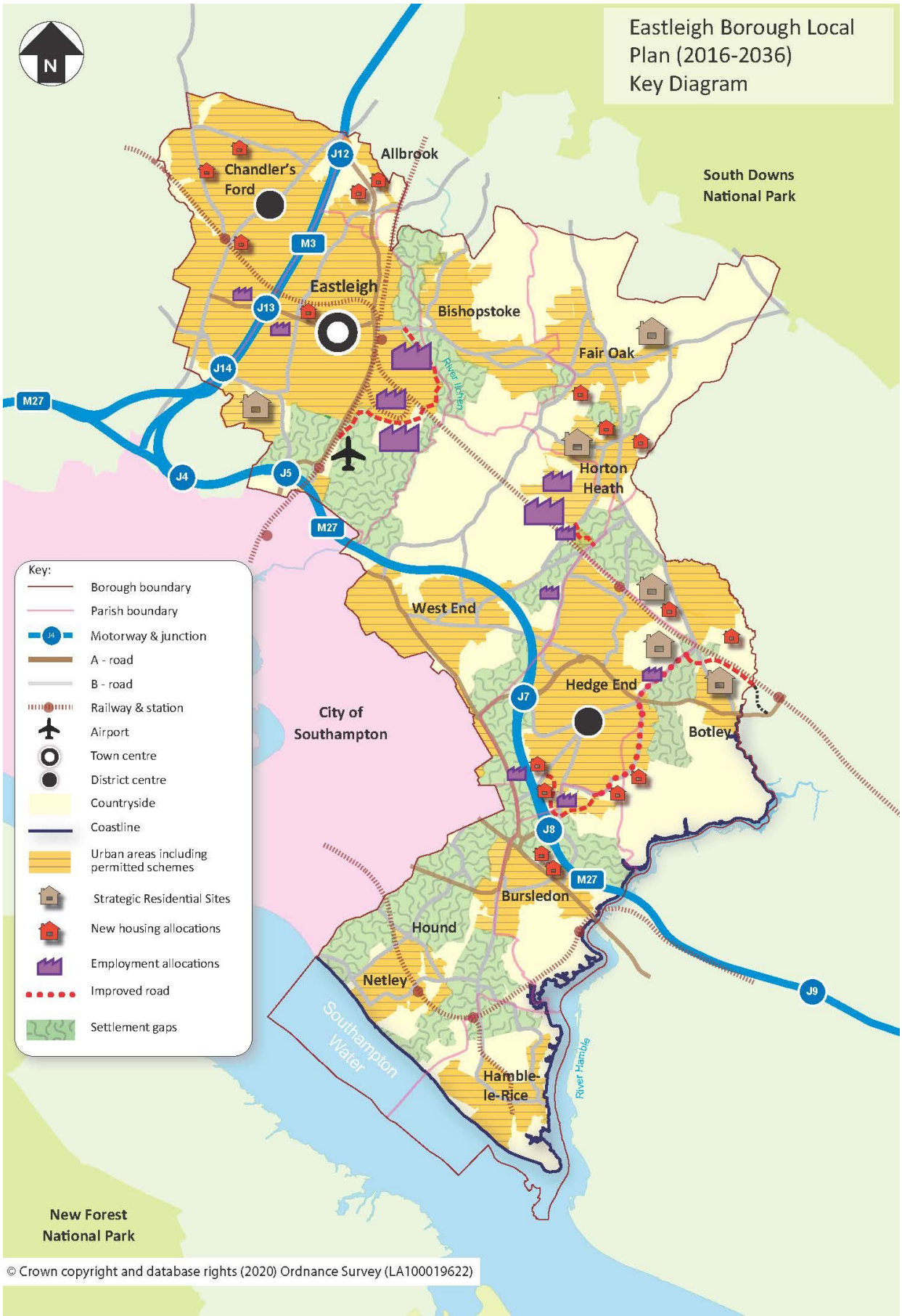


Figure 1.1: Local Plan Key Diagram

2 Methodology

2.1 Good Practice Guidance

2.1.1 Broad guidance on HRA has been published by MHCLG[4] and DEFRA[5] with more detailed guidance issued by the European Commission (2018). *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 Screening Assessment and Appropriate Assessment for the Proposed Main Modifications EBLP have been undertaken with reference to the *HRA Handbook* and other guidance documents, updating the findings of earlier stages of HRA for the EBLP[6].

2.1.2 The HRA process is formed of four stages as listed in Table 2.1.

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):

[4] Ministry of Housing, Communities and Local Government (MHCLG; 2019b): *Planning Practice Guidance: Appropriate Assessment – Guidance on the use of Habitats Regulations Assessment*. Published 22 July 2019, and accessed online [14/04/2021] at: https://www.gov.uk/guidance/appropriate-assessment

[5] Department for Environment, Food and Rural Affairs (DEFRA; 2021): *Habitats Regulations Assessments: protecting a European site*. Published 24 February 2021, and accessed online [14/04/2021] at: https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

[6] 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.

"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.

"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 detail is to be provided within the Environment Bill. The precautionary principle therefore continues to be applicable to the HRA process.

2.2 Screening for Likely Significant Effects

2.2.1 *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/proposal 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 policy/proposal intended to avoid or reduce harmful effects on a European site

2.2.2 All policies and potential development allocations being proposed for inclusion in the Local Plan were screened for likely significant effects (LSE) on European sites. Chapters 3 and 4 define which European sites are considered during the assessment, together with their qualifying features, conservation objectives and baseline information about the sites. The ways in which each site might be significantly affected by the EBLP (impact pathways) are described in Chapter 6. The 2015 screening assessment for the EBLP (AECOM, 2015) considered whether the plan could result in the following likely significant effects:

- Atmospheric pollution;
- Coastal squeeze;
- Disturbance;
- Impacts on land outside European site boundaries (including functionally connected land, and otter foraging and dispersal routes);
- Noise and vibration;
- Non-native species;
- Water abstraction; and
- Water pollution.

2.2.3 The screening assessment was revised and updated to provide an overall screening of the EBLP 2016-2036 at the Submission stage; see Appendix I. The following additional likely significant effects were identified for consideration:

- Hydrological impacts on the River Itchen SAC and Solent Maritime SAC, including their headwaters.

2.2.4 The screening assessment has been further revised and updated at the current stage to provide an overall screening of the EBLP 2016-2036 at the Proposed Main Modifications stage.

2.2.5 The screening assessment assumes that proposed allocations individually contribute to strategically operating impacts (e.g. atmospheric pollution, disturbance, water abstraction and water pollution); as such Appendix I does not list strategically operating impacts as an LSE for proposed allocations, focusing instead on site specific impacts.

2.3 The Appropriate Assessment Stage

2.3.1 The purpose of the Appropriate Assessment is to further analyse likely significant effects identified during the screening stage, as well as any effects which were uncertain or not well understood and taken forward for assessment in accordance with the precautionary principle. The Appropriate Assessment evaluates 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. The Appropriate Assessment stage includes a test of whether the plan proposals will result in adverse effects on site integrity (Chapter 9) which can be defined as:

> *"The integrity of a site is the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."* (ODPM, 2005)

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 describe 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, 2019b), professional standards (BS42020:2013) and the National Planning Policy Framework (para. 118; MHCLG, 2019a).

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 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[7], 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. In its Note 05/2018, the Planning Inspectorate[8] has interpreted the *People Over Wind* judgment as applying to all mitigation measures, whether or not they are incorporated into the plan or project, and this HRA proceeds on that basis. However, as the PINS Note indicates, consideration is needed on a case by case basis as to whether a factor has been introduced to avoid or reduce harm (i.e. a mitigation measure) or whether it is in fact simply an integral part of the plan or project (not mitigation).

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

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

[8] Planning Inspectorate (2018): *PINS Note 05/2018: Consideration of avoidance and reduction measures in Habitats Regulations Assessment: People over Wind, Peter Sweetman v Coillte Teoranta*. 9 May 2018.

of the EBLP, possibly leading an insignificant effect to become 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. The plans and projects listed below were identified for consideration during in combination assessment:

- Extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP;
- Strategic development at North of Whiteley, Winchester district
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Welborne Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- South Downs Local Plan (adopted July 2019)
- Test Valley Borough Revised Local Plan 2011 – 2029 (adopted 2016)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- Partnership for South Hampshire (PfSH) Spatial Position Statement 2016-2034
- North Solent Shoreline Management Plan (2010) and related coastal strategies
- Hampshire Local Transport Plan (2011-2031)
- Joint Hampshire Minerals and Waste Plan (adopted 2013) (includes Portsmouth, Southampton, New Forest National Park and South Downs National Park)

2.5.2 In combination effects are considered in Chapter 6.

3 European Sites, Qualifying Features and Conservation Objectives

3.1 European Sites within the Scope of the Assessment

3.1.1 The HRA screening exercise (AECOM, 2015) for the EBLP identified the following European sites for consideration:

- Emer Bog SAC
- Mottisfont Bats SAC
- New Forest SAC
- River Itchen SAC
- Solent Maritime SAC
- New Forest SPA
- Solent & Southampton Water SPA
- New Forest Ramsar
- Solent & Southampton Water Ramsar

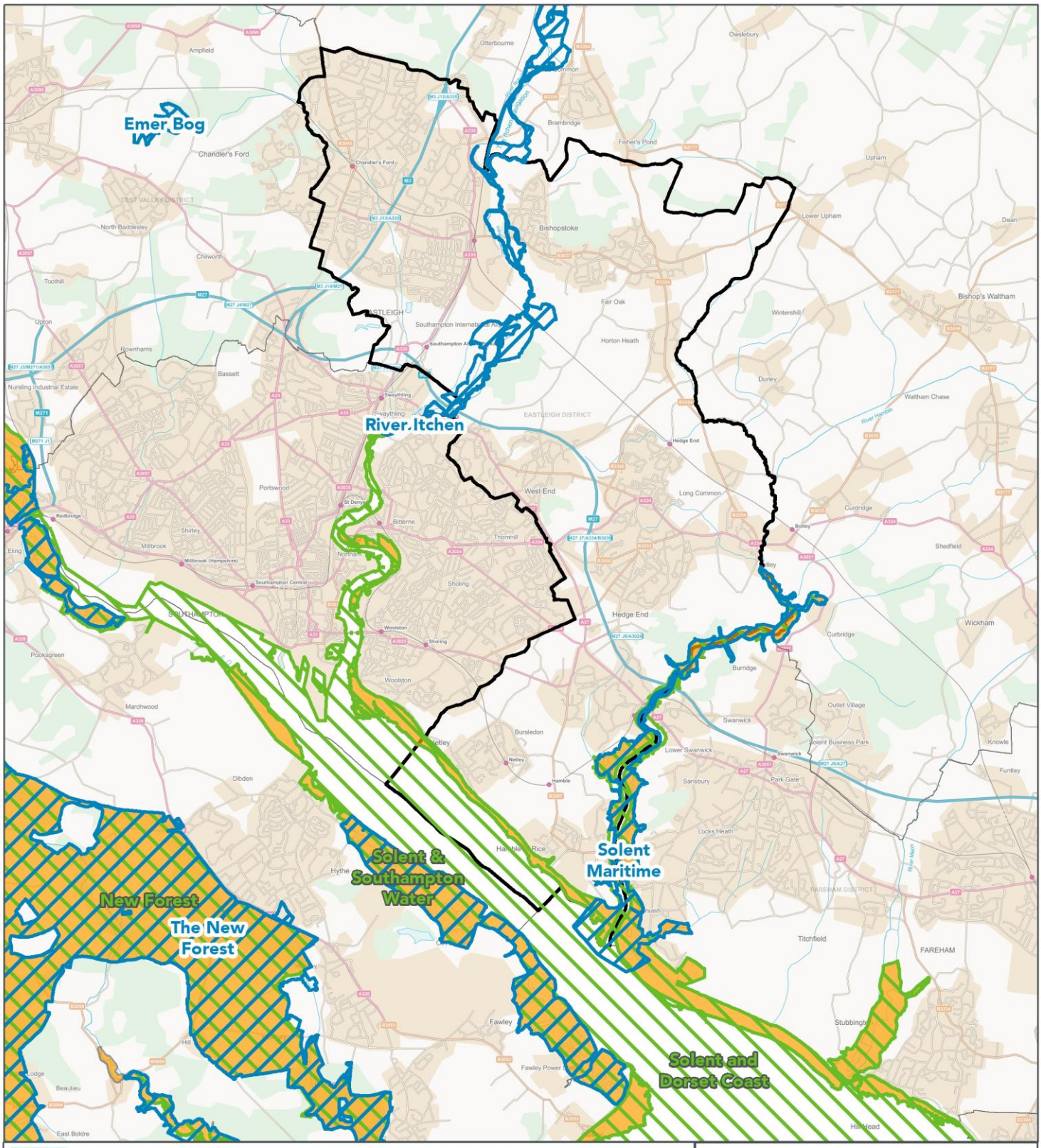
3.1.2 Acknowledging that the EBLP is not directly connected with or necessary to the management of any of these sites for nature conservation, the HRA screening report (AECOM, 2015) considered that Emer Bog SAC and Mottisfont Bats SAC could be screened-out of the assessment process. This was on the basis of their reasons for designation and distance from Eastleigh borough, reasons which remain valid for the current HRA. However, a new Solent and Dorset Coast SPA (SPA) has recently been classified[9] and now requires specific consideration in the assessment.

3.1.3 In summary, therefore, the current HRA report considers the EBLP in relation to the following European sites only; see Figure 3.1:

- New Forest SAC/SPA/Ramsar;
- River Itchen SAC;
- Solent Maritime SAC;
- Solent & Dorset Coast SPA; and
- Solent & Southampton Water SPA/Ramsar.

3.1.4 These European sites have been designated to conserve a wide variety of habitats of European importance, along with species populations of high conservation significance. Table 3.1 summarises the qualifying features of each site for ease of reference.

[9] Natural England: Consultation Outcome: Solent & Dorset Coast pSPA. Accessed online [14/04/2021] at: https://www.gov.uk/government/consultations/solent-and-dorset-coast-potential-special-protection-area-comment-on-proposals



Special Areas of Conservation

Special Protection Areas

Ramsar Sites

Borough

0 2 4 Kilometers

N

ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
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Eastleigh Local Plan HRA

Table 3.1: European site qualifying features

New Forest SAC	New Forest SPA	New Forest Ramsar	River Itchen SAC
Annex I Habitat - Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) - Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea* - Northern Atlantic wet heaths with *Erica tetralix* - European dry heaths - *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) - Depressions on peat substrates of the *Rhynchosporion* - Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*) - *Asperulo-Fagetum* beech forests - Old acidophilous oak woods with *Quercus robur* on sandy plains - Bog woodland ***** - Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) ***** - Transition mires and quaking bogs	Breeding - Honey Buzzard *Pernis apivorus* - Hobby *Falco subbuteo* - Nightjar *Caprimulgus europaeus* - Woodlark *Lullula arborea* - Dartford Warbler *Sylvia undata* - Wood warbler *Phylloscopus sibilatrix* Non-breeding - Hen Harrier *Circus cyaneus* **New Forest SAC (contd…)** Annex I Habitat (contd…) - Alkaline fens Annex II Species - Southern damselfly *Coenagrion mercuriale* - Stag beetle *Lucanus cervus* - Great crested newt *Triturus cristatus*	Criterion 1 Valley mires and wet heaths are found throughout the site and are of outstanding scientific interest. The mires and heaths are within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. This is the largest concentration of intact valley mires of their type in Britain Criterion 2 Diverse assemblage of wetland plants and animals including several nationally rare species. Seven species of nationally rare plant are found on the site, as are at least 65 British Red Data Book species of invertebrate Criterion 3 The mire habitats are of high ecological quality and diversity and have 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	Annex I Habitat - Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation Annex II Species - White-clawed (or Atlantic stream) Crayfish *Austropotamobius pallipes* - Southern damselfly *Coenagrion mercuriale* - Bullhead *Cottus gobio* - Brook Lamprey *Lampetra planeri* - Otter *Lutra lutra* - Atlantic Salmon *Salmo salar.*

Solent Maritime SAC	Solent and Dorset Coast SPA	Solent & Southampton Water SPA	Solent & Soton Water Ramsar
Annex I Habitat - Estuaries - *Spartina* swards (*Spartinion maritimae*) - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) - Sandbanks - slightly covered by sea water all the time - Mudflats and sandflats not submerged at low tide - Annual vegetation drift lines - Perennial vegetation of stony banks - *Salicornia* and other annuals colonising mud and sand - Shifting white dunes with *Ammophila arenaria* - Coastal lagoons***** Annex II Species - Desmoulin's whorl snail *Vertigo moulinsiana*	Breeding - Sandwich tern *Sterna sandvicensis* - Common tern *Sterna Hirundo* - Little tern *Sterna albifrons*	Breeding - Mediterranean Gull *Larus melanocephalus* - Little Tern *Sterna albifrons* - Sandwich Tern *Sterna sandvicensis* - Common Tern *Sterna hirundo* - Roseate Tern *Sterna dougallii* Overwintering - Black-tailed Godwit *Limosa limosa islandica* - Dark-bellied Brent Goose *Branta bernicla bernicla* - Ringed Plover *Charadrius hiaticula* - Teal *Anas crecca* Bird Assemblage - Over winter the area regularly supports 51,361 individual waterfowl (5 year peak mean 1998)	Criterion 1 - Several outstanding wetland habitat types, including unusual double tidal flow, a major sheltered channel, saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs Criterion 2 - Nationally rare species assemblage Criterion 5 - Winter assemblage of 51,343 waterfowl (5 year peak mean 02/03) Criterion 6 Breeding - Sandwich Tern *Sterna sandvicensis* - Common Tern *Sterna hiruno* - Little Tern *Sterna albifrons* - Roseate Tern *Sterna dougallii* Overwintering - Black-tailed Godwit *Limosa limosa islandica* - Dark-bellied Brent Goose *Branta bernicla bernicla* - Teal *Anas crecca* On passage - Ringed Plover *Charadrius hiaticula*

* Denotes priority feature

3.2 Special Areas of Conservation

3.2.1 Special Areas of Conservation 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 sites. 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.

New Forest SAC

3.2.2 The New Forest SAC is a complex habitat mosaic over 29,214ha which encompasses a wide range of Annex I habitats which are qualifying features for its selection as an SAC. These are:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*
- Northern Atlantic wet heaths with *Erica tetralix*
- European dry heaths
- *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
- Depressions on peat substrates of the *Rhynchosporion*
- Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)
- *Asperulo-Fagetum* beech forests
- Old acidophilous oak woods with *Quercus robur* on sandy plains
- Bog woodland (Priority habitat)
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae)* (Priority habitat)

3.2.3 The SAC also supports Annex I habitats Transition mires and quaking bogs and Alkaline fens, and a number of species of conservation importance; those listed as qualifying Annex II species are the southern damselfly *Coenagrion mercuriale*, stag beetle *Lucanus cervus* and great crested newt *Triturus cristatus*.

River Itchen SAC

3.2.4 The River Itchen SAC covers an area of 304ha. The Itchen is a classic example of a sub-type 1 chalk river, which is dominated throughout by aquatic *Ranunculus spp.* The Itchen also supports a number of Annex II species, of which southern damselfly and bullhead are among the primary reasons for the selection of this site as an SAC. The Annex I habitat and Annex II species comprise:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation
- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Southern damselfly *Coenagrion mercuriale*
- Bullhead *Cottus gobio*
- Brook lamprey *Lampetra planeri*
- Otter *Lutra lutra*
- Atlantic salmon *Salmo salar.*

Solent Maritime SAC

3.2.5 The Solent Maritime SAC covers an area of 11,243ha on both sides of the Solent and was selected for a total of three Annex 1 habitat types. A further seven habitat types were subsequently identified as being present as qualifying features:

- Estuaries
- *Spartina* swards
- Atlantic salt meadows
- Sandbanks which are slightly covered by water at all times
- Mudflats and sandbanks not covered by water at all times
- Coastal lagoons (Priority feature)
- Annual vegetation of drift lines
- Perennial vegetation of stony banks
- *Salicornia* and other annuals colonising mud and sand
- Shifting dunes along the shoreline with *Ammophila arenaria*

3.2.6 The site also supports Desmoulin's whorl snail *Vertigo moulinsiana* which is an Annex II species listed as a qualifying feature of the SAC.

3.3 Special Protection Areas

3.3.1 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 classify 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.

New Forest SPA

3.3.2 The New Forest SPA covers an area of 27,969ha located in southern Hampshire, west of the Solent. It comprises a complex mosaic of habitats overlying mainly nutrient-poor soils over plateau gravels. The major components are the extensive wet and dry heaths with their rich valley mires and associated wet and dry grasslands, the ancient pasture woodlands and inclosure woodlands, the network of clean rivers and streams, and frequent permanent and temporary ponds.

3.3.3 The New Forest SPA qualifies under Article 4.1 of the Birds Directive by supporting breeding populations of European importance of the following species listed on Annex I of the Directive:

- Nightjar *Caprimulgus europaeus*, 300 pairs representing at least 8.8% of the breeding population in Great Britain (count as at 1991)
- Woodlark *Lullula arborea*, 177 pairs representing at least 29.5% of the breeding population in Great Britain (no count period specified)
- Honey buzzard *Pernis apivorus*, 2 pairs representing at least 12.5% of the breeding population in Great Britain (no count period specified)
- Dartford warbler *Sylvia undata*, 538 pairs representing at least 33.6% of the breeding population in Great Britain (no count period specified)

3.3.4 It also qualifies under Article 4.1 by supporting the following overwintering Annex 1 species:

- Hen harrier *Circus cyaneus*, 15 individuals representing at least 2.0% of the wintering population in Great Britain (no count period specified)

3.3.5 The site qualifies under Article 4.2 of the Birds Directive by supporting breeding populations of European importance of the following regularly occurring migratory species:

- Hobby *Falco subbuteo*, 25 pairs representing at least 5.0% of the population in Great Britain (no count period specified)
- Wood warbler *Phylloscopus sibilatrix*, unspecified pairs representing at least 2.0% of the population in Great Britain (no count period specified)

Solent and Dorset Coast SPA

3.3.6 In early 2016 Natural England proposed a new marine designation for three species of bird; common, Sandwich and little tern *Sterna hirundo, S. albifrons* and *S. sandvicensis*. The site is located on the south coast within the English Channel and is approximately 255.2nm^2 in size, 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 proposed site was intended to protect important foraging areas at sea used by breeding colonies in nearby SPA. In January 2020 the site was subsequently classified under Article 4.1 of the Birds Directive by supporting breeding populations of European importance of the following species listed on Annex 1 of the Directive:

- Sandwich tern *Sterna sandvicensis*, 4.01% of GB population (441 pairs) (2008-14)
- Common tern *Sterna hirundo*, 4.77% of GB population (492 pairs) (2009-14)
- Little tern *Sterna albifrons*, 3.31% of GB population (63 pairs) (2009-14)

Solent and Southampton Water SPA

3.3.7 The Solent and Southampton Water SPA extends over 5,401ha 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.

3.3.8 In summer, the SPA is of importance for breeding seabirds, including gulls and four species of tern. In winter, the SPA holds a large and diverse assemblage of waterbirds, including geese, ducks and waders. Dark-bellied Brent goose *Branta bernicla bernicla* also feed in surrounding areas of agricultural land outside the designated site boundaries.

3.3.9 The Solent and Southampton Water Special Protection Area (SPA) qualifies under Article 4.1 of the Birds Directive by supporting breeding populations of European importance of the following species listed on Annex 1 of the Directive:

- Mediterranean gull *Larus melanocephalus* 2 pairs representing at least 15.4% of the breeding population in Great Britain (5 year peak mean, 1994-1998)
- Little tern *Sterna albifrons*, 49 pairs representing at least 2.0% of the breeding population in Great Britain (5 year peak mean, 1993-1997)
- Roseate tern *Sterna dougalli* 2 pairs representing at least 3.1% of the breeding population in Great Britain (5 year peak mean, 1993-1997)
- Common tern *Sterna hirundo*, 267 pairs representing at least 2.2% of the breeding population in Great Britain (5 year peak mean, 1993-1997)
- Sandwich tern *Sterna sandvicensis*, 231 pairs representing at least 1.7% of the breeding population in Great Britain (5 year peak mean, 1993-1997)

3.3.10 The site qualifies under Article 4.2 of the Birds Directive by supporting overwintering populations of European importance of the following regularly occurring migratory species:

- Teal *Anas crecca* 4,400 individuals representing at least 1.1% of the wintering North-western Europe population (5 year peak mean, 1992/3-1996/7)

- Dark-bellied Brent goose *Branta bernicla bernicla* 7,506 individuals representing at least 2.5% of the wintering Western Siberia/Western Europe population (5 year peak mean, 1992/3-1996/7)
- Ringed plover *Charadrius hiaticula* 552 individuals representing at least 1.2% of the wintering Europe/Northern Africa-wintering population (5 year peak mean, 1992/3-1996/7)
- Black-tailed godwit *Limosa limosa islandica* 1,125 individuals representing at least 1.7% of the wintering Icelandic-breeding population (5 year peak mean, 1992/3-1996/7)

3.3.11 The SPA also qualifies under Article 4.2 of the Birds Directive due to supporting an internationally important assemblage of birds. Over winter the area regularly supports: 51,361 waterfowl (5 year peak mean 1991/92-1995/96) which include: dark-bellied Brent goose *Branta bernicla bernicla*, teal *Anas crecca*, ringed plover *Charadrius hiaticula*, black-tailed godwit *Limosa limosa islandica*.

3.4 Ramsar Sites

3.4.1 Ramsar sites are wetlands of international importance designated under the Ramsar Convention (UNESCO, 1971). In the UK, the first Ramsar sites were notified in 1976 and since then many more have been designated. The initial emphasis was on selecting sites of importance to waterbirds, and consequently many Ramsar sites are also Special Protection Areas.

New Forest Ramsar

3.4.2 The New Forest Ramsar site qualifies under the following Ramsar Convention criteria:

- Criterion 1: Valley mires and wet heaths are found throughout the site and are of outstanding scientific interest. The mires and heaths are within catchments whose uncultivated and undeveloped state buffer the mires against adverse ecological change. This is the largest concentration of intact valley mires of their type in Britain.
- Criterion 2: The site supports a diverse assemblage of wetland plants and animals including several nationally rare species. Seven species of nationally rare plant are found on the site, as are at least 65 British Red Data Book species of invertebrate.
- Criterion 3: The mire habitats are of high ecological quality and diversity and have 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.

Solent and Southampton Water Ramsar

3.4.3 The Solent and Southampton Water Ramsar site qualifies under the following Ramsar Convention criteria:

- Criterion 1: The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow

and has long periods of slack water at high and low tide. It includes 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: The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site.
- Criterion 5: The site supports an internationally important assemblage of species; 51,343 waterfowl over winter (5 year peak mean 1998/99-2002/2003).
- Criterion 6: The site supports species or populations occurring at international levels of importance comprising the following species.

Breeding

- *Roseate tern Sterna dougallii* 1 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census)
- Little tern *Sterna albifrons* 22 apparently occupied nests, representing an average of 1.1% of the GB population (Seabird 2000 Census)
- Sandwich tern *Sterna sandivicensis* 268 apparently occupied nests, representing an average of 2.5% of the GB population (Seabird 2000 Census)
- Common tern *Sterna Hirundo* 192 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census)
- Mediterranean gull *Larus melanocephalus, 11 apparently occupied nests, representing an average of 10.1% of the GB population (Seabird 2000 Census)*
- Black-headed gull *Larus ridibundus, 6,911 apparently occupied nests, representing an average of 5.4% of the GB population (Seabird 2000 Census)*

On passage

- Ringed plover *Charadrius hiaticula* 397 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)

Overwintering

- Dark-bellied Brent goose *Branta bernicla bernicla* 6,456 individuals, representing an average of 3% of the population (5 year peak mean 1998/9-2002/3)
- Teal *Anas crecca* 5,514 individuals, representing an average of 1.3% of the north western European population (5 year peak mean 1998/9-2002/3)
- Black-tailed godwit *Limosa limosa islandica* 1,240 individuals, representing an average of 3.5% of the population (5 year peak mean 1998/9-2002/3)

3.5 Conservation Objectives for SAC and SPA

3.5.1 The Habitats Regulations require the maintenance 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. The conservation objectives defined by Natural England for the SACs and SPAs included within the scope of this HRA are given in Table 3.2.

3.5.2 Natural England has published or updated its *Supplementary advice on conserving and restoring site features* for each site[10]. Supplementary advice is not yet available for the Solent and Dorset Coast SPA.

Table 3.2: Conservation objectives for SAC and SPA

Conservation objectives for SAC (and New Forest Ramsar)
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: *[To the extent applicable to qualifying natural habitats or qualifying species:]* ▪ 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 population of qualifying species; and ▪ The distribution of qualifying species within the site.

[10] Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: The New Forest Special Area of Conservation*. 18 March 2019.
Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: New Forest Special Protection Area*. 19 March 2019.
Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: River Itchen Special Area of Conservation*. 19 March 2019.
Natural England (2018): *Conservation Advice for Marine Protected Areas: Solent Maritime SAC: Supplementary Advice on Conservation Objectives*. 16 March 2018.
Natural England (2019): *Conservation Advice for Marine Protected Areas: Solent and Southampton Water SPA: Supplementary Advice on Conservation Objectives*. 15 March 2019.

Conservation objectives for SPA (and Solent and Southampton Water Ramsar)

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.

3.6 Conservation Objectives for Ramsar Sites

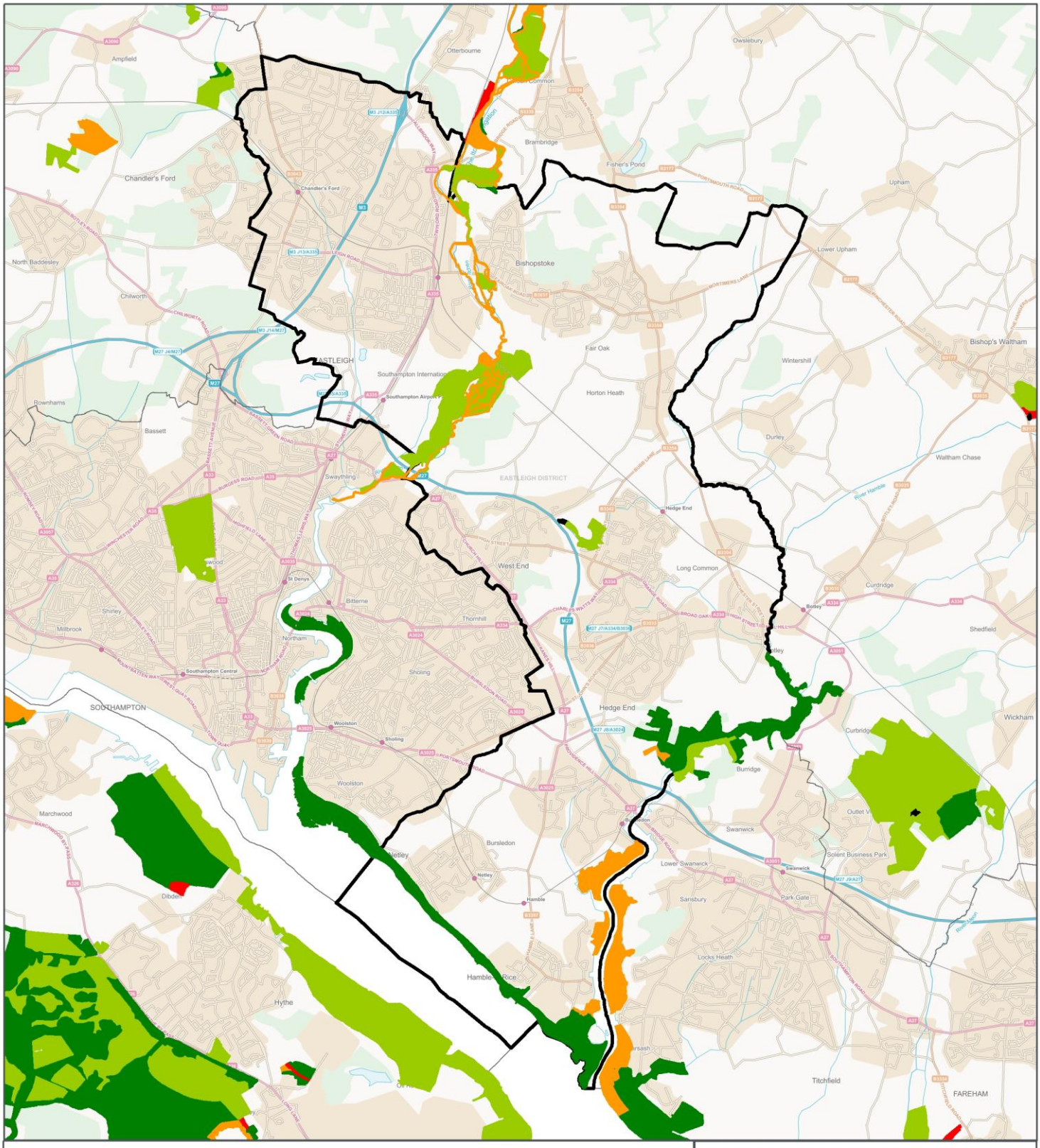
3.6.1 Ramsar sites do not have agreed conservation objectives, but in most instances overlap with SPA site boundaries. However, it should be noted that Ramsar qualifying features can include a range of habitats and non-bird species common to SAC designations, as well as bird species and assemblages and their supporting habitats, which are common to SPAs.

3.6.2 Of the Ramsar sites 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 SPA can be used in the assessment.

3.6.3 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.

3.7 Condition Status

3.7.1 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 (October 2020) of SSSIs forming part of the European sites within the scope of this assessment are illustrated on Figure 3.2.



SSSI Units Condition

- FAVOURABLE
- UNFAVOURABLE RECOVERING
- UNFAVOURABLE NO CHANGE
- UNFAVOURABLE DECLINING
- DESTROYED
- Borough

0 1.5 3 Kilometers

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Eastleigh Local Plan HRA

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4 European Site Characterisation

4.1 SPA Bird Populations and Ecology

4.1.1 The following summaries have been adapted from the UK SPA Reviews, published by the Joint Nature Conservancy Committee (Stroud *et al.*, 2001; Stroud *et al.*, 2016), together with a review of other available literature on the behaviour and ecology of these species[11]. Where available species accounts have been supplemented by core count data presented in the Wetlands Bird Survey (WeBS) report for 2019/20 (Frost *et al.* 2021) and earlier years. The data were obtained from Southampton Water. This area does not exactly correspond with the boundaries of the SPA, but provides an insight to species population trends throughout the area.

Dark-bellied Brent Goose

4.1.2 Brent Geese have a circumpolar distribution breeding in the extreme high Arctic in all northern countries. The Dark-bellied Brent Goose *Branta bernicla 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.

4.1.3 The UK population of Dark-bellied Brent Geese is estimated at 103,300 individuals representing 31% of the biogeographic population (Kirby 1995), 94% of which 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.

4.1.4 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 (IUCN 2013).

4.1.5 Of the sites being assessed by the HRA, the following support internationally important populations:

- Solent and Southampton Water SPA: 7,506 individuals representing at least 2.5% of the wintering Western Siberia/Western Europe population (5year peak mean, 1992/3-1996/7).

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

- Solent and Southampton Water Ramsar: 6,456 individuals, representing an average of 3% of the population (5 year peak mean 1998/9-2002/3).

4.1.6 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 (IUCN 2013).

4.1.7 As shown in Table 4.1 Southampton Water is not consistently maintaining internationally important numbers of Dark-bellied Brent Geese (over 2,100 individuals). The average numbers recorded for Southampton Water in the 2011-2016 and 2016-2020 periods fell below the threshold for an internationally important population in some years, although they were still within the limits set for a nationally important population (980 individuals). It should be noted that this WeBS recording area does not include the Solent which forms a substantial part of the SPA.

Table 4.1: WeBS Core Count data for Dark-bellied Brent Goose

Survey Area	11/12	12/13	13/14	14/15	15/16	5yr avg
Southampton Water	2,496	1,257	2,395	3,355	1,893	2,279
Survey Area	**16/17**	**17/18**	**18/19**	**19/20**	**-**	**5yr avg**
Southampton Water	1,592	2,174	2,100	1,618	-	1,875

(X) Incomplete count X[10] WeBS low tide count

X[11] Roost count X[12] Supplementary daytime count

Black-tailed Godwit

4.1.8 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.

4.1.9 The UK population of Black-tailed Godwit is estimated at 7,410 individuals (Cayford & Waters 1996), representing 13% of the biogeographic population (Rose and Scott 1997), 100% of which 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 non-breeding population size, of more than 50%, over 25 years (or the longer-term).

4.1.10 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.

4.1.11 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Black-tailed Godwit *Limosa limosa islandica* 1,125 individuals representing at least 1.7% of the wintering Icelandic-breeding population (5 year peak mean, 1992/3-1996/7)
- Solent and Southampton Water Ramsar; Black-tailed Godwit *Limosa limosa islandica* 1,240 individuals, representing an average of 3.5% of the population (5 year peak mean 1998/9-2002/3)

4.1.12 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 (IUCN 2013).

4.1.13 As shown in Table 4.2 the average numbers recorded for Southampton Water fall below the threshold for an internationally important population, although they are still within the limits set for a nationally important population (over 390 individuals).

Table 4.2: WeBS Core Count data for Black-tailed Godwit

Survey Area	**11/12**	**12/13**	**13/14**	**14/15**	**15/16**	**5 yr avg**
Southampton Water	438	314	420	571	443	437
Survey Area	**16/17**	**17/18**	**18/19**	**19/20**	**-**	**5 yr avg**
Southampton Water	(416)	750	392	412	-	499

Ringed Plover

4.1.14 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.

4.1.15 The UK population of breeding Ringed Plover is estimated at 8,500 pairs (Lloyd *et al* 1991). During the winter the UK supports 28,600 individuals representing 14% of the biogeographic population (Rose and Scott 1997), 21% of which occur within SPA sites for which the species is a qualifying feature. A further 30,000 birds will pass through the UK during winter migrations. This represents 30% of the biogeographic population. The species is not considered a species of European conservation concern but is a UK Amber listed Bird of Conservation Concern because of an important non-breeding population and a decline in breeding population.

4.1.16 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.

4.1.17 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Ringed Plover *Charadrius hiaticula* 552 individuals representing at least 1.2% of the wintering Europe/Northern Africa - wintering population (5 year peak mean, 1992/3-1996/7)
- Solent and Southampton Water Ramsar; Ringed Plover *Charadrius hiaticula* 397 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)

4.1.18 As shown in Table 4.3 the average numbers recorded for Southampton Water fall below the thresholds for a nationally (420) or internationally (540) important population. Southampton Water did not meet table-qualifying levels for Ringed Plover in the WeBS counts for 2011 to 2015, as indicated by the absence of records.

Table 4.3: WeBS Core Count data for Ringed Plover

Survey Area	15/16	16/17	17/18	18/19	19/20	5 yr avg
Southampton Water	205	149	115	110	144	145

Common Tern

4.1.19 The Common Tern 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.

4.1.20 The breeding population of common terns in Great Britain is estimated to be 10,000 pairs (Musgrove et al. 2013), representing at least 2% of the Northern & Eastern European breeding population (500,000 pairs derived by division by 3 of the upper estimate of 1,500,000 individuals: AEWA 2012), 46% of which 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.

4.1.21 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.

4.1.22 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.

4.1.23 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent & Southampton Water SPA; Common tern *Sterna hirundo*, 267 pairs representing at least 2.2% of the breeding population in Great Britain (5yr peak mean, 1993-1997)
- Solent and Southampton Water Ramsar; Common tern *Sterna Hirundo* 192 apparently occupied nests, representing an average of 1.8% of the GB population (Seabird 2000 Census)

4.1.24 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 (IUCN 2013).

4.1.25 As shown in Table 4.4 Southampton Water is not currently maintaining internationally important numbers of Common Tern (over 1,800 individuals). It should be noted that at the current time the recording of terns during WeBS surveys is optional.

Table 4.4: WeBS Core Count data for Common Tern

Survey Area	2011	2012	2013	2014	2015	Mean
Southampton Water	480	112	(24)	(35)	3	198
Survey Area	**2016**	**2017**	**2018**	**2019**	**-**	**Mean**
Southampton Water	94	4	6	5	-	22

Little Tern

4.1.26 The Little Tern 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.

4.1.27 The UK population of Little Tern is estimated at 2,400 pairs (Lloyd *et al* 1991), representing 8% of the biogeographic population (Rose and Scott 1997), 67% of which 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 because it is a species of European Concern, with a localised breeding population which has suffered a decline in its range.

4.1.28 Breeding occurs at scattered colonies around much of the coast of Britain and Ireland, from the north of Scotland to the south coast of England. All British and Irish Little Terns nest on the coast, utilising sand and shingle beaches and spits, as well as tiny islets of sand or rock close inshore. The greater part of the population occurs in south and east England from Hampshire to Norfolk (Lloyd *et al*. 1991). There are small, scattered colonies on the coasts of north-east and north-west England, eastern Scotland, the Outer and Inner Hebrides, and in Wales. The Irish population is mainly found on the west and south-east coasts. 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).

4.1.29 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Little Tern *Sterna albifrons*, 49 pairs representing at least 2.0% of the breeding population in Great Britain (5 year peak mean, 1993-1997)
- Solent and Southampton Water Ramsar; Little Tern *Sterna albifrons* 22 apparently occupied nests, representing an average of 1.1% of the GB population (Seabird 2000 Census)

4.1.30 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) It is also highly vulnerable to human disturbance (including birdwatchers) at coastal and inland nesting sites which can lead to nest failures. Pesticide pollution and artificially induced water-level fluctuations in saltmarshes may also pose a threat to the species' reproductive success.

4.1.31 Little Tern was recorded in Southampton Water in just one of the last five years' available data (2015, 4 birds)

Roseate Tern

4.1.32 The global distribution of Roseate Tern 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.

4.1.33 The UK population of breeding Roseate Terns is estimated at 64 pairs (Stone *et al* 1997) which represents 3% of the biogeographic population (Rose and Scott 1997), 88% of which are found 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 an Amber listed Bird of Conservation Concern in the UK due to a recent decline in the breeding population.

4.1.34 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 sandeel (which are particularly important during chick rearing).

4.1.35 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Roseate Tern *Sterna dougalli* 2 pairs representing at least 3.1% of the breeding population in Great Britain (5 year peak mean, 1993-1997)
- Solent and Southampton Water Ramsar; *Roseate Tern Sterna dougallii* 1 apparently occupied nests, representing an average of 1.9% of the GB population (Seabird 2000 Census)

4.1.36 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 2013).

4.1.37 No Roseate Tern were recorded in Southampton Water during the last five years (2015-2019).

Mediterranean Gull

4.1.38 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.

4.1.39 The UK population of breeding Mediterranean Gull is estimated at 31 pairs (Ogilvie *et al* 1996) which represents 0.1% of the biogeographic population (Rose and Scott 1997), 74% of which 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.

4.1.40 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.

4.1.41 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Mediterranean Gull *Larus melanocephalus* 2 pairs representing at least 15.4% of the breeding population in Great Britain (5 year peak mean, 1994-1998)
- Solent and Southampton Water Ramsar; *Mediterranean Gull Larus melanocephalus, 11 apparently occupied nests, representing an average of 10.1% of the GB population (Seabird 2000 Census)*

4.1.42 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 2013).

4.1.43 As shown in Table 4.5 Southampton Water is not currently maintaining internationally important numbers of Mediterranean Gull (over 2,400 individuals), but exceeds the threshold set for sites of national importance (40 individuals).

Table 4.5: WeBS Core Count data for Mediterranean Gull

Survey Area	11/12	12/13	13/14	14/15	15/16	5 yr avg
Southampton Water	478	39	873	92	135	323
Survey Area	**16/17**	**17/18**	**18/19**	**19/20**	**-**	**5 yr avg**
Southampton Water	28	219	(68)	(5)	-	127

Teal

4.1.44 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.

4.1.45 The UK population of Teal is estimated at 135,000 (Kirby 1995) which represents 17% of the biogeographic population (Rose and Scott 1997), 47% of which are found within SPA sites for which this species is a qualifying feature. It is also estimated that 2,100 pairs of breeding birds are resident in the UK (BTO 2013). 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.

4.1.46 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.

4.1.47 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- Solent and Southampton Water SPA; Teal *Anas crecca* 4,400 individuals representing at least 1.1% of the wintering Northwestern Europe population (5 year peak mean, 1992/3-1996/7)
- Solent and Southampton Water Ramsar; Teal *Anas crecca* 5,514 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3)

4.1.48 This species is threatened by lowland habitat loss and degradation. It is also threatened by disturbance from human recreational activities and construction work (IUCN 2013).

4.1.49 As shown in Table 4.6 Southampton Water is not currently maintaining nationally (4,300 individuals) or internationally (5,000 individuals) important numbers of Teal.

Table 4.6: WeBS Core Count data for Teal

Survey Area	11/12	12/13	13/14	14/15	15/16	5 yr avg
Southampton Water	1,142	844	798	1,352	1,139	1,152
Survey Area	**16/17**	**17/18**	**18/19**	**19/20**	**-**	**5 yr avg**
Southampton Water	(1,333)	1,238	1,173	877	-	1,152

Nightjar

4.1.50 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.

4.1.51 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.

4.1.52 The UK breeding population of Nightjar is estimated by surveying the numbers of male birds heard 'churring' (calling) and is around 4,600 pairs (Conway *et al.*, 2007). This represents 2.3% of the biogeographic population. The SPA suite supports approximately 46% of the UK population (Stroud *et al.*, 2016). The species is considered depleted and of conservation concern in Europe, it is an Amber listed Bird of Conservation Concern in the UK due to a recent decline in breeding range.

4.1.53 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.

4.1.54 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- New Forest SPA; Nightjar *Caprimulgus europaeus*, 300 pairs representing at least 8.8% of the breeding population in Great Britain

4.1.55 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 (BTO 2004). Table 4.7 shows the percentage of Nightjars which are supported by the New Forest SPA.

Table 4.7: Distribution of Nightjars within SPA in Britain (JNCC, 2001)

Site Name	Site Total	% of Biogeographic Pop.	% of GB Pop.
Ashdown Forest	35	<0.1 1	1.0
Breckland	415	0.2	12.2
Dorset Heathland	386	0.2	11.4
East Devon Heaths	83	<0.1	2.4
Minsmere – Walberswick	24	<0.1	0.7
New Forest	300	0.1	8.8
Sandlings	109	<0.1	3.2
Thames Basin Heaths	264	0.1	7.8
Thorne and Hatfield Moors	66	<0.1	1.9
Wealden Heaths	103	<0.1	3.0

Woodlark

4.1.56 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.

4.1.57 The UK population of breeding Woodlark is estimated at 3,100 pairs (Conway *et al.*, 2009) which represents 0.2% of the biogeographic population (Hagemeijer & Blair 1997), 31% of which are found within SPA sites for which this species is a qualifying feature. The species is considered depleted and of conservation concern in Europe.

4.1.58 Favoured breeding habitat is dependent on location, with birds in the south west 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.

4.1.59 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- New Forest SPA; Woodlark *Lullula arborea*, 184 pairs representing at least 12.3% of the breeding population in Great Britain (Count as at 1997)

4.1.60 Table 4.8 shows the percentage of Woodlarks which are supported by the New Forest SPA.

Table 4.8: Distribution of Woodlarks within SPA in Britain (JNCC, 2001)

Site Name	Site Total	% of Biogeographic Pop.	% of GB Pop.
Breckland	430	<0.1	28.7
Dorset Heathland	60	<0.1	4.0
Minsmere – Walberswick	20	<0.1	1.3
New Forest	184	<0.1	12.3
Sandlings	154	<0.1	10.3
Thames Basin Heaths	149	<0.1	9.9
Wealden Heaths	105	<0.1	7.0

Honey Buzzard

4.1.61 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.

4.1.62 The UK population of breeding Honey Buzzard is estimated at 33 pairs (Ogilvie, 2003) which represents 0.05% of the biogeographic population (Hagemeijer & Blair 1997), 12% of which 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.

4.1.63 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.

4.1.64 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- New Forest SPA; Honey Buzzard *Pernis apivorus*, 2 pairs representing at least 10.0% of the breeding population in Great Britain

Dartford Warbler

4.1.65 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.

4.1.66 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.

4.1.67 The UK population of breeding Dartford Warbler is estimated at 3,200 pairs (Wotton *et al.*, 2009) which represents 0.5% of the biogeographic population (Hagemeijer & Blair 1997), 52% of which 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.

4.1.68 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.

4.1.69 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- New Forest SPA; Dartford Warbler *Sylvia undata*, 538 pairs representing at least 33.6% of the breeding population in Great Britain

4.1.70 Table 4.9 shows the percentage of Dartford Warblers which are supported by the New Forest SPA.

Table 4.9: Distribution of Dartford Warblers within SPA in Britain (JNCC, 2001)

Site Name	Site Total	% of Biogeographic Pop.	% of GB Pop.
Ashdown Forest	29	<0.1	1.8
Dorset Heathland	418	<0.1	26.1
East Devon Heathlands	128	<0.1	8.0
New Forest	538	<0.1	33.6
Thames Basin Heaths	445	<0.1	27.8
Wealden Heaths	123	<0.1	7.7

Hen Harrier

4.1.71 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.

4.1.72 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.

4.1.73 The UK population of non-breeding Hen Harrier is estimated at 1,710 individuals (Holling *et al.* 2012) which represents approximately 3.7% of the biogeographic population (Hagermeyer and Blair 1997), 15% of which are found within SPA sites for which this species is a qualifying feature. It is also estimated that 483 pairs of breeding birds are resident in the UK (JNCC 2013). 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.

4.1.74 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.

4.1.75 Of the sites being assessed by the HRA, the following have been assessed as supporting internationally important populations:

- New Forest SPA; Hen Harrier *Circus cyaneus,* 15 individuals representing at least 2.0% of the wintering population in Great Britain

4.1.76 Table 4.10 shows the percentage of Hen Harriers which are supported by the New Forest SPA.

Table 4.10: Distribution of Hen Harriers within SPA in Britain (JNCC, 2001)

Site Name	Site Total	% of Biogeographic Pop.	% of GB Pop.
Blackwater Estuary	4	<0.1	0.5
Broadland	22	<0.1	2.9
Colne Estuary	4	<0.1	0.5
Dengie	5	<0.1	0.7
Dorset Heathlands	20	<0.1	2.7
Foulness	6	<0.1	0.8
Humber Flats, Marshes & Coast	20	<0.1	2.7
Loch of Inch and Torrs Warren	8	<0.1	1.1
Minsmere - Walberswick	15	<0.1	2.0
Muirkirk & North Lowther Uplands	10	<0.1	1.3
New Forest	15	<0.1	2.0
North Norfolk Coast	16	<0.1	2.1
Orkney Mainland Moors	13	<0.1	1.7

4.2 Solent and Dorset Coast SPA

4.2.1 The following population data for the SPA are drawn from the assessment of ornithological interest (section 5) prepared as part of the departmental brief[12] recommending that the Solent and Dorset Coast be considered as a potential SPA.

Sandwich tern

4.2.2 The breeding population of Sandwich terns in Great Britain is estimated to be 11,000 pairs (Musgrove et al. 2013), representing about 19.3% of the Western Europe/West Africa breeding population (57,000 pairs derived by division by 3 of the upper estimate of 171,000 individuals: AEWA 2012). In the UK, the species is restricted to relatively few large colonies, most of which are on the east coast of Britain with a few smaller ones on the south and north-west coasts of England and Northern Ireland. Colonies are mostly confined to coastal shingle beaches, sand dunes and offshore islets (Mitchell et al. 2004).

4.2.3 The principal Sandwich tern breeding colonies supported by the Solent & Dorset Coast SPA during the breeding season are located at: Poole Harbour SPA, Solent & Southampton Water SPA and Chichester & Langstone Harbours SPA. The sum of the site-specific recent 5 year means across these three principal source colony SPAs yields a figure of 441 pairs or 882 breeding adults supported by the SPA which constitutes 4.01% of the GB breeding population; see Table 4.11.

Table 4.11: Summary of breeding populations of Sandwich tern within SPAs contributing to the foraging population of the Solent & Dorset Coast SPA

Species	Poole Harbour	Solent/Soton Water	Chich/Lang Hbrs
Popln. at citation (pairs)	n/a	231	31
Old % of GB popln.	n/a	1.7	0.2
Data age	n/a	1993-97	1993-97
Recent mean (pairs)	181	104	156
Recent % of GB popln.	1.65	0.94	1.42
Data age	2010-14	2010-14	2008-11&2013
Solent & Dorset Coast SPA population (pairs x2 for individuals)			882
Solent & Dorset Coast SPA population: % of GB breeding popln.			4.01

Common tern

4.2.4 The breeding population of common terns in Great Britain is estimated to be 10,000 pairs (Musgrove et al. 2013), representing at least 2% of the Northern & Eastern European breeding population (500,000 pairs derived by division by 3 of the upper estimate of 1,500,000 individuals: AEWA 2012). A significant proportion of the British population breeds in Scotland. Coastal colonies in England are concentrated in the north-east, East Anglia, at a few localities along the south coast, and in the north-west (Mitchell et al. 2004). Common terns breed not only around

[12] *Ibid.*

coasts but, unlike the other tern species which breed in the UK, also breed frequently beside inland freshwater bodies.

4.2.5 The principal common tern breeding colonies supported by the Solent & Dorset Coast SPA during the breeding season are located at: Poole Harbour SPA, Solent & Southampton Water SPA and Chichester & Langstone Harbours SPA. The sum of the site-specific recent 5 year means across these SPAs yields a figure of 492 pairs or 984 breeding adults supported by the SPA which constitutes 4.92% of the GB breeding population; see Table 4.12.

Table 4.12: Summary of breeding populations of common tern within SPAs contributing to the foraging population of the Solent & Dorset Coast SPA

Species	Poole Harbour	Solent/Soton Water	Chich/Lang Hbrs
Popln. at citation (pairs)	155	267	33
Old % of GB popln.	1.3	2.2	0.3
Data age	1993-97	1993-97	1992-96
Recent mean (pairs)	178.4	164.2	149.0
Recent % of GB popln.	1.38	1.6	1.5
Data age	2010-14	2010-14	2009-11/13-14
Solent & Dorset Coast SPA population (pairs x2 for individuals)			983.2
Solent & Dorset Coast SPA population: % of GB breeding popln.			4.92

Little tern

4.2.6 The breeding population of little tern in Great Britain is estimated to be 1,900 pairs (Musgrove et al. 2013), representing about 10.3% of the Eastern Atlantic breeding population (18,500 pairs derived by division by 3 of the upper estimate of 55,500 individuals: AEWA 2012). Breeding occurs in scattered colonies along much of the east and west coasts of Britain, from the north of Scotland to (and including) the south coast of England (Mitchell et al. 2004). The greater part of the population occurs in south and east England from Dorset to Norfolk (Mitchell et al. 2004). All British little terns nest on the coast, utilising sand and shingle beaches and spits, as well as tiny islets of sand or rock close inshore (Mitchell et al. 2004).

4.2.7 The principal little tern breeding colonies supported by the Solent & Dorset Coast SPA during the breeding season are located at: Solent & Southampton Water SPA and Chichester & Langstone Harbours SPA. The sum of the site-specific recent 5 year means across these SPAs yields a figure of 63 pairs or 126 breeding adults supported by the SPA which constitutes 3.31% of the GB breeding population; see Table 4.13.

Table 4.13: Summary of breeding populations of little tern within SPAs contributing to the foraging population of the Solent & Dorset Coast SPA

Species	Solent/Southampton Water	Chichester/Langstone Hbrs
Popln. at citation (pairs)	49	100
Old % of GB popln.	2.0	4.2

Species	Solent/Southampton Water	Chichester/Langstone Hbrs
Data age	1993-97	1992-96
Recent mean (pairs)	19	43
Recent % of GB popln.	1.02	2.28
Data age	2010-14	2010-14
Solent & Dorset Coast SPA popln. (pairs x2 for individuals)		126
Solent & Dorset Coast SPA popln.: % GB breeding popln.		3.31

4.3 Qualifying Species of Special Areas of Conservation

4.3.1 The following summaries have been adapted from the descriptions published by the Joint Nature Conservancy Committee[13] together with a review of other available literature on the behaviour and ecology of these species.

Southern Damselfly

4.3.2 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.

4.3.3 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.

4.3.4 Strong populations of Southern Damselfly occur in the River Itchen SAC, estimated to be in the hundreds 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.

4.3.5 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.

[13] http://jncc.defra.gov.uk/ProtectedSites/SACselection/SAC_species.asp

Stag Beetle

4.3.6 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.

4.3.7 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.

4.3.8 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).

Great Crested Newt

4.3.9 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.

4.3.10 The Great Crested Newt 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.

4.3.11 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).

Bullhead

4.3.12 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.

4.3.13 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.

White-clawed Crayfish

4.3.14 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.

4.3.15 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 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.

4.3.16 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).

Brook Lamprey

4.3.17 The Brook Lamprey *Lampetra planeri* is a primitive, jawless fish resembling an eel, and is the smallest of the lampreys found in the UK. 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.

4.3.18 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.

Otter

4.3.19 The Otter *Lutra lutra* is a semi-aquatic mammal, which occurs in a wide range of ecological conditions, including inland freshwater and coastal areas (particularly in Scotland). Inland populations utilise a range of running and standing freshwaters. These must have an abundant supply of food (normally associated with high water quality), together with suitable habitat, such as vegetated river banks, islands, reedbeds and woodland, which are used for foraging, breeding and resting.

4.3.20 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).

4.3.21 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).

Atlantic Salmon

4.3.22 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.

4.3.23 The Atlantic Salmon is a widespread species in the UK and is found in several hundred rivers, many of which have adult runs in excess of 1,000. The latest estimates of the UK spawning population size (ICES 2000) are, however, about 50% down on the ten-year average. This decrease could be due to a number of factors 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.

Desmoulin's whorl snail

4.3.24 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.

4.3.25 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[14].

[14] Natural England Conservation Advice for Marine Protected Areas: Solent Maritime SAC. Accessed online [14/04/2021] at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030059&SiteName=solent&countyCode=&responsiblePerson=#condition

4.4 Qualifying Habitats of Special Areas of Conservation

4.4.1 The following accounts are adapted from the JNCC site descriptions of the three SACs (New Forest, River Itchen and Solent Maritime), which are considered in the HRA[15].

Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)

4.4.2 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.

Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea

4.4.3 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.

Northern Atlantic wet heaths with Erica tetralix

4.4.4 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.

[15] JNCC: SACs in the United Kingdom. Accessed online [14/04/2021] at:
https://sac.jncc.gov.uk/site/

European dry heaths

4.4.5 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)

4.4.6 The New Forest represents *Molinia* meadows in southern England. 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.

Depressions on peat substrate of the Rhynchosporion

4.4.7 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*

Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)

4.4.8 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.

Asperulo-Fagetum beech forests

4.4.9 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.

Old acidophilous oak woods with Quercus robur on sandy plains

4.4.10 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).

Bog woodland (priority feature)

4.4.11 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

Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) (priority feature)

4.4.12 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. In other places there are transitions to Old acidophilous oak woods with *Quercus robur* on sandy plains and Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*), for which this site has also been selected.

Transition mires and quaking bogs

4.4.13 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'.

4.4.14 The following NVC communities form the core of transition mire vegetation in the UK:

- M4 *Carex rostrata – Sphagnum recurvum* mire
- M5 *Carex rostrata – Sphagnum squarrosum* mire
- M8 *Carex rostrata – Sphagnum warnstorfii* mire
- M9 *Carex rostrata – Calliergon cuspidatum/giganteum* mire
- S27 *Carex rostrata – Potentilla palustre* tall-herb fen

4.4.15 However this is not an exhaustive list and numerous other communities form important components of some mire sites.

Alkaline fens

4.4.16 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. The core vegetation is short sedge mire (mire with low-growing sedge vegetation) of the following NVC types:

- *M9 Carex rostrata – Calliergon cuspidatum/giganteum mire*
- *M10 Carex dioica – Pinguicula vulgaris mire*
- M13 *Schoenus nigricans – Juncus subnodulosus mire*

4.4.17 At most sites there are well-marked transitions to a range of other fen vegetation, predominantly, but not exclusively, to M14 *Schoenus nigricans – Narthecium ossifragum* mire and S24 *Phragmites australis – Peucedanum palustre* tall-herb fen in the lowlands.

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

4.4.18 The Itchen is a classic example of a sub-type 1 chalk river. The river is dominated throughout by aquatic *Ranunculus spp*. The headwaters contain pond water-crowfoot *Ranunculus peltatus*, while two *Ranunculus* species occur further downstream: stream water-crowfoot *R. penicillatus ssp. pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans*.

Estuaries

4.4.19 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-buil 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.

Spartina swards (Spartinion maritimae)

4.4.20 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

Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

4.4.21 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. In contrast to the Severn estuary, 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*.

Sandbanks which are slightly covered by sea water all the time

4.4.22 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.

4.4.23 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*).

Mudflats and sandflats not covered by water at low tide

4.4.24 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.

Coastal Lagoons (priority feature)

4.4.25 Coastal lagoons are areas of shallow, coastal salt water, wholly or partially separated from the sea by sandbanks, shingle or, less frequently, rocks. Lagoons show a wide range of geographical and ecological variation; five main sub-types have been identified in the UK, on the basis of their physiography, as meeting the definition of the Annex I habitat type; Isolated lagoons, percolation lagoons, silled lagoons, sluiced lagoons and lagoonal inlets.

Annual vegetation of drift lines

4.4.26 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.

4.4.27 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.

Perennial vegetation of stony banks

4.4.28 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

4.4.29 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.

4.4.30 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.*

Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`)

4.4.31 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.

5 The Eastleigh Borough Local Plan

5.1 Introduction

5.1.1 The Council is proposing a range of Main Modifications to the Local Plan in response to the Examination in Public hearings held between November 2019 and January 2020 and in January 2021. It is the modified version of the plan that is now subject to Habitats Regulations Assessment. The screening assessment presented in Appendix I has therefore been revised and updated at the current stage to provide an overall screening of the EBLP 2016-2036 at the Proposed Main Modifications stage. The findings of the Appropriate Assessment, presented in Chapter 7, have also been revised and updated where necessary to reflect the Main Modifications.

5.1.2 The Eastleigh Borough Local Plan 2016-2036 will set the planning strategy for the borough and address housing and employment needs for a period of 20 years up to 2036. The plan sets out proposed strategic and development management policies, development allocations and actions to meet the environmental, social and economic challenges facing the borough. When adopted the Local Plan 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, provisions for the mitigation required to prevent negative effects, and proposals for monitoring the successful implementation of the plan.

5.2 Key Policy Proposals: EBLP Proposed Main Modifications

5.2.1 The spatial development strategy proposed by the EBLP, incorporating the changes proposed at the Main Modifications stage, includes:

- Provision for approximately 14,580 new dwellings over the plan period, comprising: 2,572 dwellings completed between April 2016 and March 2019; 7,187 dwellings with planning permission or resolution to grant permission at 1 April 2019; allowance for windfall development of 1,475 dwellings; and 732 dwellings on new sites allocated in the plan;
- Provision for approximately 103,500m^2 of new employment floorspace;
- Approximately 5,960 dwellings on strategic sites with planning permission around Eastleigh, Horton Heath, Hedge End, Boorley Green & Botley, Fair Oak, and Hedge End rail station;
- Approximately 2,702 dwellings on other large sites which already have planning permission, or a resolution to grant permission, or will come forward as windfall development;
- Approximately 732 dwellings on new small greenfield and urban allocations (at Allbrook, Bishopstoke, Botley, Bursledon, Chandler's Ford, Eastleigh, Fair Oak & Horton Heath, Hedge End, Netley and West End);

- Employment development focused on existing urban areas, Eastleigh Riverside and Southampton Airport, and allocations at Chalcroft Business Park, Chandler's Ford, Eastleigh, Hedge End, Horton Heath and West End;
- The Botley bypass; a new link road between Burnetts Lane and Bubb Lane serving Chalcroft Business Park; the Sunday's Hill bypass; and a range of junction improvements and other highway, pedestrian/cycle and public transport improvements; and
- Amendments to proposed policy DM11 Nature Conservation to ensure that the negative effects of the Local Plan can be adequately mitigated.

5.2.2 Allocations and other significant proposals put forward in the EBLP 2016-2036 are shown on Figure 5.1 to Figure 5.4.

5.3 Incorporated Mitigation Measures

5.3.1 The EBLP at the Main Modifications stage includes incorporated mitigation measures which were devised in response to the HRA process and these are summarised in Table 5.1. Incorporated mitigation measures are considered when assessing the impacts of the EBLP at the integrity test stage.

Table 5.1: Incorporated mitigation measures

Incorporated mitigation measures
DM2 Environmentally sustainable development
The Borough Council requires that: a. all new build residential development (C3 use Class only) must achieve at the time a Reserved Matters or Full Planning Application is submitted: … ii. a predicted mains water consumption of no more than 110 litres/person/day …
DM6 Sustainable surface water management and watercourse management
1. New development (excluding extensions to dwellings and changes of use), will only be permitted if it incorporates Sustainable Drainage Systems (SuDS). Wherever feasible, naturalised filtration should be included within the treatment train as folows… … a. On sites of 1 hectare or more, or within 100 m of the River Itchen SAC or Solent Maritime SAC, SuDS schemes should include at least three forms of naturalised filtration. On sites within 100m of headwaters and tributaries draining into a SAC, SuDS schemes should include at least three forms of naturalised filtration unless hydrological studies and project-level Habitats Regulations Assessment demonstrate this to be unnecessary to protect the integrity of the SAC and its qualifying features; b. On other sites of between 0.5 hectares and 1 hectare, SuDS schemes should include two forms of naturalised filtration; and c. On other sites of less than 0.5 hectares non-naturalised SuDS e.g. permeable paving will be considered where justified… … 4. Where development drains into a waterway connected to the Natura 2000 or Ramsar network a site specific Construction Environment Management Plan must be prepared before permission.
DM8 Pollution
Development will not be permitted if it is likely to cause … unacceptable environmental impacts

Incorporated mitigation measures
through: … c. Noise or vibration… *[In supporting text:]* In respect of the Solent and Southampton Water SPA and Ramsar sites and supporting habitat, construction noise should be kept below 69dBA max either alone or in combination with other developments (measured at the sensitive receptor which is the nearest point of the SPA/Ramsar or supporting habitat) during the bird overwintering period, or works timed so that they do not coincide with the wintering bird season. Natural England will provide advice on a case by case basis where construction noise exceeds 69dBA max.
DM10 Water and Waste Water
Where new water supply or waste water infrastructure is required or proposed in support of new development the development will be phased alongside the provision of the infrastructure to ensure: - compliance with the Habitats Regulations …
DM11 Nature conservation
… Development which is likely (either individually or in combination with other developments) to adversely affect the integrity of an international or European nature conservation site will not be permitted subject only to imperative reasons of overriding public interest in the absence of alternative solutions. A 'project level' Habitat Regulations Assessment will be required. Any mitigation measures required to ensure no adverse impact must be implemented at the appropriate time. The Council will work with PfSH, Natural England, the Environment Agency and other wildlife organisations to develop and implement with developers a strategic approach to the protection and enhancement of international and European sites from the direct and indirect effects of development. Within Eastleigh Borough this will include: i. Implementing a. the Solent Recreation Mitigation Strategy (requiring contributions from residential developments within 5.6 kilometres of the Solent Special Protection Area to the Strategy); and b. the interim and any future New Forest Recreation Mitigation Strategy if required; ii. preserving the water quality and flows within the Itchen and Hamble, Southampton Water and Solent; iii. protecting the River Itchen SAC, in particular the maintenance and where appropriate restoration of habitats and qualifying species to favourable conservation status (as defined by article 1 of the Habitats Directive) …
Policy DM37 Recreational activity on the River Hamble
… i. new moorings and replacement or relocation of existing moorings will only be permitted outside the mooring restriction areas shown on the policies map, and subject to the advice of the River Hamble Harbour Authority and in accordance with policy DM11… iii. Within the Mooring Restriction Areas the replacement or relocation of existing moorings will be permitted where … they do not: … c. adversely affect the nature conservation … value of the River Hamble
Site allocation policies
Repeated references to the need to protect hydrological flows and water quality, prevent the spread of non-native species, control pollution during construction, maintain otter dispersal routes and/or undertake project-level HRA, in the following policies:

Incorporated mitigation measures
FO1, FO2, FO3, HH1, BU1, BU2, BU3, BU6, HA2, CF1, CF3, CF4, E1, E6, E7, E9, AL1, AL2, HE1, HE2, HE3, HE4, WE2, BO1, BO2, BO3, BO4, BO5

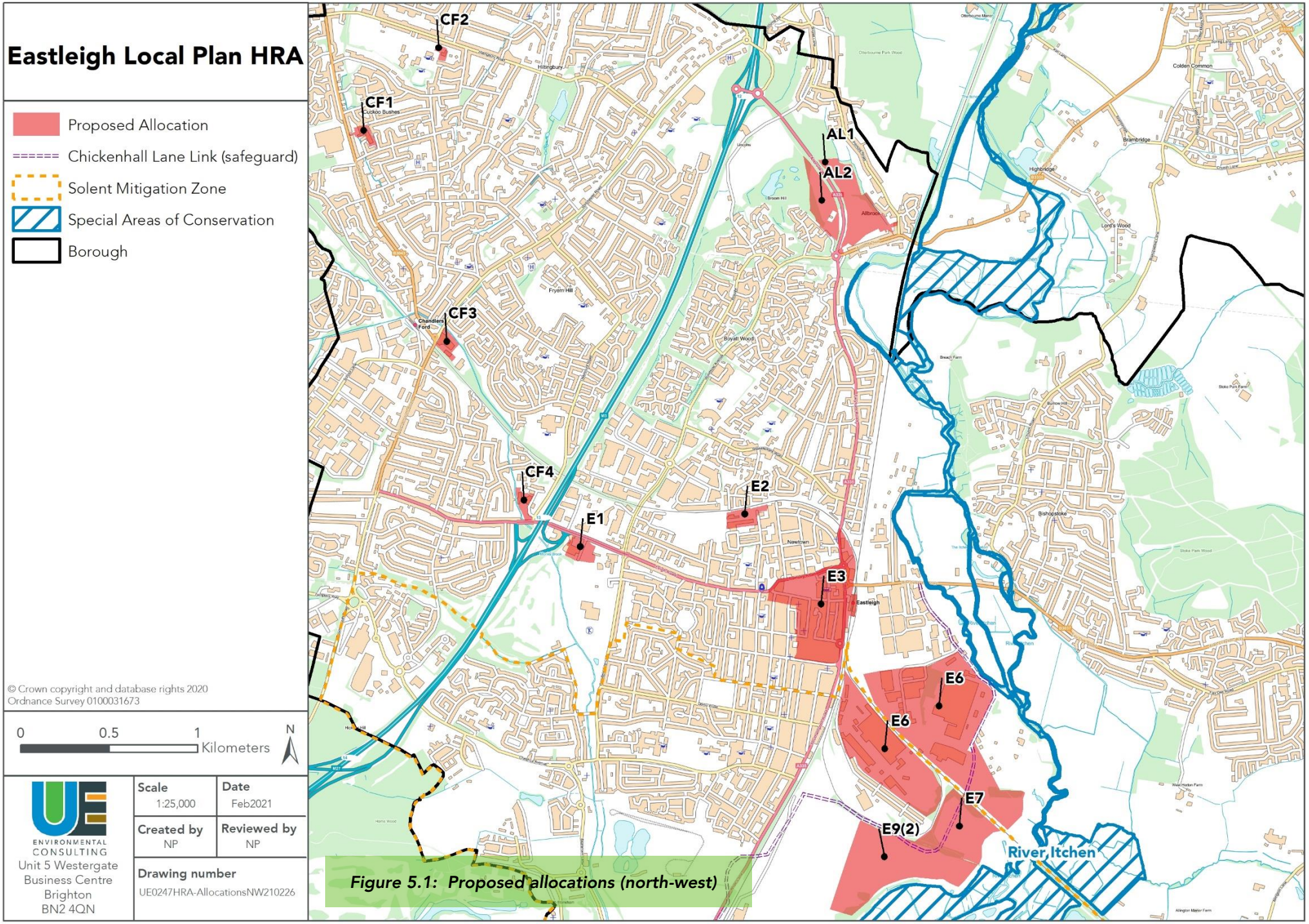


Figure 5.1: Proposed allocations (north-west)

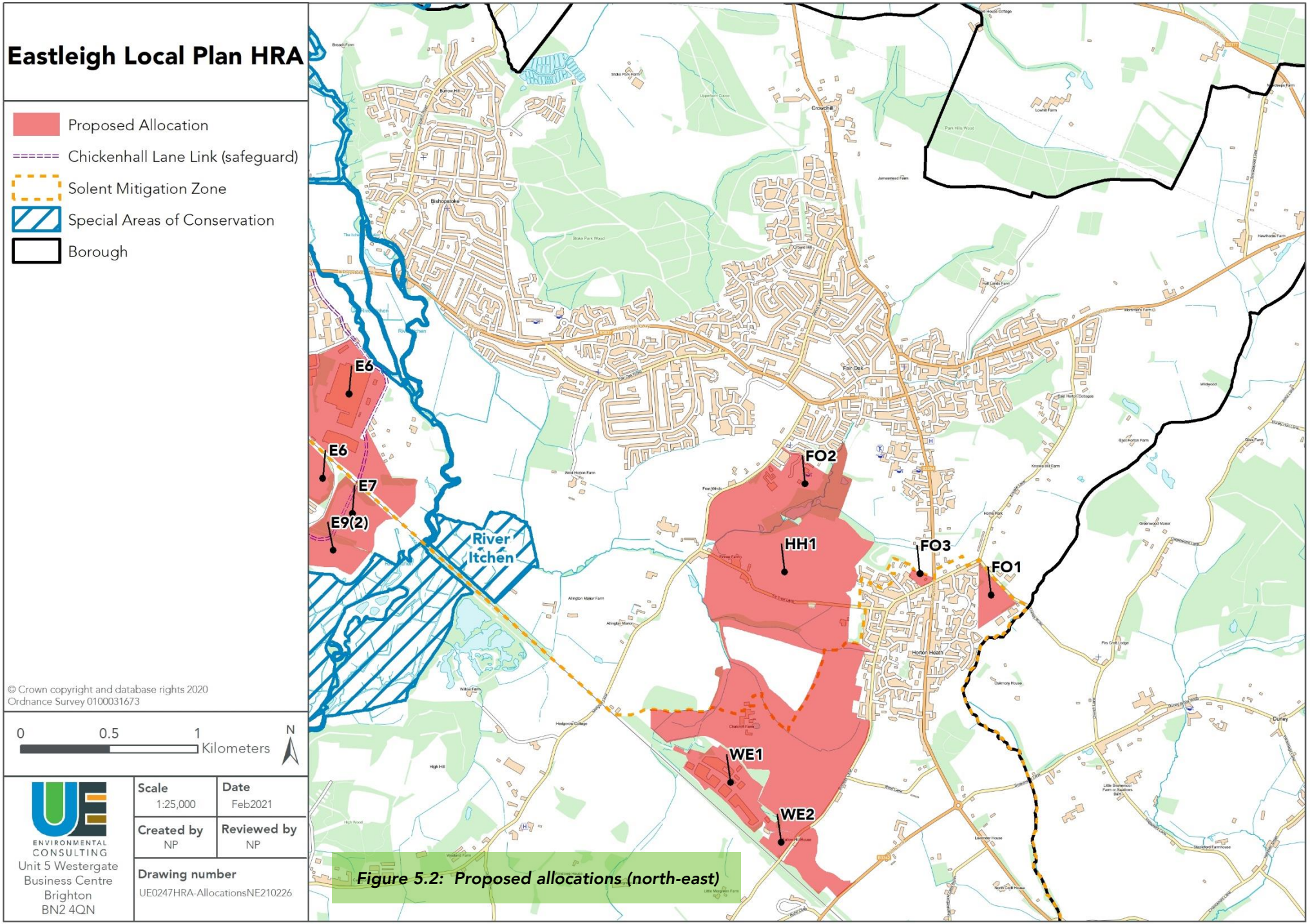


Figure 5.2: Proposed allocations (north-east)

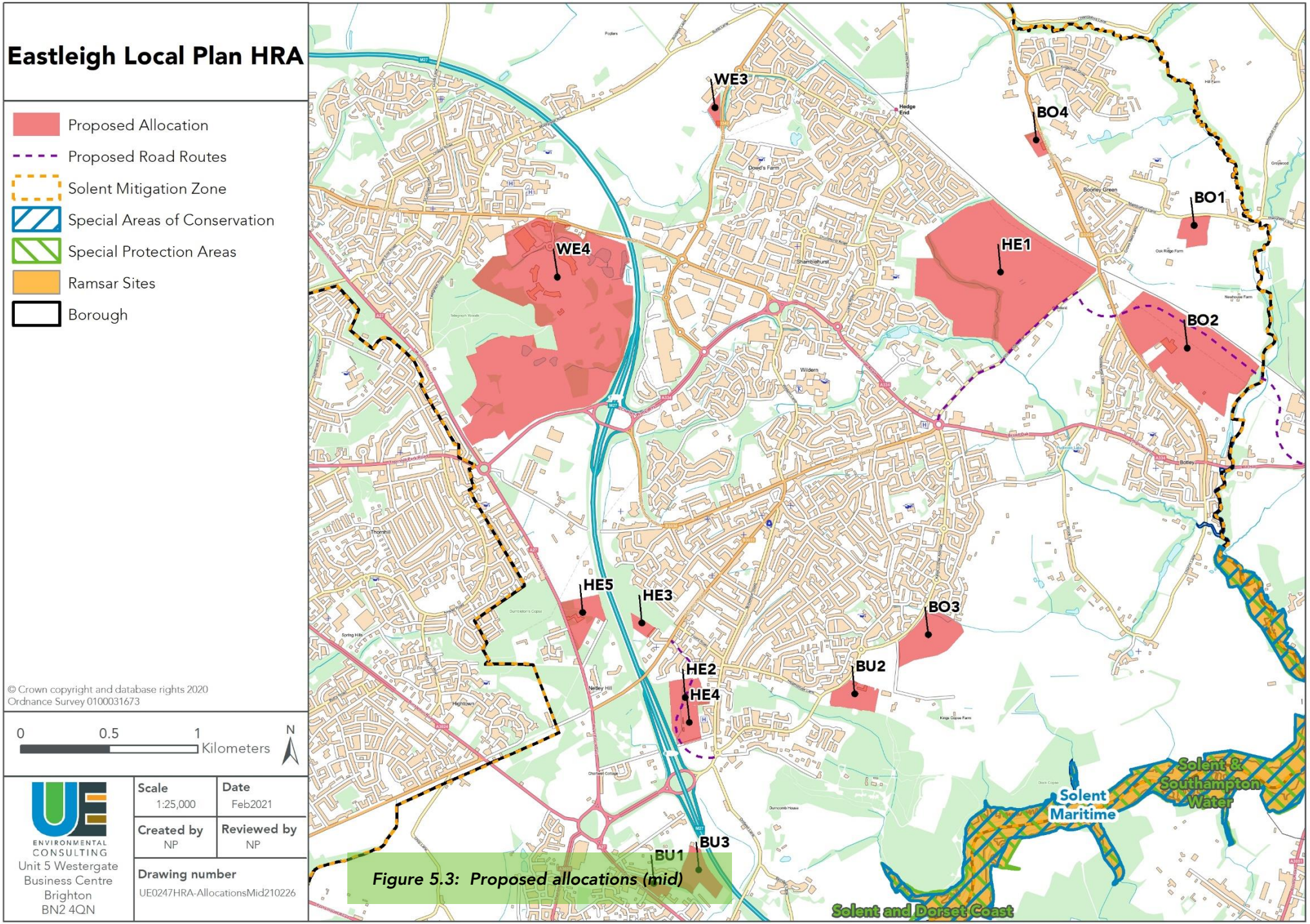


Figure 5.3: Proposed allocations (mid)

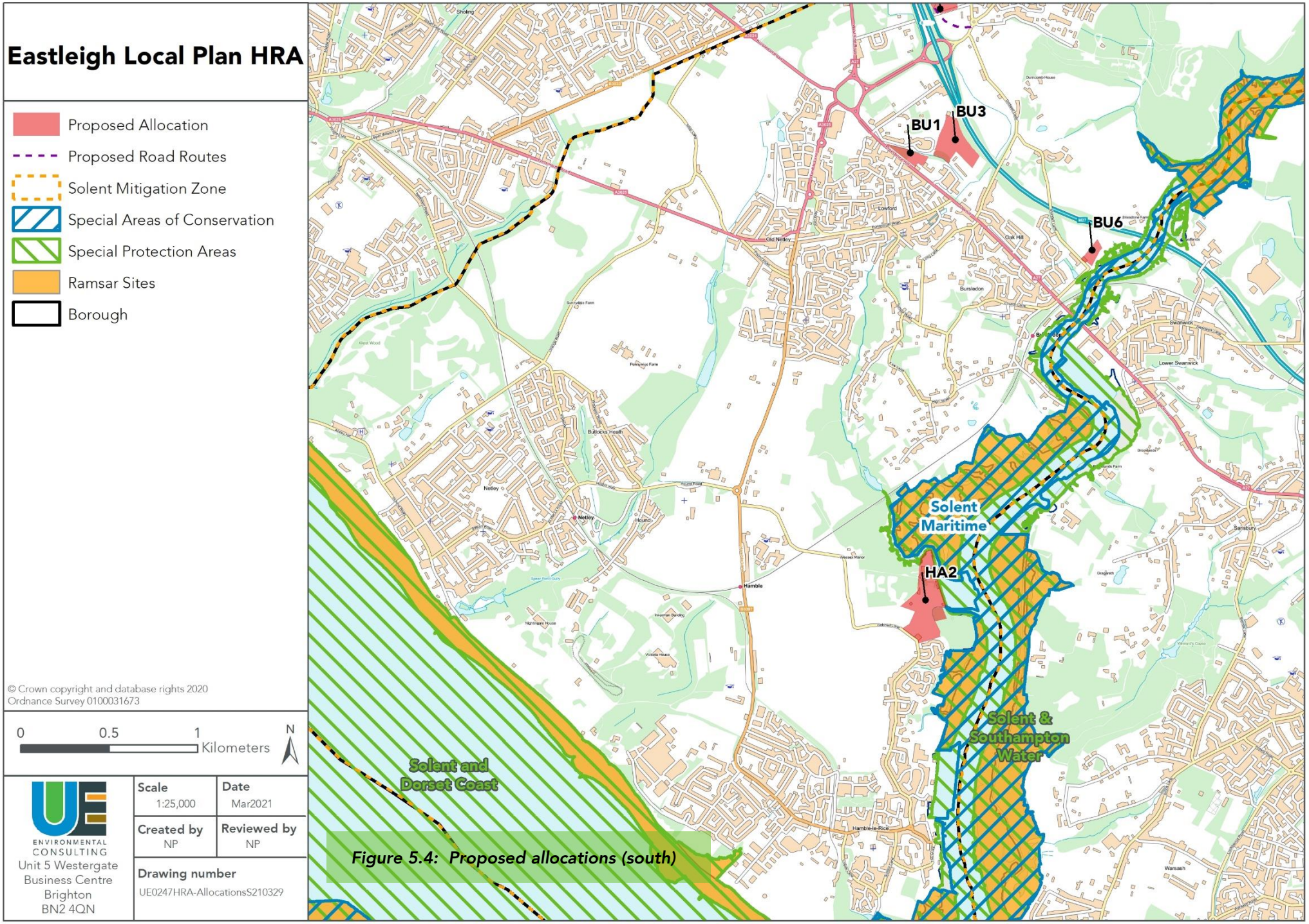


Figure 5.4: Proposed allocations (south)

6 Identifying Impact Pathways

6.1 Introduction

6.1.1 This chapter discusses the available evidence relating to the pathways of impacts to European sites, as identified during HRA screening for the Issues & Options Local Plan (AECOM, 2015) and re-assessed during screening for the Proposed Main Modifications plan.

6.2 Atmospheric Pollution

6.2.1 This impact pathway relates to the direct and in combination effects of pollution on the River Itchen SAC, Solent Maritime SAC, and Solent and Southampton Water SPA/Ramsar (see Appendix I). As a strategically operating impact it is assumed that all proposed allocations with residential, employment or other significant traffic-generating use will contribute to the effect; as such the screening assessment at Appendix I does not list atmospheric pollution as an LSE for proposed allocations, focusing instead on site specific impacts.

Impact mechanisms

6.2.2 Atmospheric pollution is a widespread issue, with background air quality heavily influenced by large point-source emitters including transboundary sources. Local pollutant sources can affect designated sites, particularly in relation to protected habitats within SACs, 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.

6.2.3 The main pollutants of interest are the toxifying effects of nitrogen oxides (NO_X), and changes in botanical species composition and structure due to acid deposition and eutrophication by nitrogen deposition. In addition, greater ammonia (NH_3) concentrations in the atmosphere will lead to increased rates of nitrogen deposition. The following brief descriptions draw on information presented through the Air Pollution Information System[16] (APIS).

6.2.4 Acid deposition: caused by NO_X (or sulphur dioxide) reacting with rain/cloudwater to form nitric (or sulphuric) acid, and is caused primarily by energy generation, as well as road traffic and industrial combustion. Both wet and dry acid deposition have been implicated in the damage and destruction of vegetation (heather, mosses, liverworts and lichens are particularly susceptible to cell membrane damage due to excessive pollutant levels) and in the degradation of soils and watercourses (including acidification and reduced microbial activity).

[16] Online at: http://www.apis.ac.uk [Accessed 14/04/2021]

6.2.5 Eutrophication by nitrogen deposition: consists of the input of nitrogen from NO_X (and sometimes ammonia) emissions by deposition, and is caused primarily by road traffic, as well as energy generation, industrial combustion and agricultural practices. Nitrogen deposition can cause direct damage to heather, mosses, liverworts and lichens, as well as other plant species, because of their sensitivity to additional atmospheric nitrogen inputs. Deposition can also lead to long term compositional changes in vegetation and reduced species and structural diversity in nitrogen-limited terrestrial habitats. 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 et al (1993) and Pitcairn et al (1991)).

6.2.6 Nitrogen oxides: while plants are able to detoxify and assimilate low exposure to atmospheric concentrations of NO_X, high levels of uptake can lead to detrimental impacts including:

- Inhibition of pigment biosynthesis, leading to reduced rates of photosynthesis;
- Water soaking as NO_2 molecules attach to lipids in membranes, causing plasmolysis (removal of water) and eventually necrosis;
- Inhibition of lipid biosynthesis, leading to reduced rates of regeneration and growth;
- Injury to mitochondria and plastids, essential to internal processing of energy & proteins;
- Decrease in stomatal conductance of air and water vapour; and
- Inhibition of carbon fixation (at least under low light levels).

6.2.7 Emissions from road transport currently make the largest single contribution to atmospheric NO_X in the UK, accounting for 33% in 2010[17], with an estimated 92% of those associated with residential development being contributed by road traffic (Dore *et al*, 2005). 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 traffic growth on roads within 200m of European sites, as beyond 200m effects of emissions from this source diminish to the equivalent of background levels (Laxen & Wilson (2002)).

6.2.8 A Partnership for South Hampshire (PfSH) research report (AEAT, 2010) notes that the critical load or level for each of these pollutant classes is already exceeded or approaching exceedance at background locations, away from roads across large parts of the sub-region. Nilsson and Grennfelt (1988) define critical loads and levels as "*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 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).

6.2.9 Guidance from Natural England (pers. comm., 2018a) provides a method for assessing impacts of air pollution on European sites. It is based on a staged process by which sites and locations are initially screened into the assessment if predicted pollution concentrations exceed 1% of the critical load or critical level. This can be considered the screening stage of the Habitats

[17] APIS [accessed online 14/04/2021] at: http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm

Regulations Assessment and concludes that in those places where the 1% threshold is breached there is likely to be a significant effect on sensitive European sites within the impact contour.

In combination effects

6.2.10 The following plans/projects may also contribute to road traffic emissions:

- Strategic development at North of Whiteley, Winchester district
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Welborne Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- South Downs Local Plan (emerging)
- Test Valley Borough Revised Local Plan 2011 – 2029 (adopted 2016)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034
- Hampshire Local Transport Plan (2011-2031)
- Joint Hampshire Minerals and Waste Plan (adopted 2013) (includes Portsmouth, Southampton, New Forest National Park and South Downs National Park)
- Southampton Airport Masterplan

6.2.11 To the extent relevant for assessment purposes, these have been taken into account within traffic and atmospheric pollution modelling undertaken for the EBLP.

Evidence of current or future impacts: River Itchen SAC

6.2.12 The HRA screening report (AECOM, 2015) provided an overview of the potential effects of air pollution on the interest features of the River Itchen SAC and concluded that, for most of these, predicted changes in air quality arising from planned development within Eastleigh Borough will have no likely significant effect, either alone or in combination with other plans and projects. The authors of the current HRA agree with this conclusion. However, for southern damselfly the screening report concluded that likely significant effects might occur due to potential effects of nutrient nitrogen deposition on terrestrial habitats used by the species.

6.2.13 The ecology of the southern damselfly is summarised at section 4.3.2. Its specific habitat requirements are similar in both its heathland and chalk river valley landscapes. These are described by Rushbrook (2017, 2018) as comprising the following:

- Shallow, well oxygenated, base-rich water;
- A constant (perennial) slow to moderate flow of water;

- Channel substrate consisting primarily of silt and detritus;
- Presence of a broad fringe of herbaceous emergent dicotyledon plants along margins;
- Presence of some areas of open water; and
- Largely (but not necessarily completely) unshaded by bankside shrubs and trees.

6.2.14 In order to assess the effects of air pollution on these range of habitat features it is necessary to relate them to the broad habitat types for which there are predictions of the effect of changes in air quality on the APIS website. The closest match broad habitat type is the Fens, Marshes and Swamps habitat. The APIS website provides two Critical Loads for nitrogen deposition within this broad habitat type, as shown in Table 6.1: This draws the important distinction between Valley mires, poor fens and transition mires (EUNIS[18] code D2) and Rich fens (EUNIS Code D4.1).

Table 6.1: Critical loads for N deposition in Fen, Marsh and Swamp

Habitat/ Ecosystem	Eunis Code	Critical Load	Status	Reliability	Indication of exceedance	Reference
Valley mires, poor fens and transition mires	D2	10-15 kg N ha-1 year-1	UNECE 2010 - Noordwijkerhout workshop	Quite reliable	Increase sedges and vascular plants, negative effects on bryophytes.	472
Rich fens	D4.1	15-30 kg N ha-1 year-1	UNECE 2010 - Noordwijkerhout workshop	Expert judgement	Increase in tall graminoids, decrease in bryophytes.	472

6.2.15 The fen habitats within the Itchen Valley used by the southern damselfly do not fall with the D2 EUNIS habitat classification, but are best considered as components of D4.1 Rich fens, for which a Critical Load for nitrogen deposition has been defined at 15-30 kg N/ha/yr. The EUNIS description of D4.1 Rich fens is reproduced in Box 1.

Box 1: EUNIS habitat code and names D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks

Wetlands and spring-mires, seasonally or permanently waterlogged, with a soligenous or topogenous base-rich, often calcareous water supply. Peat formation, when it occurs, depends on a permanently high water table. Rich fens may be dominated by small or larger graminoids (*Carex* spp., *Eleocharis* spp., *Juncus* spp., *Molinia caerulea*, *Phragmites australis*, *Schoenus* spp., *Sesleria* spp.) or tall herbs (e.g. *Eupatorium cannabinum*). Where the water is base-rich but nutrient-poor, small sedges usually dominate the mire vegetation, together with a "brown moss" carpet. Hard-water spring mires (D4.1N) often contain tufa cones and other tufa deposits. Excluded is the water body of hard-water springs

18 EUNIS denotes European Union Nature Information System Habitat Classification (https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification)

Box 1: EUNIS habitat code and names D4.1 Rich fens, including eutrophic tall-herb fens and calcareous flushes and soaks

(C2.1); calcareous flushes of the alpine zone are a separate category (D4.2). Rich fens are exceptionally endowed with spectacular, specialised, strictly restricted species. They are among the habitats that have undergone the most serious decline. They are essentially extinct in several regions and gravely endangered in much of central and western Europe.

6.2.16 The specific micro-habitat used by the southern damselfly for egg laying is described as a fringe of herbaceous emergent dicotyledon plants. This is likely to be the most vulnerable element of this habitat to nitrogen deposition and nutrient enrichment. Such vegetation is classified by the National Vegetation Classification (NVC; Rodwell (ed.), 1995; Volume 4) as S23 Other Water Margin Vegetation. The NVC describes this vegetation as being characteristically heterogenous, but the most frequent species are Fool's water-cress *Apium nodiflorum*, Water-cress *Rorippa nasturtium-aquaticum* and Brooklime *Veronica beccabunga*. The NVC states; "*The vegetation is most typical of unshaded margins of mesotrophic to eutrophic waters where there is some accumulation of medium to fine textured mineral sediments*." In other words, this is a vegetation type that is associated with habitats with some degree of nutrient enrichment, typically from agricultural runoff. This community of emergent swamp vegetation is therefore considered a component of the Rich Fen broad habitat type (Table 6.1). However, it must be appreciated that this broad habitat type spans a wide spectrum of fen vegetation types ranging from the very nutrient poor sedge dominated fens to the eutrophic fens associated with water margins and nutrient enriched flood plains. In this instance, whereas the habitat used by the southern damselfly falls within the Rich Fen broad habitat type, it is located at the nutrient enriched end of the spectrum of fen vegetation within this habitat.

6.2.17 Although requiring a degree of nutrient enrichment, it is possible that increased nitrogen deposition above a certain level will cause this water margin vegetation community to become more eutrophic and dominated by coarser ruderal plants including stinging nettle *Urtica dioica*, woody nightshade *Solanum dulcamara*, bind-weed *Convolvulus* spp. and greater growth of grasses. This combination of plants would not be suitable as egg laying habitat for southern damselfly and hence there is an identifiable impact pathway between predictions of increased nitrogen deposition associated with road traffic and the specific habitat requirements of the southern damselfly.

Revised screening assessment of air quality impacts on fen habitats

Approach to assessment

6.2.18 Air Quality Consultants (AQC; February 2018) were commissioned to undertake interim air quality modelling of the impacts of the Local Plan in Eastleigh Borough – which at the time included a Strategic Growth Option to the north of Bishopstoke and Fair Oak. A single future assessment year of 2036 was used for the following two Local Plan scenarios:

- DCY: With full Local Plan development including 5,000 dwellings at SGO B/C (north of Bishopstoke / north and east of Fair Oak) – Scenario A2.a; and
- DCZ: With full Local Plan development including 6,000 dwellings at SGO B/C – Scenario A2.b.

6.2.19 Scenario DCZ envisages a greater quantum of development at north of Bishopstoke / north and east of Fair Oak over the period to 2036 and presents the worse-case scenario for traffic flows passing close to European sites. Taking a precautionary approach, the results using the DCZ scenario were used in this part of the assessment. The modelling predicted levels of nitrogen deposition and found that the baseline load in the vicinity of Highbridge Farm (B3355 Highbridge Road), Bishopstoke (B3037 Bishopstoke Road) and Itchen Valley Country Park (M27/A27) currently exceeds the critical load of 15kg N/ha/yr. It further predicted that the EBLP 2016-36 could increase deposition rates above the 1% threshold level. Further assessment was therefore undertaken to assess the impacts of air quality on rich fen habitats within the River Itchen SAC.

6.2.20 Air Quality Consultants (June 2018) were subsequently commissioned to undertake revised air quality modelling of the impacts of the Local Plan in Eastleigh Borough - which at the time still included an SGO to the north of Bishopstoke and Fair Oak. A single future assessment year of 2036 was used for a worst-case combination of two Local Plan scenarios; DS2_DPC_2036 and DS3_DPP_2036. Both scenarios included the full Local Plan development quanta (including 5,656 dwellings at Bishopstoke / Fair Oak) but with a range of different options for transport interventions – for each road link, the scenario producing the highest traffic flows was selected for the air pollution modelling to ensure a precautionary approach.

6.2.21 The air quality assessment was undertaken in accordance with the latest industry guidance available in the discipline. Levels of air pollution produced by vehicles were predicted using both the government (Defra) model and a sensitivity test (ST). The sensitivity test assumes higher NOx emissions from certain vehicles than have been published by Defra and therefore predicts higher levels of impact than the Defra model, using the consultants' bespoke Calculator Using Realistic Emissions for Diesels (CURED v3A) tool. This was developed to address the potential under-performance of emissions control technology on modern diesel vehicles, leading to a more precautionary assessment. The Council considered the sensitivity test to be sufficiently precautionary for the purposes of appropriate assessment; in particular it considers the autonomous measures included in the sensitivity test to be certain beyond a reasonable scientific doubt, such that they can be relied upon in the context of the CJEU Joined Cases C-293/17 and C-294/17[19].

6.2.22 AQC produced contour plots using the Defra and ST traffic models for the following three pollutants:

- Nitrogen oxides (NOx) (Annual Mean and 24-hour Mean);
- Nutrient nitrogen deposition; and
- Ammonia.

6.2.23 Pollutant predictions were made for a current base year (2015) and three future year (2036) scenarios:

[19] 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.*

- 2036 with zero traffic growth: traffic volumes in 2036 are identical to those in 2015 but emissions per vehicle fall in line with national projections;
- 2036 without Local Plan: traffic volumes increase taking account of regional and national projections, but excluding growth associated with the Local Plan; and
- 2036 with Local Plan: adds the traffic associated with Local Plan growth.

6.2.24 These results are compared to take account of in-combination impacts as follows:

A) Local Plan in isolation impacts are determined by comparing the 2036 with Local Plan results against the 2036 without Local Plan results

B) Local Plan in combination impacts are determined by comparing the 2036 with Local Plan results against the 2036 with zero traffic growth results

6.2.25 Impacts were assessed on three European sites in the first instance – River Itchen SAC, Solent Maritime SAC and Solent and Southampton Water Ramsar.

Method of assessment

6.2.26 Defra and the Environment Agency have published guidance[20] to which Natural England also subscribes, that advises where the concentration within the emission footprint (i.e. the Process Contribution, the contribution of the scheme in question) in any part of the European site(s) is less than 1% of the relevant long-term benchmark (critical level or critical load), the emission is not likely to have a significant effect alone or in combination irrespective of the background levels. When the PC does exceed 1% of the critical level/load but the Predicted Environmental Concentration (the sum of the PC and the background concentrations) falls at or below 70% of the critical level/load then it is still possible to conclude without further analysis that no likely significant effect will result. Where the PC exceeds 1% of the critical level/load and the PEC exceeds 70% of the critical level/load this does not necessarily mean that an adverse effect will occur, but does mean further consideration of any potential effect is required. It can be assumed that these thresholds have been set by Environment Agency and Natural England taking the precautionary approach required to conclude no likely significant effect.

Impacts of ammonia

6.2.27 Impacts of ammonia were initially predicted by AQC (February 2018) using a critical level of 1µg/m^3. This was based upon levels for the Fen, Marsh and Swamp habitat type provided in the APIS website. The guidance is reproduced below in Table 6.2. Although 1µg/m^3 can be used as the Critical Level in some ecosystems, the guidance is clear that this should only apply where sensitive lichens and bryophytes are present. In the case of the River Itchen SAC, this group of species are not prominent in the ecosystem which is largely base enriched and alkaline in character. It was therefore suggested that the 1µg/m^3 was too stringent and the 3µg/m^3 level was used in subsequent (June 2018) modelling.

20 Defra (2016): Air emissions risk assessment for your environmental permit. Accessed online [14/04/2021] at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screen-out-insignificant-pcs

Table 6.2: Critical Levels for Ammonia within Fen, Marsh and Swamp habitats

Habitat/ Ecosystem	Critical Load/ Level	Status	Indication of exceedance	Reference
Higher plants	3 µg NH_3 m^{-3} annual mean (uncertainty of 2-4 µg NH_3 m^{-3})	UNECE, 2007	Direct visible injury; species composition changes. Ecosystems where sensitive lichens and bryophytes are an important part of the ecosystem integrity, the critical level is set at 1 µg NH_3 m^{-3}.	860
Lichens and Bryophytes	1 µg NH_3 m^{-3} annual mean	UNECE, 2007	Loss of sensitive mosses and lichens communities. Communities become dominated by nitrophiles at the expense and virtual loss of acidophytes as bark pH becomes less acidic.	860

6.2.28 Ammonia is one of the key pollutants that contribute to nitrogen deposition. However, the APIS website states that risk areas are likely to be *"sites in rural areas with elevated background concentrations. Higher concentrations and dry deposition are found close to point sources e.g. intensive livestock units but also wild animal (e.g. seal and bird colonies)."*

6.2.29 A critical level of 3 µg NH_3 m^{-3} annual mean (uncertainty of 2-4 µg NH_3 m^{-3}) is set for higher plants within Fen, Marsh and Swamp habitats such as those used by southern damselfly. Ammonia may be taken up by plants through leaves, so increasing potential for nitrogen uptake. There is also potential for the alkaline effects of ammonia to change pH, especially within acid wetland habitats. The model of ammonia deposition shows the 1% screening level is exceeded in a number of locations within the River Itchen SAC (dark red patches shown in Figure 6.1). However total ammonia concentrations are only predicted to be above the critical level of 3 µg/m^3 up to approximately 25 m from the M27 (black hatched areas in Figure 6.1). It is concluded that impacts of ammonia on the banks of the River Itchen in this section of the SAC are much more heavily influenced by total nitrogen deposition and changes in river morphology and flow under the motorway bridge so that elevated ammonia levels over this small section of river are not considered likely to be significant in this location. Direct impacts from atmospheric ammonia concentrations are therefore screened out and not considered further.

6.2.30 The greatest impact of ammonia will not be in its gaseous form but in solution through wet deposition. This adds to the overall nitrogen deposition rate which is assessed separately and is measured in terms of kgN/ha/yr. The APIS website states; "*Nitrogen (N) deposition describes the input of reactive nitrogen from the atmosphere to the biosphere both as gases, dry deposition and in precipitation as wet deposition. Enhanced reactive nitrogen deposition is a consequence of global emissions of oxidised nitrogen (NO, HNO_3 and NO_2 – often referred to as NO_y) from fossil fuel combustion (Dignon and Hameed, 1989), and reduced N (NH_x) from agricultural sources.*"

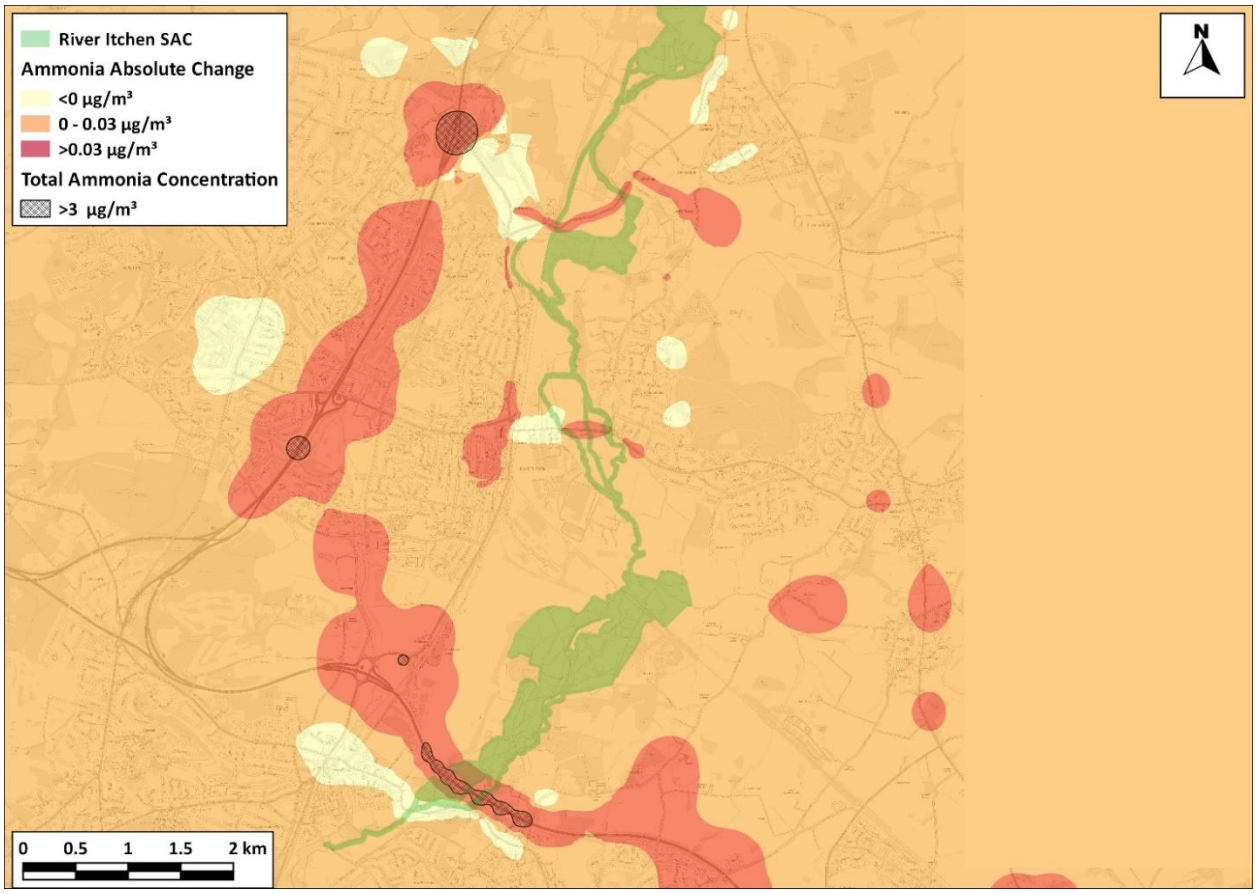


Figure 6.1: Ammonia concentrations resulting from traffic modelling within Eastleigh Borough (Ammonia absolute change)

Atmospheric NOx concentrations

6.2.31 The concentration of atmospheric NOx was calculated using both annual mean NOx and 24 hour NOx concentrations. The concentration of atmospheric NOx can have an impact on terrestrial vegetation however, it is not clear how this would affect aquatic and semi-aquatic vegetation. It is likely that deposition of nitrogen will have a greater impact on habitats than atmospheric NOx concentrations, indeed, nitrogen deposition rates are likely to be directly linked to atmospheric NOx concentration. This assessment has therefore only considered nitrogen deposition (NDep) as this is considered the best indicator of ecological impact of the changes in air quality predicted by AQC.

Screening assessment: impacts on rich fen habitats within the River Itchen SAC

6.2.32 The worst case scenario model produced by AQC (June 2018) again predicted that the baseline load of nitrogen deposition in the vicinity of Highbridge Farm (B3355 Highbridge Road), Bishopstoke (B3037 Bishopstoke Road) and Itchen Valley Country Park (M27/A27) currently exceeds the critical load of 15kg N/ha/yr. It further predicted that the EBLP 2016-36 – including the SGO north of Bishopstoke and Fair Oak and its link road (with a junction on B3355 Highbridge Road) - could increase deposition rates above the 1% threshold level.

6.2.33 As we have concluded that there are likely to be significant effects from changes in air quality on the habitat of the southern damselfly within the River Itchen SAC, it is necessary to undertake an Appropriate Assessment to determine whether these will have an adverse effect on the integrity of the site – either alone or in combination. This is presented in section 7.2.

Evidence of current or future impacts: Solent Maritime SAC and Solent & Southampton Water SPA/Ramsar

6.2.34 The HRA screening report (AECOM, 2015) identified the potential for impacts from air pollution to adversely affect the saltmarsh habitats that are features of the Solent Maritime SAC and Solent and Southampton Water Ramsar site. These two sites comprise a mix of coastal and marine habitats listed in the Habitats Directive and Ramsar Convention. Three distinct saltmarsh habitats occur within the SAC, referred to as Atlantic salt meadows, Spartina swards and Salicornia and other annuals colonising sand and mud. The three saltmarsh types often form complex mosaics of broader saltmarsh habitat and for the purposes of this assessment are considered collectively. Saltmarsh is also a Ramsar habitat type and contributes to Criterion 1 of the Solent and Southampton Water Ramsar site. The definition of Ramsar saltmarsh habitat is broader than that of the SAC. Impacts on saltmarsh habitats from air pollution are also listed on the APIS website at the level of broad habitat type so that air quality impacts on all three Annex 1 saltmarsh habitats and the Ramsar saltmarsh habitat type are assessed together at this broad habitat level. The APIS website lists Critical Loads for nitrogen deposition within saltmarsh habitats as 20-30kg N/ha/yr, as shown in Table 6.3:

Table 6.3: Critical loads for N deposition in Coastal Saltmarsh

Habitat/ Ecosystem	Eunis Code	Critical Load	Status	Reliability	Indication of exceedance	Reference
Pioneer, low-mid, mid-upper saltmarshes	A2.54; A2.55; A2.53	20-30 kg N ha-1 year-1	UNECE 2010 - Noordwijkerhout workshop	Expert judgemetn	Increase late successional species, increase in productivity, increase in dominance of graminoids.	472

6.2.35 The majority of Solent Maritime SAC qualifying features are not listed on APIS as sensitive to acid deposition, the exception being Perennial vegetation on stony banks and Desmoulin's whorl snail. Perennial vegetation on stony banks is restricted in distribution to a small area in Hamble-Le-Rice, away from the main distributor road network, while Desmoulin's whorl snail is restricted to Fishbourne Channel in Chichester Harbour and has not been recorded since 2005. Acid deposition is not considered further for this SAC. The only feature listed on APIS as sensitive to ammonia is Desmoulin's whorl snail; ammonia is not considered further for Solent Maritime SAC.

6.2.36 Solent and Southampton Water SPA is excluded from this part of the assessment. APIS lists terns using coastal stable dune habitat as vulnerable to N deposition, and common tern using

supralittoral sediment as vulnerable to acid deposition. However, there are no breeding terns in the vicinity of Eastleigh and no suitable nesting habitat (dunes or shingle beaches) close to the road routes of interest. Impacts on intertidal habitats used by other qualifying and assemblage species are first assessed via impacts to the SAC and then, if significant, considered for adverse effects on the SPA.

Revised screening assessment of air quality impacts on saltmarsh habitats

Approach to assessment

6.2.37 Air Quality Consultants (February 2018) were commissioned to undertake interim air quality modelling of the impacts of the Local Plan in Eastleigh Borough – which at the time included a Strategic Growth Option to the north of Bishopstoke and Fair Oak. A single future assessment year of 2036 was used for the following two Local Plan scenarios:

- DCY: With full Local Plan development including 5,000 dwellings at SGO B/C (north of Bishopstoke / north and east of Fair Oak) – Scenario A2.a; and
- DCZ: With full Local Plan development including 6,000 dwellings at SGO B/C – Scenario A2.b.

6.2.38 Scenario DCZ envisages a greater quantum of development at north of Bishopstoke / north and east of Fair Oak over the period to 2036 and presents the worse-case scenario for traffic flows passing close to European sites. Taking a precautionary approach, the results using the DCZ scenario were used in this part of the assessment. The modelling predicted levels of nitrogen deposition and found that the baseline load in the vicinity of the M27 currently exceeds the critical load of 20kg N/ha/yr. It further predicted that the EBLP 2016-36 could increase deposition rates above the 1% threshold level. Further assessment was therefore undertaken to assess the impacts of air quality on saltmarsh habitats within the Solent Maritime SAC and Solent and Southampton Water Ramsar site.

6.2.39 Air Quality Consultants (June 2018) were subsequently commissioned to undertake revised air quality modelling of the impacts of the Local Plan in Eastleigh Borough - which at the time still included an SGO to the north of Bishopstoke and Fair Oak. . A single future assessment year of 2036 was used for a worst-case combination of two Local Plan scenarios; DS2_DPC_2036 and DS3_DPP_2036. Both scenarios included the full Local Plan development quanta (including 5,656 dwellings at Bishopstoke / Fair Oak) but with a range of different options for transport interventions – for each road link, the scenario producing the highest traffic flows was selected for the air pollution modelling.

6.2.40 The approach to atmospheric pollution modelling was the same as for River Itchen SAC, as described at paragraphs 6.2.21 to 6.2.31.

Screening assessment: impacts on saltmarsh habitats within the Solent Maritime SAC and Solent & Southampton Water Ramsar site

6.2.41 The worst case scenario model produced by AQC (June 2018) predicted nitrogen deposition rates above the 1% screening threshold for approximately 750m from the M27 and 130m from

the A27. However, the total nitrogen deposition concentrations were predicted to be above the 20 kgN/ha/yr only up to about 65m from the M27 as shown in Figure 6.2 and Figure 6.3.

6.2.42 The results of this modelling were overlain with the SPA/Ramsar boundaries and habitat data to assess the area of impacted saltmarsh habitat[21] as shown in Figure 6.4 and Figure 6.5. Saltmarsh habitats shown in Figure 6.5 include *Halimione spp.*, *Juncus gerardii*, Saltmarsh grass and *Spartina spp.*. No saltmarsh habitat within the SAC or Ramsar site was within the 65m zone adjacent to the M27 where nitrogen deposition was predicted to exceed 20 kg N/ha/yr. It was therefore concluded that there would be no likely significant effect from nitrogen deposition on the Solent Maritime SAC or Solent and Southampton Water Ramsar, and these sites were screened out from further assessment.

6.2.43 The Local Plan transport (and hence air quality) modelling was based on all the submission allocations, including 5,300 dwellings at the SGO (3,350 dwellings within the plan period) and the link road. On this basis the HRA concluded there was no likely significant effect from air pollution on Solent Maritime SAC or Solent and Southampton Water Ramsar. The SGO's 5,300 dwellings (3,350 dwellings within the plan period) and the link road are now deleted from the plan. This represents a significant proportion of the overall development proposed in the submission plan, and so it is considered reasonable to conclude that overall traffic levels will be lower, and thus the area and/or magnitude of exceedence over the 1% screening threshold will also be reduced by comparison with that modelled. Deletion of the SGO from the plan is therefore compatible with the earlier conclusion that there will be no likely significant effect from nitrogen deposition on the Solent Maritime SAC or Solent and Southampton Water Ramsar, and these sites can still be screened out from further assessment.

Impacts outside of Eastleigh borough

6.2.44 Traffic modelling data for road links close to European site boundaries outside of Eastleigh borough (e.g. M3 crossing of River Itchen SAC at Junction 11 south of Winchester and A3051 close to Solent Maritime SAC at Curbridge) were not available. Air pollution impacts in these locations could not therefore be modelled.

6.2.45 New Sub-Regional Transport Model data were received in August 2018 and March 2019 for three model scenarios at locations outside Eastleigh borough in close proximity to the River Itchen SAC (M3 at Otterbourne and Twyford Down) and Solent Maritime SAC (A3051 Burridge to Curbridge) – these locations are shown on a plan at Appendix V:

- BL_DKF_2015: baseline traffic flows in 2015
- BL_DOP_2036: baseline traffic flows in 2036, including all committed development in Eastleigh Borough and the wider Solent sub-region, but not including EBLP development
- DS3_DPP_2036: traffic flows in 2036, including all committed development in Eastleigh Borough and the wider Solent sub-region, plus EBLP development – including the SGO north of Bishopstoke and Fair Oak

[21] Environment Agency (2004): *Science Group – Technology Solent CASI Survey, Project PM_0202, Final Project Report.*

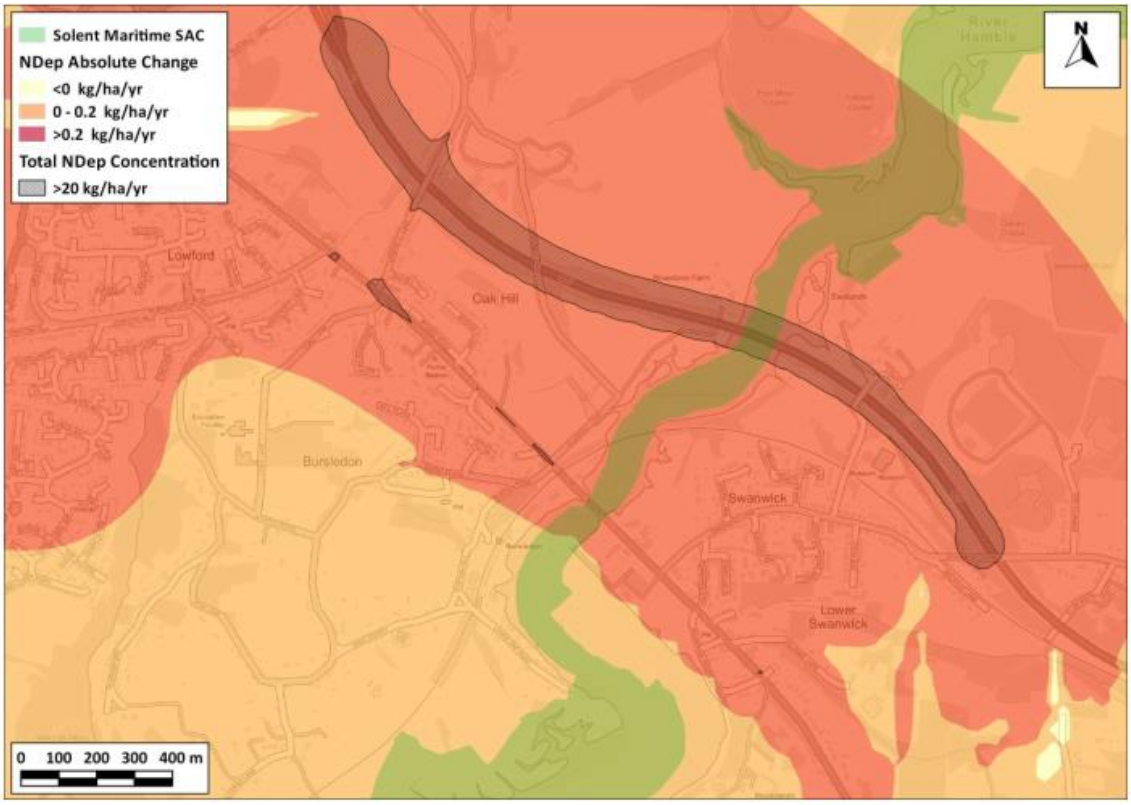


Figure 6.2: Solent Maritime nitrogen deposition, absolute changes in-combination and total nitrogen deposition (Defra model): M27 / A27

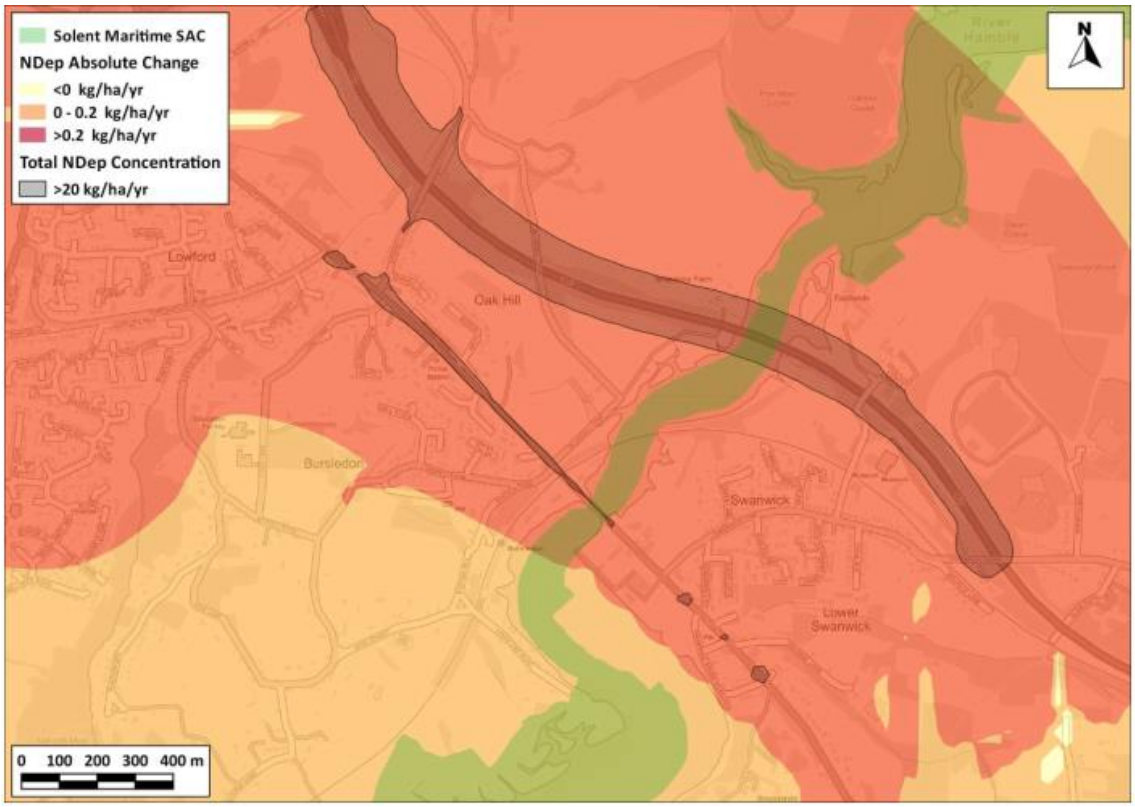
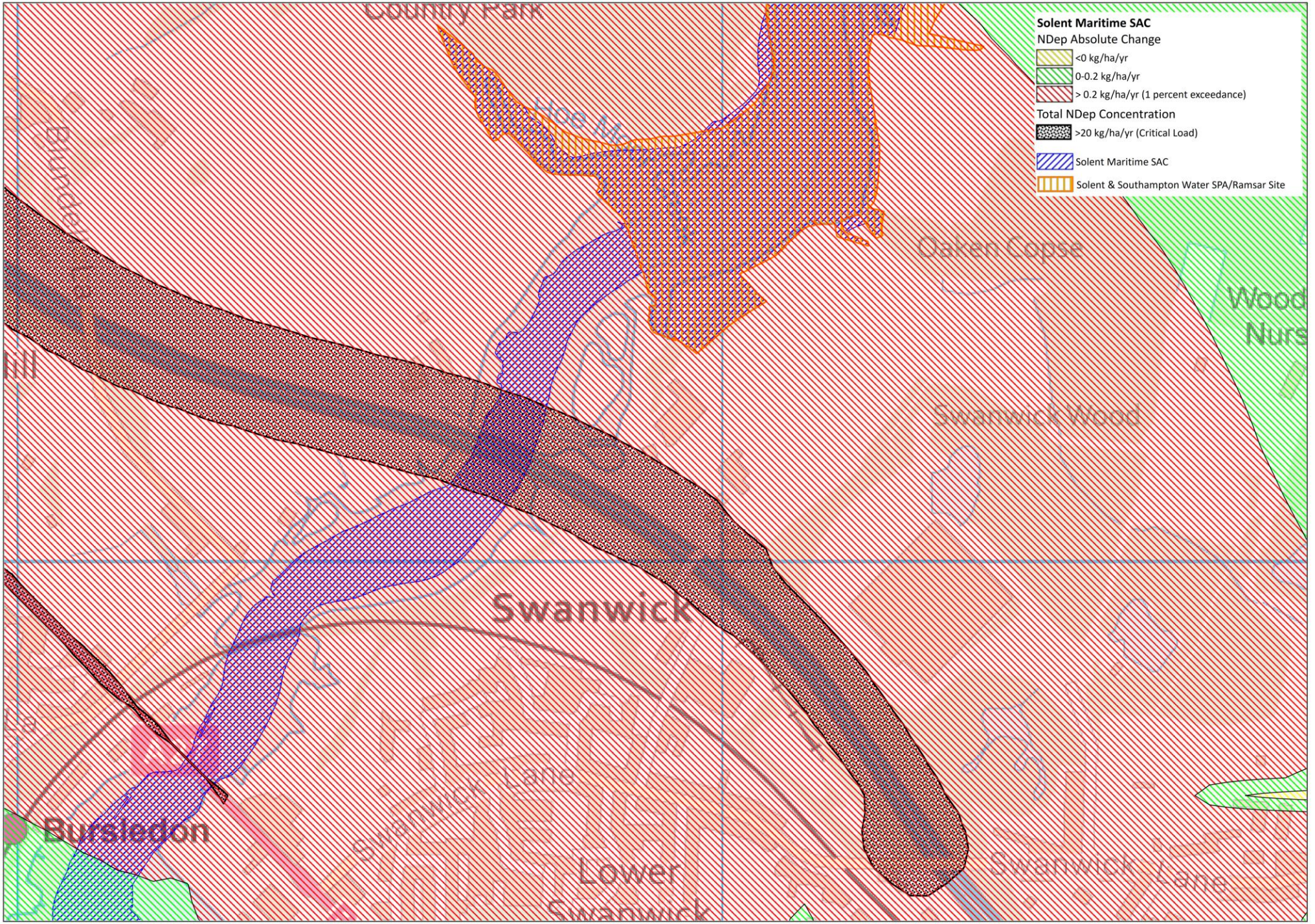
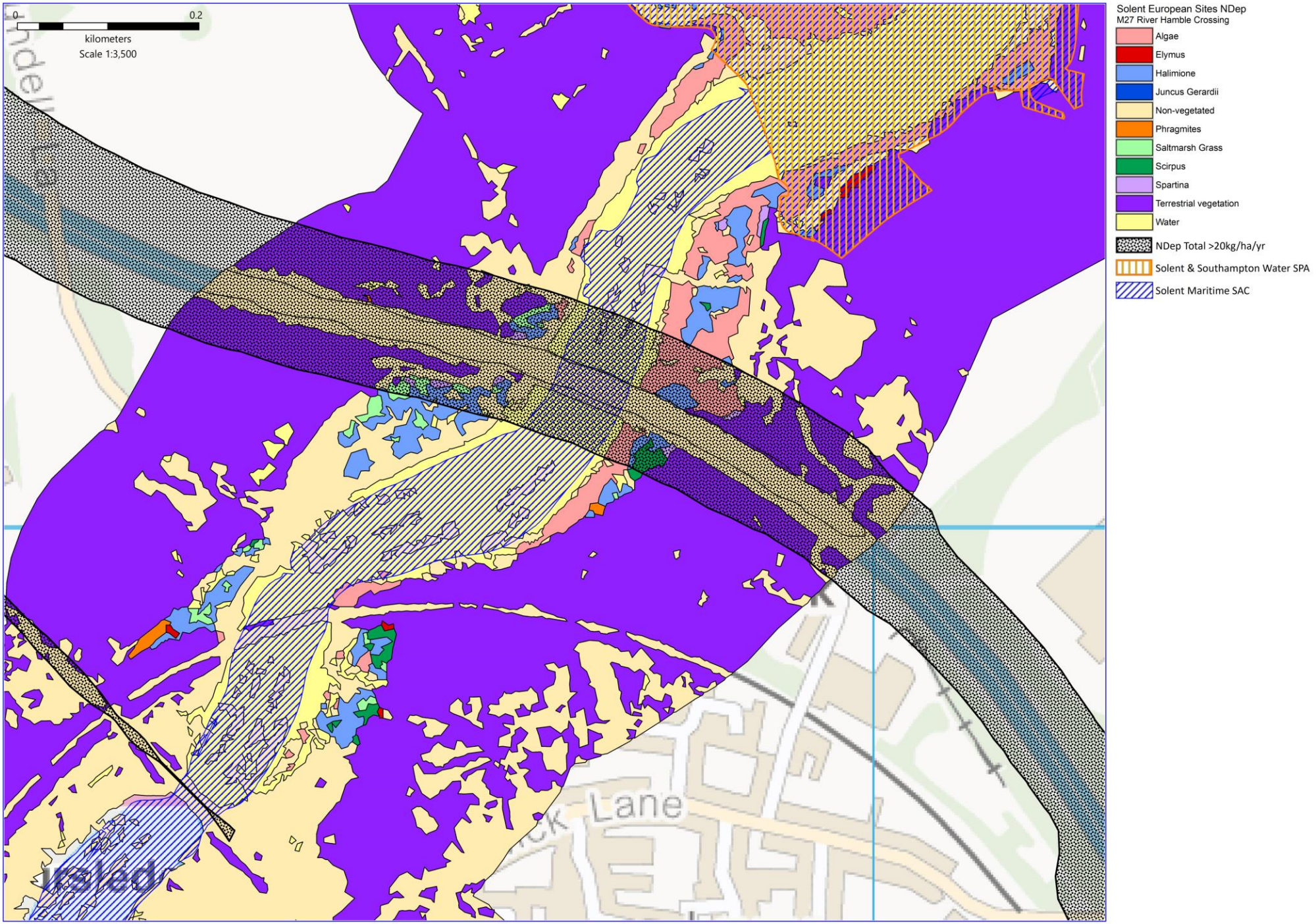


Figure 6.3: Solent Maritime nitrogen deposition, absolute changes in-combination and total nitrogen deposition (sensitivity test): M27 / A27


Solent Maritime SAC
NDep Absolute Change
<0 kg/ha/yr
0-0.2 kg/ha/yr
> 0.2 kg/ha/yr (1 percent exceedance)
Total NDep Concentration
>20 kg/ha/yr (Critical Load)
Solent Maritime SAC
Solent & Southampton Water SPA/Ramsar Site
Country Park
Oaken Copse
Swanwick Wood
Swanwick
Swanwick Lane
Lower Swanwick
Bursledon


0
0.2
kilometers
Scale 1:3,500
Solent European Sites NDep
M27 River Hamble Crossing
Algae
Elymus
Halimione
Juncus Gerardii
Non-vegetated
Phragmites
Saltmarsh Grass
Scirpus
Spartina
Terrestrial vegetation
Water
NDep Total >20kg/ha/yr
Solent & Southampton Water SPA
Solent Maritime SAC
Lane

6.2.46 A further run of the atmospheric dispersion model using the new traffic data was not commissioned. In its absence, predicted changes resulting from EBLP development (including the SGO) were analysed by comparing DS3_DPP_2036 against BL_DOP_2036. Three factors were considered: 24hr annual average daily traffic (AADT) flow for vehicles; 24hr AADT for HGVs; and daily average speed (km/hr). In line with advice from Natural England (pers. comm., 2018a), predicted changes were compared against the Design Manual for Roads and Bridges[22] screening thresholds, namely:

- Daily traffic flows will change by 1,000 annual average daily traffic (AADT) or more; or
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10km/hr or more.

6.2.47 None of the modelled road links exceeded the screening thresholds, as can be seen in the analysis tables presented at Appendix V. The AADT (vehicles) flow caused in 2036 by EBLP development (including the SGO), when compared to the 2036 baseline, was predicted to increase by 1,086 on the M3 northbound carriageway at Otterbourne, however, this was predicted to be offset by a decrease in southbound traffic of -533, and the modelled road link is not within 200m of an SAC (in this case the River Itchen). Traffic flow increases outside of Eastleigh borough were screened out from the assessment and not considered further.

6.2.48 The SGO (including 3,350 dwellings within the plan period) is now deleted from the EBLP. This represents a significant proportion of the overall development proposed in the submission plan, and so it is considered reasonable to conclude that overall traffic levels will be lower in close proximity to the River Itchen SAC (M3 at Otterbourne and Twyford Down) and Solent Maritime SAC (A3051 Burridge to Curbridge). Deletion of the SGO from the plan is therefore compatible with the earlier conclusion that there will be no likely significant effect from atmospheric pollution in these locations, and traffic flow increases outside of Eastleigh borough can still be screened out from further assessment.

6.3 Coastal Squeeze

6.3.1 The HRA screening for the Issues & Options Local Plan (AECOM, 2015) considered that the plan did not propose development in such a position that it would cause coastal squeeze or necessitate a change to Shoreline Management Plan policy, and hence concluded that no significant effects were likely to occur. This remains the case for the EBLP 2016-2036 at the Proposed Main Modifications stage and the issue is not considered further.

6.4 Disturbance: Strategic Impacts

6.4.1 This impact pathway relates to the direct and in combination effects of disturbance on the River Itchen SAC and Solent and Southampton Water SPA/Ramsar, and the potential for indirect in combination effects on the New Forest SPA (see Appendix I). As a strategically operating

[22] Highways Agency (2007): *Design Manual for Roads and Bridges: Volume 11 Environmental Assessment, Section 3 Environmental Assessment Techniques, Part 1 Air Quality (HA207/07).*

impact it is assumed that all proposed allocations with residential use will contribute to the effect; as such the screening assessment at Appendix I does not list disturbance as an LSE for proposed allocations, focusing instead on site specific impacts. The potential for site-specific disturbance effects is considered below (section 6.5).

Impact mechanisms

6.4.2 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.

6.4.3 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).

6.4.4 Disturbance can be caused by a wide variety of activities and, generally, both distance from the source of disturbance and the scale of the event will influence the nature of the response. Factors such as habitat, food requirements, breeding behaviour, cold weather, variations in food availability and flock size, will influence birds' abilities to respond to disturbance and hence the scale of the impact (Stillman *et al,* 2009). On the other hand, birds can modify their behaviour to compensate for disturbance, for example by feeding for longer time periods. Some birds can become habituated to particular disturbance events or types of disturbance, and this habituation can develop over short time periods (Stillman *et al,* 2009).

In combination effects

6.4.5 The following plans/projects may also contribute to (strategically-operating) disturbance effects:

- Strategic development at North of Whiteley, Winchester district
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Welborne Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- South Downs Local Plan (emerging)

- Test Valley Borough Revised Local Plan 2011 – 2029 (adopted 2016)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034

Evidence of current or future impacts: Solent European Sites

6.4.6 At coastal areas it can be helpful to divide impacts into the effects of disturbance on overwintering birds, or on breeding birds. Impacts to wintering birds are centred on interruption to foraging or roosting. Individuals alter their threshold in response to shifts in the basic trade-off between increased perceived predation risk (tolerating disturbance) and the increased starvation risk of not feeding or increased energetic expenditure (avoiding disturbance) (Stillman *et al*, 2009). During the breeding season, impacts on shorebirds arise from increased predation of eggs, as well as trampling and increased thermal stress, when birds flush the nest in response to a disturbance event, leading to reduced breeding success (Stillman *et al*, 2009).

6.4.7 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*, 2011), household surveys and future visitor modelling (Fearnely *et al*, 2011) and disturbance impact modelling (Stillman *et al*, 2012). Phase 3 outlined an avoidance and mitigation strategy to prevent adverse effects on winter bird populations around the Solent (Liley & Tyldesley, 2013).

6.4.8 The research showed that an estimated 52 million visits are made by households to the Solent coast each year, of which just over half are made by car. The majority of visitors make trips to the coast specifically to see the sea and enjoy the coastal scenery. Dog walking was the most frequently observed activity, with walking, cycling and jogging being other common recreational activities. Most activities involved people staying on the shore/sea wall rather than being on the intertidal areas or in the water. Human activity that took place on the intertidal areas was more likely to result in bird disturbance; on those areas dog walking was particularly common and resulted in a disproportionate amount of the observed bird disturbance.

6.4.9 The EBLP allocates a minimum of 1,387 dwellings to locations within 5.6km of the Solent coastline; see Table 6.4 and Figure 6.6. In the absence of avoidance and/or mitigation measures, this level of residential development is likely to increase the number of regular visitors to the Solent and Southampton Water SPA/Ramsar. The resultant increase in disturbance from people and their dogs is likely to adversely affect overwintering populations dark-bellied Brent goose, black-tailed godwit, ringed plover and teal (by reducing winter survival rates), thereby undermining the integrity of the SPA/Ramsar.

Table 6.4: Proposed allocations falling within 5.6km Solent mitigation zone

Ref	Name	No. dwellings
BO1	Land south of Maddoxford Lane and east of Crows Nest Lane	30
BO2	Land north-east of Winchester Street, Botley	375
BO3	Land east of Kings Copse Avenue and east of Tanhouse Lane	120
BO4	Land north of Myrtle Cottage, Winchester Road	22
BU1	Land north of Providence Hill	19
BU2	Heath House Farm	38
BU3	Land lying south east of Windmill Lane	50
BU6	Riverside Boatyard, Blundell Lane, Bursledon	N/A
E6	Eastleigh River Side	N/A
E7	Development opportunities adjoining Eastleigh River Side	N/A
E9	Southampton Airport	N/A
FO1	West of Durley Road, Horton Heath	73
FO3	Lechlade, Burnetts Lane, Horton Heath	13
HA2	Mercury Marina and Riverside Camping and Caravan Park	N/A
HE1	Land west of Woodhouse Lane, Hedge End	605
HE2	Land at Sundays Hill and Land north of Peewit Hill Close	106
HE3	Land at Home Farm, St John's Road	16
HE4	Land off Peewit Hill Close and Dodwell Lane	N/A
HE5	Land at Netley Firs, Kanes Hill, Hedge End	N/A
HH1	Land west of Horton Heath	1,500 (part)
WE1	Chalcroft Business Park, Burnetts Lane, West End	N/A
WE2	Land adjoining the Chalcroft Business Park	N/A
WE3	Land west of Tollbar Way and south of Berrywood Business Park, Hedge End	N/A
WE4	Land at Aegeas Bowl	N/A

6.4.10 The Phase 3 (Liley & Tyldesley, 2013) report considered the available options for avoiding and mitigating impacts to the overwintering bird assemblage of the Solent European sites, in the context of current planning policy and regulation. It outlined a strategy of projects including 'quick wins' and longer term behavioural change initiatives for reducing the overall adverse effect such that planned new developments can be accommodated. The Solent Recreation Mitigation Partnership (SRMP) was established in 2014 to implement the recommendations of the Phase 3 report. Among its first tasks was the preparation of an interim mitigation strategy and significant progress towards its implementation has already been made. The SRMP adopted its definitive mitigation strategy[23] to take the project forward in 2017, key aspects of which include:

[23] Solent Recreation Mitigation Partnership (2017): *Solent Recreation Mitigation Strategy*. Accessed online [14/04/2021] at: http://www.birdaware.org/CHttpHandler.ashx?id=29372&p=0

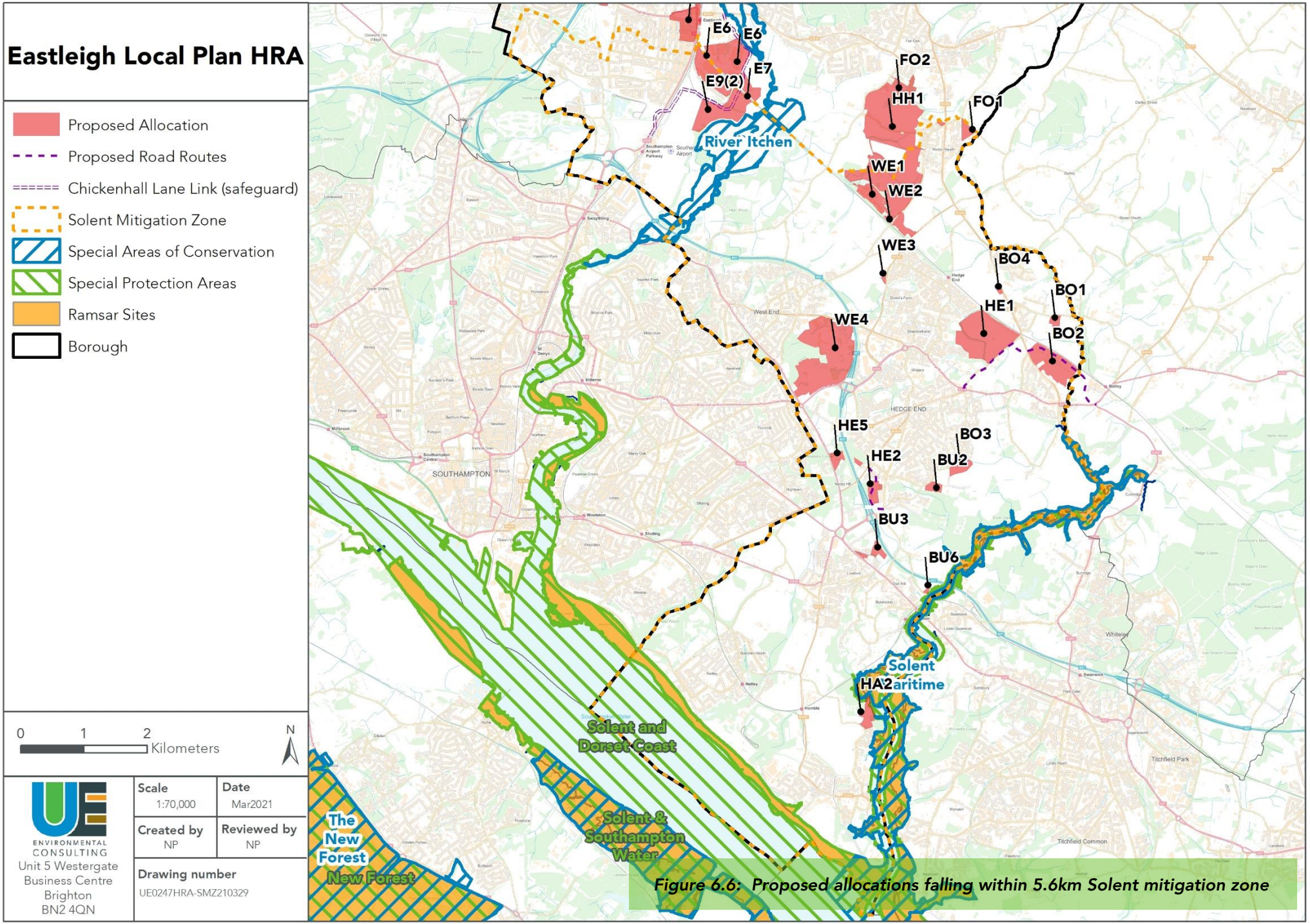


Figure 6.6: Proposed allocations falling within 5.6km Solent mitigation zone

- 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 code 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;
- Implementation and monitoring to be funded by contributions from development which creates net additional dwellings within 5.6 kilometres of the Solent SPAs (a distance which includes approximately two-thirds of Eastleigh borough including Horton Heath, parts of Eastleigh, and all settlements and parishes southwards); and
- A partnership manager to coordinate and manage all of the above.

6.4.11 Most recent local development plans in the area now include a policy providing the mechanism to collect development contributions from proposals likely to lead to disturbance effects, such as EBLP proposed policy DM11. Taking account of this mitigation strategy (but not at the screening stage), Chapter 7 undertakes an assessment of the disturbance effects of the EBLP on the Solent and Southampton Water SPA/Ramsar in view of the sites' conservation objectives.

Evidence of current or future impacts: New Forest

6.4.12 At the New Forest SPA, it is the ground and near-ground nesting birds that are particular receptors of negative effects, such as Dartford Warbler, Nightjar and Woodlark. Studies by Langston *et al* (2007), Liley and Clarke (2003), and Murison (2002) investigated the effect of disturbance on Nightjar on heaths in Dorset, finding that breeding success of Nightjar is significantly lower close to paths, and that proximity to housing has a negative relationship with the size of the population (Langston *et al*, 2007). The most common cause of breeding failure for this ground-nesting species was due to daytime predation of eggs when disturbance caused an incubating bird to leave the nest.

6.4.13 Similarly, the study by Murison *et al* (2007) found that for Dartford Warbler on Dorset heathland, disturbance also reduced breeding activity, particularly so in heather-dominated territories. Birds in heavily disturbed areas (eg, close to access points and car parks) delayed the start of their breeding by up to six weeks, preventing multiple broods and so reducing annual productivity. Most of this disturbance was found to come from dog-walkers as a result of dogs being encouraged to run through the vegetation after sticks.

6.4.14 It has been observed that the removal of human disturbance effects could result in an increase of between 13% and 48% in the breeding population of Woodlark over 16 heathland sites (Mallord *et al*. 2007a, Mallord *et al*. 2007b). At sites with recreational access Woodlark was found to be less likely to colonise suitable habitat in areas with greater disturbance. The probability of colonisation was reduced to below 50% with disturbance levels at eight events per hour.

6.4.15 Disturbance effects are not the only impacts of visitor pressure. Others include: arson and wild fires, litter, predation from people and pets, fly-tipping, trampling and soil compaction, and site management problems, each of which could have indirect effects on SPA qualifying features. Sharp *et al* (2008) estimated the number of annual visits to the New Forest to be over 13 million per year, a figure which they predicted to increase by 1.05 million visits by 2026 based on sub-regional development objectives at the time the work was carried out. They estimated that around three quarters (764,000) of this annual total increase would originate from within the first 10km from the Forest. This then reduces to between 10,000 and 50,000 additional visitors from within each 1km band originating between 8 and 18 km from the Forest in any direction. This further declines to approximately 3,000 – 4,000 additional visitors per year beyond a distance of 20km. The New Forest is between c.3.3km and c.21.6km from parts of Eastleigh borough and residential proposals will therefore fall within the sphere of potential influence on the SPA. Although, the New Forest is relatively inaccessible from the southern part of the borough due to the Solent, northern parts of the borough (Eastleigh and Chandler's Ford) are around 12-13km from the New Forest.

6.4.16 The EBLP provides for approximately 14,580 dwellings within c.20km of the New Forest. In the absence of avoidance and/or mitigation measures, this level of residential development is likely to increase the number of regular visitors to the New Forest SPA. The resultant increase in disturbance from people and their dogs is likely to adversely affect breeding populations of nightjar, woodlark and Dartford warbler (by reducing breeding success), thereby undermining the integrity of the SPA/Ramsar.

6.4.17 Local planning authorities surrounding the New Forest have taken a range of approaches to putting mitigation strategies in place. New Forest District Council has been seeking development contributions to mitigation measures for a number of years as currently set out in its *Mitigation for Recreational Impacts on European Sites SPD* (2018). It consulted on a new *Mitigation for Recreational Impacts on New Forest European Sites SPD*[24] in January and February 2021 and expects to adopt the SPD in Spring 2021. Mitigation measures include the provision and enhancement of greenspace in the district, access and visitor management on site, employment of additional ranger resource within the National Park and ongoing monitoring. Test Valley Borough Council also seeks development contributions towards habitat mitigation measures under its Interim Mitigation Framework (2014)[25].

6.4.18 The New Forest National Park Authority has sought development contributions towards habitat mitigation measures from development within the National Park since 2012, and it meets with Natural England, the RSPB and Wildlife Trust to review the mitigation measures annually. As part of the New Forest Local Plan 2016-2036, the Authority has published a revised mitigation

[24] New Forest District Council (2021): *Mitigation for Recreational Impacts on New Forest European Sites SPD – Consultation Draft.* Accessed online [14/04/2021] at: https://www.newforest.gov.uk/media/1306/Mitigation-for-Recreational-Impacts-On-New-Forest-European-Sites-Draft-SPD/pdf/Mitigation_for_Recreational_Impacts_DRAFT_2021.pdf?m=637438075465070000

[25] Test Valley Borough Council (2014): *New Forest SPA Mitigation – Interim Framework.* Accessed online [14/04/2021]: https://www.testvalley.gov.uk/planning-and-building/guidance/solent-southampton-water-special-protection-area

strategy[26] which sets out a range of measures to protect the SAC/SPA/Ramsar qualifying features from the effects of development, including:

- Access management within the designated sites;
- Alternative recreation sites and routes outside the designated sites;
- Education, awareness and promotion;
- Monitoring and research; and
- In perpetuity funding.

6.4.19 The strategy states that the Authority will work with Natural England and other neighbouring local authorities to develop a strategic and co-ordinated approach to mitigation and preventing adverse effects on the SAC/SPA/Ramsar, which could involve adapting the strategy's mitigation measures and extending the funding mechanism to include mitigation proposals outside of the National Park. To that end, a partnership was established with the aid of grant funding from the Ministry for Housing, Communities and Local Government. The New Forest International Designation Working Group is formed of officers representing: Eastleigh Borough Council, Natural England, New Forest National Park Authority, New Forest District Council, Southampton City Council, Test Valley Borough Council and Wiltshire Council.

6.4.20 The Working Group commissioned a new study into recreational effects, arising from new development, on the international nature conservation designations in the New Forest. The scope of the study was to: (i) collate up to date information to enable a clearer understanding of the profile of visitors (including local regular users, day visitors and staying tourists) to the New Forest international nature conservation designations, including the reasons for their visits and where they are coming from; (ii) consider the nature and type of potential recreational impacts on the New Forest SPA, SAC and Ramsar species and habitats; (iii) use this information to determine a catchment area where additional population growth would have a significant effect on these designations (and thus where mitigation may be required); and (iv) re-affirm existing mitigation measures or recommend appropriate further options for mitigating the impacts of recreation associated with changing visitor numbers and patterns. This research will form the basis for a strategic approach to mitigation from local authorities close to the New Forest. It will update the evidence base to demonstrate the proportion of people visiting, how often people visit, where they have travelled from, the locations they visit and why, their activities and what proportion of these activities take place in the New Forest. Five research reports were completed and published on the New Forest NPA website in May 2020[27], including the results of telephone and on-site visitor surveys and vehicle count surveys.

6.4.21 The first part of the research (a telephone survey) ran from November to December 2018 and interviewed 2,000 people including 138 in Eastleigh borough, asking whether they had visited in the past 12 months, how this compared to other greenspaces, how often they visited and the activities undertaken. As would be expected, the emerging findings show that Eastleigh

[26] New Forest National Park Authority (2020): *Revised Habitat Mitigation Scheme 2020.* Accessed online [14/04/2021]: https://www.newforestnpa.gov.uk/app/uploads/2020/07/Revised-Habitat-Mitigation-Scheme-SPD-.pdf

[27] https://www.newforestnpa.gov.uk/documents/conservation/footprint-ecology-2020/

residents are less reliant on the New Forest and make fewer visits than residents living closer by. The draft telephone survey findings indicate that:

- around two thirds of interviewees in Eastleigh borough had visited the New Forest in the past 12 months;
- the most common frequency of visits from Eastleigh borough residents was once a month or less than once a month;
- across the whole survey, the proportion of people who had visited the New Forest in the past year, and their frequency of visits, declined with distance and travel time;
- the proportion of visits to the New Forest as opposed to other greenspaces also declined with distance and travel time;
- for people travelling 10km or more, the most common activity undertaken was walking; and
- part of the reason why people visit the New Forest relates to the intrinsic characteristics of the landscape; however many people from nearby urban areas visit locations outside of the European designated sites, for example the larger villages of Lyndhurst, Burley, Brockenhurst and Lymington.

6.4.22 A total of 111 Eastleigh residents were surveyed as part of the on-site visitor surveys. The results for Eastleigh residents show that:

- Over 70% of respondents visited less frequently than once a week;
- The main activity stated by Eastleigh residents was walking (over 40% of responses), followed by dog walking (30% of responses);
- The most common amount of time spent on the visit was 1-2 hours;
- A wide range of reasons were given for the choice of locations. The most common reasons given were habit/familiarity/previous experience (in 21 responses); quick and easy travel routes or location en route (16 responses); choice of routes (12 responses); and scenery/variety of views (12 responses).

6.4.23 The partnership responsible for the strategic mitigation is putting governance and decision making structures in place to progress discussions on an appropriate mitigation strategy. The steering group have asked the researchers to undertake a further short piece of work to answer some outstanding questions resulting from their research and set out clearer recommendations to help progress this to a strategy. The partnership will use the research and recommendations in the further work to consider whether all, or only part, of Eastleigh borough will be required to contribute to the strategy and the proportionate level of contributions.

6.4.24 In addition to its membership of the Working Group, EBLP Policy DM11 includes a commitment that the Council will work with PfSH, Natural England, Environment Agency and other organisations to develop and implement a strategic approach to the protection of European sites from the direct and indirect effect of development including recreational disturbance. The policy specifically refers to the Council's intention to continue to work in partnership to deliver mitigation measures where required to protect the New Forest from the impacts of

development proposals. While the research project is completed and in advance of a joint strategic mitigation programme being agreed, Eastleigh Borough Council has developed an interim approach to mitigating the effects of residential development within the borough[28]. The extent of the mitigation required will be calculated based on the average number of visits generated by new homes and reflecting the estimated proportion of households who visit the New Forest and designated SPA/SAC/Ramsar sites each year.

6.4.25 Within the borough, there is scope to provide SANG (including within the west of Horton Heath development) and implement changes to existing open spaces and routes. By improving facilities, increasing capacity and delivering a network of routes and spaces, these will be increasingly attractive as an alternative to visiting the New Forest. The Council has identified a number of projects to improve open spaces and deliver footpath improvements as set out in the Infrastructure Delivery Plan and Capital Investment Programme. In addition, Hampshire County Council has identified strategic (and non-strategic) infrastructure projects within the borough and cross-boundary. These include improvements to HCC country parks and routes to these parks within the borough; and improving and connecting existing routes to help deliver a strategic network of walking, cycling and riding routes.

6.4.26 A proportion of the visits to the New Forest will be due to the intrinsic character of the New Forest, its landscape, nature and scale, and therefore cannot be diverted to other locations. Access management measures such as changes to car parks, way-marking and improvements to routes can be used to direct people to non-designated areas within the New Forest. In addition, face to face contact, communications, education and events help to promote responsible recreation while visiting designated areas. Projects are already in place in the New Forest and contributions could be made to extend these further to address extra visits from Eastleigh residents. The need for this will be established by the ongoing research being conducted by the Working Group, of which Eastleigh Borough Council is a member.

6.4.27 Taking account of these commitments (but not at the screening stage), Chapter 7 undertakes an assessment of the disturbance effects of the EBLP on the New Forest SPA in view of the site's conservation objectives.

Recreational impacts on River Itchen SAC

6.4.28 In its representation on the Proposed Submission plan, Natural England raised concerns over the potential recreational impacts from development upon the River Itchen SAC.

Potential impact mechanisms

6.4.29 High levels of recreation 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

[28] Eastleigh Borough Council (2019): *Interim New Forest Recreation Mitigation*. Accessed online [14/04/2021] at: https://www.eastleigh.gov.uk/media/5441/update-doc-4c-new-forest-interim-mitigation.pdf

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.

6.4.30 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.

Consideration of likely significant effects

6.4.31 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 2.9km of main river channels in Eastleigh Borough (7.5% of main river channel in the SAC). The opportunity for recreational impacts to the river banks through erosion and siltation are therefore limited. Most of the accessible river bank is along the artificially constructed banks of the former canal known as the Itchen Navigation. This runs along the side of the Itchen flood plain and is elevated above it within constructed river banks. These are generally more robust and resilient to trampling and erosion than natural soft sediment river banks within the flood plain. However, there are localised sections of bank where dogs have access to the Navigation where marginal fen and swamp vegetation is damaged by recreational activity. In addition, some sections of the Navigation path can become muddy and difficult to access so increasing the risk of sediment erosion into the SAC.

6.4.32 There has been no assessment of the likely increase in recreational use of the public rights of way along the SAC river channels from the level of proposed housing in Eastleigh, however, an approximate estimate can be calculated by comparing the current population of Eastleigh with the increase in population derived from proposed development in the Local Plan. The 2011 Census gives a population for Eastleigh Borough of 125,900 people. The Local Plan proposes 14,580 dwellings in the period 2016-2036. Assuming an occupancy rate of 2.4 people per house would give a population increase for the Borough of almost 35,000 people or an increase in population of 28%.

6.4.33 Between 2007 and 2012 the Hampshire & Isle of Wight Wildlife Trust led a heritage lottery funded project aimed at preserving the Itchen Navigation and enhancing it for wildlife. This included significant expenditure on restoration of river banks and provision of improved footpaths. The work of this project has continued with the support of the Wildlife Trust through the Friends of the Itchen Navigation (FIN). This volunteer group is involved in the continued maintenance of the Navigation and its associated footpaths. This has become an important component of the Green Infrastructure of the Borough.

6.4.34 An increase in local population of 28% may result in an increase in recreation use of the River Itchen by a similar amount. However, within Eastleigh Borough this will be confined to 7.5% of the main river water courses within the SAC. . Given the construction of the banks of the Itchen Navigation it is unlikely that the river will be able to widen appreciably as a result of recreational use. Trampling and erosion of the canal path could result in localised sediment transfer to the Itchen Navigation but to an extent, this is self-regulating, as fewer people will walk along the difficult to traverse muddy sections of canal bank.

6.4.35 The Itchen Navigation Project and FIN have significantly reduced the impact of bankside erosion on the River Itchen SAC and continue to do so. Given the limited extent of the potential impact and the projects in place to manage this impact, it is considered that increased recreation use is not likely to cause a significant effect on the SAC from bank erosion. However, it is considered important that continued funding is available to support the FIN and the green infrastructure and ecosystem services that are provided by the Itchen Navigation.

6.4.36 Otters are most vulnerable to recreation impacts if there is disturbance to their holts, lying up sites and breeding sites. These tend to be undisturbed locations with limited or no public access. The potential increase in recreation use of the existing public rights of way network and open access areas such as the Itchen Valley Country Park is not considered likely to have a significant impact on these sensitive but inaccessible locations.

6.4.37 Overall it is considered that increases in recreation use of the River Itchen arising from the Local Plan policies is not likely to have a significant effect on the designated features of the SAC.

6.5 Disturbance: Site Specific Impacts (Noise and Vibration)

6.5.1 This impact pathway relates to the direct and in combination effects of noise and vibration on River Itchen SAC and Solent and Southampton Water SPA/Ramsar (see Appendix I).

Impact mechanisms: River Itchen

6.5.2 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. The HRA screening for the Issues & Options Local Plan (AECOM, 2015) established distances from the SAC over which construction projects could be likely to significantly affect qualifying species based on the species' sensitivity to noise and vibration.

Atlantic salmon

6.5.3 In addition to direct trauma, a significant risk associated with underwater noise generated by piling is the creation of an acoustic barrier to fish migration. Acoustic barriers/deterrents have the potential to impede fish as they migrate up and down the estuary. 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).

6.5.4 The metric most commonly used for the assessment of the behavioural and audiological effects of noise on animals is that of 'decibels above the hearing threshold' or dB_{ht}. This is species-specific, requiring knowledge of the hearing threshold of the species in question, and has been most widely investigated for marine species. The Atlantic salmon has relatively poor hearing with peak sensitivity at 160Hz. For marine species, it is becoming accepted practice in the UK to consider that between 0-50dB_{ht} (*Species*) there is a low likelihood of disturbance. The Environment Agency criteria for acceptability of in-water levels for Atlantic salmon requires that not more than 50% of the cross sectional area of a watercourse should be exposed to noise levels greater than 50dB_{ht} (*Salmo salar*) (i.e. 50 decibels above the hearing threshold of the Atlantic salmon) to ensure that continued use of the watercourse by migrating salmon is possible (AECOM, 2015).

6.5.5 Postlethwaite (2010) [29] suggested that noise levels may exceed the 50dB_{ht} (*Salmo salar*) threshold for some construction activities (e.g. piling operations) taking place up to 20m (in the case of vibropiling) or up to 70m (in the case of impact piling) from the edge of the watercourse. Given the relatively narrow width of the river in some locations, it is possible that vibration within the river will travel the full width.

6.5.6 The Environment Agency has expressed concern over the potential risks to incubating salmon eggs from vibration. It would hence be prudent for a preconstruction habitat survey to be undertaken by a fisheries biologist for sites close to the SAC to determine the likelihood of salmon spawning occurring in the relevant stretch of the River Itchen SAC and the Barton River in particular. If the likelihood was low, or the anticipated levels of vibration were also low (through the use of non-percussive methods of piling for example) then the timing of the works would probably not be affected from this consideration. If the likelihood of the presence of salmon eggs and vibration were both high, then timing of the works would need to be restricted.

Otter

6.5.7 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 (AECOM, 2015). Chanin (2003) stated that otters will rest under roads, in industrial buildings, close to quarries and at other sites close to high levels of human activity. These observations indicate that otters are very flexible in their use of resting sites and do not necessarily avoid disturbance in terms of noise or proximity to human activity. However, 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.

[29] Postlethwaite B. February 2010. Noise Quality Assessment Eastleigh River Side Project. Unpublished report by Bureau Veritas on behalf of Eastleigh Borough Council. Cited in AECOM (2015), p.17.

6.5.8 Postlethwaite (2010) suggested that a sound pressure level below 50dB$_{ht}$ (*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 (e.g. driven/impact piling). To be precautionary for the purposes of this HRA any development site which could involve piling within 100m of the River Itchen SAC or tributaries known/likely to be used by otters is screened in for the devising of site-specific measures at the planning application stage.

Impact mechanisms: Solent & Southampton Water

6.5.9 Development whose construction processes emit a level of noise which could change the distribution of qualifying species within a European site or important supporting area, displacing the species from otherwise suitable habitats, could thereby reduce individual survival rates and risk a population reduction. This could be due to the proximity of the development site to the European site / supporting area, or the absence of existing topographic features, structures or vegetation which may serve to sufficiently attenuate the noise, or a combination of both.

6.5.10 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. 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. These activities can have an impact on bird species at a distance of up to 300m. This figure has been used as a worst-case scenario and is based on published research and studies by the Environment Agency for the Humber Estuary Tidal Defences scheme, the Environmental Statement for which states that: "*Sudden noise in the region of 80dB appears to elicit a flight response in waders to 250m from the source, with levels below this to approximately 70dB causing flight or anxiety behaviour in some species.*'' (Environmental Statement for the Humber Estuary Tidal Defences: Urgent works, Paull to Kilnsea and Whitton to Pyewipe, cited in Biodiversity by Design, 2008, p.79).

In combination effects

6.5.11 The following plans/projects may also contribute to noise and vibration within the River Itchen SAC and Solent & Southampton Water SPA/Ramsar:

- Extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP;
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)

- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034
- North Solent Shoreline Management Plan (2010) and related coastal strategies
- Hampshire Local Transport Plan (2011-2031)
- Joint Hampshire Minerals and Waste Plan (adopted 2013) (includes Portsmouth, Southampton, New Forest National Park and South Downs National Park)

Evidence of current or future impacts

6.5.12 Table 6.5 below lists the proposed allocations within the EBLP which fall within the relevant screening distances for River Itchen SAC and Solent and Southampton Water SPA/Ramsar. Also listed are extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP and which may act in combination.

Table 6.5: Proposed allocations falling with noise & vibration zones of influence

Site	**≤70m Itchen SAC**	**≤100m Itchen SAC***	**≤300m Solent SPA**
Qualifying feature:	*Fish*	*European otter*	*Waders/wildfowl*
S11 Transport infrastructure ^	Yes	Yes	No
AL1 Land east of Allbrook Way	No	Yes	No
BO2 Winchester Street, Botley	No	Yes	No
BO3 East of Kings Copse Avenue	No	Yes	No
BU1 Land north of Providence Hill	No	Yes	No
BU2 Heath House Farm	No	Yes	No
BU3 South east of Windmill Lane	No	Yes	No
BU6 Riverside Boatyard	No	Yes	No
CF1 Common Road Industrial Estate	No	Yes	No
CF3 Central Precinct, Chandler's Ford	No	Yes	No
CF4 Steele Close, Chandler's Ford	No	Yes	No
E1 Civic Offices, Eastleigh	No	Yes	No
E6 Eastleigh River Side	Yes	Yes	No
E7 Eastleigh River Side adjacent land	Yes	Yes	No
E9abcd Southampton Airport	Yes	Yes	No
FO1 West of Durley Road, Hton Hth	No	Yes	No
FO2 East of Allington Lane	No	Yes	No
HA2 Mercury Marina	No	Yes	Yes
HE1 West of Woodhouse Lane	No	Yes	No
HE2 Sunday's Hill / Pewett Hill Close	No	Yes	No
HE4 Peewit Hill Close / Dodwell Ln	No	Yes	No
HH1 Land west of Horton Heath	No	Yes	No

Site	≤70m Itchen SAC	≤100m Itchen SAC*	≤300m Solent SPA
WE3 Tollbar Way / Berrywood Park	No	Yes	No
Extant planning permissions / resolutions to grant			
Scotland Close, Fair Oak	No	Yes	No
Land north of Mortimers Lane	No	Yes	No
Land East of Knowle Lane	No	Yes	No
Hammerley Farm, Horton Heath	No	Yes	No
Land at Bishopstoke Cemetery, Stoke Common Road	No	Yes	No
Hardings Lane/Crowdhill, Fair Oak	No	Yes	No
Pembers Hill Farm, Fair Oak	No	Yes	No
St Swithuns Church, Allington Lane	No	Yes	No
Land north & east of Boorley Green	No	Yes	No
Land north of Hedge End station	No	Yes	No
Land east of Dodwell Lane & north of Pylands Lane	No	Yes	No
Land south of Ford Road & west of Dodwell Lane	No	Yes	No
Land north of Bridge Rd & west of Blundell Lane	No	Yes	No
Land at Providence Hill	No	Yes	No
Land r/o Orchard Lodge, Windmill Lane	No	Yes	No
Land at Berry Farm, Hamble Lane	No	Yes	No
Land north of Cranbury Gardens	No	Yes	No
Land at Jurd Way, west of Hamble Lane	No	Yes	No
Land south of Bursledon Road	No	Yes	No
14 Hobb Lane	No	Yes	No
North of Botley Road, West End	No	Yes	No
Land at Hatch Farm, north of Barbe Baker Avenue, West End	No	Yes	No
Land at Firtree Lane Horton Heath	No	Yes	No
Chestnut Avenue, Eastleigh	No	Yes	No
59-61 Brownhill Road, Chandler's Ford	No	Yes	No
Land at Fair Oak Road Bishopstoke	No	Yes	No
Draper Tools Ltd, Hursley Road, Chandler's Ford	No	Yes	No
The Mount Hospital Church Road Bishopstoke	Yes	Yes	No
Penarth House, Otterbourne Hill	No	Yes	No
North of Grange Rd, Netley Abbey	No	Yes	No

Site	≤70m Itchen SAC	≤100m Itchen SAC*	≤300m Solent SPA
Maddoxford Lane, Boorley Green	No	Yes	No
Crow's Nest Lane, Boorley Green	No	Yes	No
Land west and south of Horton Heath, Burnetts Lane	No	Yes	No
Land south of Long Garden Cottage	No	Yes	No

* Or within 100m of headwaters & tributaries known/likely to be used by otter, including when moving between catchments

^ Including noise/vibration impacts of the S11 proposals for junction improvements along Bishopstoke Road

6.5.13 The proposals listed in Table 6.5 are taken forward for assessment in view of the River Itchen SAC and Solent and Southampton Water SPA/Ramsar conservation objectives.

6.6 Land outside European Site Boundaries: Solent European Sites

6.6.1 This impact pathway relates to direct and in combination effects on land which is functionally connected to Solent and Southampton Water SPA/Ramsar (see Appendix I).

Impact mechanisms

6.6.2 Whereas the Solent Recreation Mitigation Partnership seeks to manage impacts to overwintering birds within the SPA/Ramsars, the *Solent Waders and Brent Goose Strategy* (SWBGS Steering Group, interim report May 2019) 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.

6.6.3 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.

6.6.4 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, have good visibility and are usually situated away from sources of disturbance, such as housing and industry (King, 2010).

6.6.5 The EBLP 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 functionally connected land used by the species for feeding or roosting at high tide. Loss of functionally connected land to development of any kind could, unless mitigated, reduce the overall extent of habitats which support the Brent goose and wader populations within the SPA/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.

6.6.6 The Solent Waders and Brent Goose Strategy (SWBGS Steering Group, interim report May 2019) aims to protect the network of non-designated terrestrial wader and Brent goose sites that support the SPA. 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.

In combination effects

6.6.7 The following plans/projects may also contribute to impacts to land outside European Site Boundaries (Solent European Sites):

- Extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP;
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- PfSH Spatial Position Statement 2016-2034

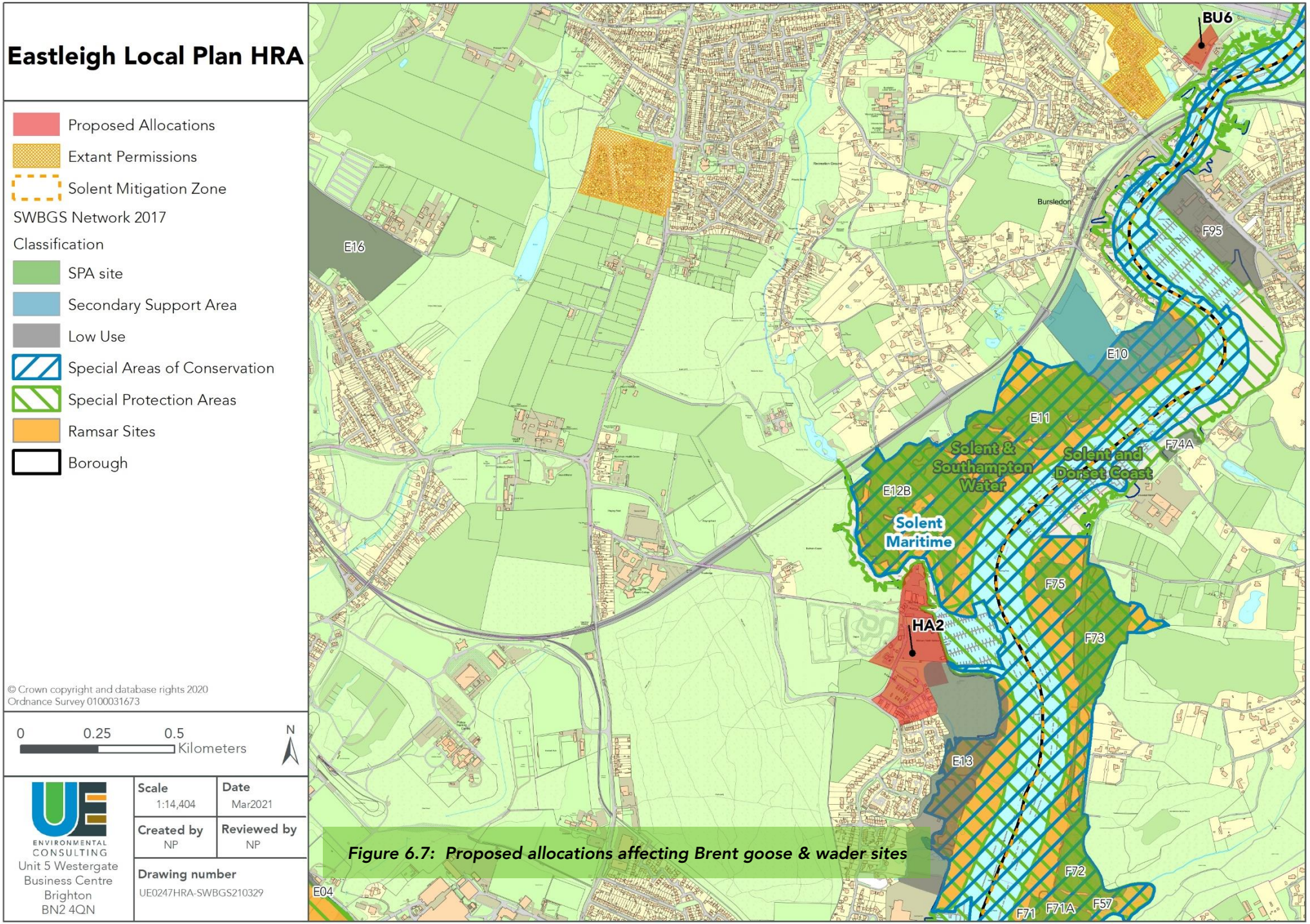


Figure 6.7: Proposed allocations affecting Brent goose & wader sites

Evidence of current or future impacts

6.6.8 The only site proposed for allocation within the EBLP close to a Brent goose / wader site is HA2 Mercury Marina and Riverside Camping and Caravan Park. There are no extant planning permissions in Eastleigh borough which overlap with a Brent goose / wader site. HA2 partially overlaps with the northern extremity of Brent goose / wader site E13 (Figure 6.7), a Low Use site with a maximum count of 26 birds over 19 recorded sightings of species including curlew, grey plover, lapwing, oystercatcher, redshank and dark-bellied Brent goose. The overlap extends to c.0.083ha but E13 extends another c.670m south and has a total area of c.12ha. Aerial photography shows the northern third of E13, broadly coinciding with Mercury Marina Saltmarsh SINC, to be dominated by deciduous woodland which is unsuitable for feeding Brent goose or roosting waders. The EBLP is therefore unlikely to result in significant effects on the Solent and Southampton Water SPA/Ramsar either alone or in combination with other plans and projects. Impacts to land outside European Site Boundaries (Solent European Sites) can be screened-out of the HRA process without relying on mitigation measures.

6.7 Impacts on Otter outside European Site Boundaries

6.7.1 This impact pathway relates to direct effects on otter using foraging and dispersal routes in relation to the River Itchen SAC (see Appendix I).

Impact mechanisms

6.7.2 The European otter *Lutra lutra* 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.

6.7.3 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.

6.7.4 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 6.8. Equally the Monks Brook and Tadburn Stream are thought to provide important links to the Test catchment to the west.

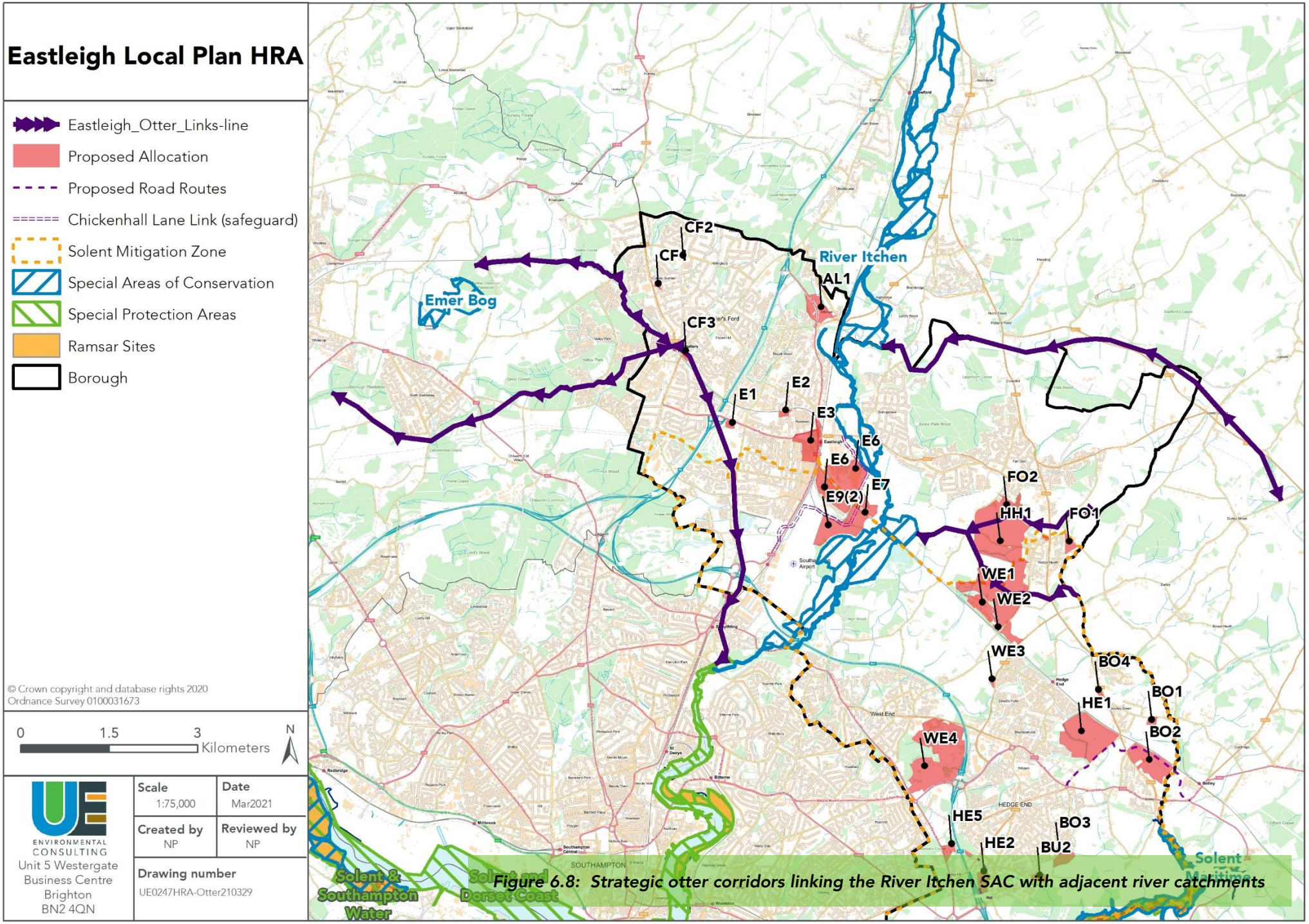


Figure 6.8: Strategic otter corridors linking the River Itchen SAC with adjacent river catchments

In combination effects

6.7.5 The following plans/projects may also contribute to impacts on the River Itchen otter population:

- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034

Evidence of current or future impacts

6.7.6 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. 2018b). 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.

6.7.7 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 EBLP; as such the screening assessment at Appendix I lists impacts to otter outside of the European site boundary under strategic policies but not individual site allocations. This impact pathway is carried forward for assessment in view of the River Itchen SAC conservation objectives.

6.8 Non-native Species and Site-specific Hydrological Impacts

6.8.1 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 SACSPA (see Appendix I).

Impact mechanisms: non-native species

6.8.2 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.

6.8.3 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*.

6.8.4 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.

6.8.5 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 EBLP.

Impact mechanisms: site-specific hydrological impacts

6.8.6 This pathway is defined as impacts from construction activities on sites potentially containing contaminants whose mobilisation during remediation, demolition or construction could result 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.

6.8.7 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 wide spread scale, which in turn is likely to impact the ecology within designated sites and surrounding areas.

6.8.8 During the operational phase, the increase in developed areas can result in an increase in suspended solids within surface water and impact upon water quality in receiving waters.

[31] GB Non-native Species Secretariat: Signal Crayfish, *Pacifastacus leniusculus*. Accessed online [14/04/2021] at: http://www.nonnativespecies.org/factsheet/factsheet.cfm?speciesId=2498

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. Where additional sediment is deposited within the river system this can impact upon migratory and spawning fish and feeding patterns.

In combination effects

6.8.9 The following plans/projects may also contribute to the introduction of non-native species to the River Itchen SAC and Solent Maritime SAC:

- Extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP;
- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034

Evidence of current or future impacts

6.8.10 Natural England's latest condition assessments[32] for River Itchen SSSI make specific mention of invasive species and water pollution for management units in unfavourable condition, including:

- Unit 79 (Twyford): With the correct management a more diverse swamp community could be restored. Management should include scrub clearance, thinning of non-native trees and removal of [invasive] orange balsam.
- Unit 99 (Bishopstoke): Failed on cover of negative and invasive species (nettles and Himalayan balsam).
- Unit 105 (Old Alresford): Water quality: No data for BOD (Biochemical Oxygen Demand) but as meets target downstream, inferred compliance. Passes for DO (Dissolved Oxygen). Passes for un-ionised and total ammonia. 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.

[32]Natural England: Designated Sites View: Condition of SSSI Units for Site River Itchen - 2000227 SSSI [accessed online 14/04/2021]: https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S2000227&ReportTitle=River%20Itchen%20-%202000227%20SSSI

- Unit 106 (Itchen Stoke-Itchen Abbas): Non-native invasive species – monkey flower (Mimulus) and orange balsam found in River Habitat Survey transect, the latter is increasing in distribution... Water quality: No data for BOD (Biochemical Oxygen Demand) but as meets it downstream, inferred compliance. Marginal failure for DO (Dissolved Oxygen). Passes for un-ionised and total ammonia. 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.
- Unit 107 (Easton-Eastleigh): Non-native invasive species – monkey flower (Mimulus) and orange balsam found in River Habitat Survey transect, the latter is increasing in distribution... Water quality: Passes for BOD (Biochemical Oxygen Demand), DO (Dissolved Oxygen), un-ionised and total ammonia. Fails on Total Reactive Phosphorous (growing season and annual mean). Fails on Trophic Diatom Index (indicator of nutrient enrichment).
- Unit 142 (Alresford-Itchen Stoke): Non-native invasive species – monkey flower (Mimulus) found in River Habitat Survey transect, but orange balsam also known from this reach and distribution likely to be increasing as so far unmonitored... Possible signal crayfish sightings, posing further risk to native crayfish population... Water quality: No data for BOD (Biochemical Oxygen Demand) but as meets target downstream, inferred compliance. Passes for DO (Dissolved Oxygen), un-ionised and total ammonia. Fails on Total Reactive Phosphorous (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment).
- Unit 143 (New Cheriton-Ovington): Water quality: No data for BOD (Biochemical Oxygen Demand) but as meets it downstream, inferred compliance. Marginal failure for DO (Dissolved Oxygen), reasons currently unknown. Passes for un-ionised and total ammonia. Fails on Total Reactive Phosphorous (growing season and annual mean). No data for Trophic Diatom Index (indicator of nutrient enrichment). No data on other pollutants.

6.8.11 Natural England's supplementary advice[33] for Solent Maritime SAC makes specific mention of invasive species and water pollution in relation to the following features and attributes:

- Structure and function (vegetation – undesirable species): Annual vegetation of drift lines and Perennial vegetation of stony banks: The 2013 survey of vegetation across the Solent shoreline (King *et al.* 2014) did not identify any significant stands of undesirable species within the Solent Maritime SAC. The report concludes that invasive non-native species do not appear to be having a significant effect on the vegetation communities of the Solent shingle stands surveyed, though beach rose *Rosa rugosa* was noted as expanding on some sites. Annuals or short-lived perennials such as *Conyza*, *Oenothera* and red valerian *Centranthus ruber* were present especially on more urban sites, but it is not clear whether they are having an adverse effect on the native vegetation communities.

[33] Natural England: Designated Sites View: Solent Maritime SAC supplementary advice [accessed online 14/04/2021]: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=solent&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

- Structure (non-native species and pathogens): Intertidal and subtidal habitats: The 2012 Cefas report found the Solent area to have a high likelihood of introduction for all species via the five main pathways (commercial shipping, recreational boating, aquaculture, live seafood trade and natural dispersal; Pearce et al., 2012). The large volume of shipping in the Solent means it is susceptible to the introduction of non-native species from ballast water or anchor lines. Much of the available data is from harbours and marinas. Species known to be within the SAC include the American hardshell clam *Mercenaria mercenari*, solitary sea squirt *Styela clava*, soft clam *Mya arenaria,* Pacific oyster *Crassostrea gigas* and slipper limpet *Crepidula fornicata*, all of which now dominate some native communities on the Hampshire coast. Portuguese oyster *Crassostrea gigas* have been sporadically encountered as well as small amounts of Japanese wireweed *Sargassum muticum.*
- Supporting habitat (vegetation composition - invasive non-native plants): Desmoulin's whorl snail: Desmoulin's whorl snails are potentially or actually at risk from non-native invasive plants. Such plants are considered a major threat to habitat due to their rapid growth and dominance over native species, and the difficulty of controlling them. Species of concern include Japanese knotweed, Himalayan balsam and giant hogweed. These riparian plants may directly alter the composition of Desmoulin's whorl snail habitat by replacing preferred species and increasing shading.
- Supporting processes (water quality – contaminants): Intertidal and subtidal habitats: High levels of the priority hazardous substance tributyl tin and its compounds are present in the Southampton Water Water Framework Directive waterbody. There is no evidence available for aqueous contaminant levels in the Western Yar, Lymington or Newtown River estuaries.
- Supporting processes (water quality – dissolved oxygen): Intertidal and subtidal habitats: For Dissolved Oxygen this site has been classified as having High Ecological Status under the Water Framework Directive for at least 5 of the years since 2009.
- Supporting processes (water quality –nutrients): Intertidal and subtidal habitats: The site has been assessed as at risk of eutrophication, leading to opportunistic macroalgae and phytoplankton blooms which can smother the sediment, preventing aeration and causing anoxia (lack of oxygen). This can impact sensitive fish, epifauna and infauna communities.
- Supporting processes (water quality –turbidity): Intertidal and subtidal habitats: In coastal environments turbidity levels can rise and fall rapidly as a result of biological (eg plankton blooms), physical (eg storm events) or human (eg coastal development) factors. Prolonged changes in turbidity may influence the amount of light reaching the seabed, affecting the primary production and nutrient levels of the habitat's associated communities. Suspended sediment concentrations in the Solent have a high variability dependent on location, tidal state, storminess and freshwater flows into the estuaries. Both modelled and sampled data demonstrate a high level of variability.
- Supporting processes (water quality): Saltmarsh, dunes and vegetated shingle: Poor water quality and inadequate quantities of water can adversely affect the structure and function of these habitat types. Water quality should be restored to mean winter

dissolved inorganic nitrogen levels at which biological indicators of eutrophication do not affect the integrity of the site and its features.

6.8.12 Although several of the invasive non-native species affecting Solent Maritime SAC are marine invertebrates, and therefore unlikely to be attributable to the types of development proposed by the EBLP, botanical invasives could potentially impact upon Desmoulin's whorl snail. Mobilised contaminants and increased turbidity in run-off from construction sites could contribute to existing negative effects within the Solent Maritime SAC; nutrient levels are less likely to be affected by construction (but may be affected via waste water treatment discharges; see section 6.10).

6.8.13 Non-native signal crayfish and invasive species of flora are already contributing to the unfavourable condition of at least five River Itchen SSSI management units which occur within the SAC. Poor water quality also affects at least five River Itchen SSSI units within the SAC although this is primarily due to total reactive phosphate concentrations which are more likely to result from agricultural practices and effluent discharge than from contaminated development sites or pollution incidents during construction.

6.8.14 Table 6.6 below lists proposed allocations within the EBLP which fall within 100m of watercourses draining into each SAC (or the SAC itself); this distance is considered sufficiently precautionary to include all sites where there is a realistic possibility of a likely significant 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[34]. Also listed are extant planning permissions in Eastleigh borough which are referred to but not proposed by the EBLP and which may act in combination.

Table 6.6: Proposed allocations hydrologically connected with River Itchen SAC / Solent Maritime SAC

Site	≤100m Itchen SAC*	≤100m Solent SAC*
S11 Transport infrastructure	Yes	Yes^
AL1 Land east of Allbrook Way	Yes	No
BO2 Land north-east of Winchester Street, Botley	No	Yes
BO3 East of Kings Copse Avenue	No	Yes
BO5 Botley bypass	No	Yes^
BU1 Land north of Providence Hill	No	Yes
BU2 Heath House Farm	No	Yes
BU3 South east of Windmill Lane	No	Yes
BU6 Riverside Boatyard	No	Yes
E6 Eastleigh River Side	Yes	No
E7 Eastleigh River Side adjacent land	Yes	No
E9abcd Southampton Airport (employment allocation)	Yes	No
FO1 West of Durley Road, Horton Heath	No	Yes

[34] 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*
FO2 East of Allington Lane	Yes	No
HA2 Mercury Marina	No	Yes
HE1 West of Woodhouse Lane	No	Yes
HE2 Sunday's Hill / Pewett Hill Close	No	Yes
HE4 Peewit Hill Close / Dodwell Ln	No	Yes
HH1 Land west of Horton Heath	Yes	No
WE3 Tollbar Way / Berrywood Park	No	Yes
Extant planning permissions / resolutions to grant		
Scotland Close, Fair Oak	Yes	No
Land north of Mortimers Lane	Yes	No
Land East of Knowle Lane	No	Yes
Hammerley Farm, Horton Heath	Yes	No
Land at Bishopstoke Cemetery, Stoke Common Road	Yes	No
Hardings Lane/Crowdhill, Fair Oak	Yes	No
Pembers Hill Farm, Fair Oak	Yes	No
St Swithuns Church, Allington Lane	Yes	No
Land north & east of Boorley Green	No	Yes
Land north of Hedge End station	No	Yes
Land east of Dodwell Lane & north of Pylands Lane	No	Yes
Land south of Ford Road & west of Dodwell Lane	No	Yes
Land north of Bridge Rd & west of Blundell Lane	No	Yes
Land at Providence Hill	No	Yes
Land r/o Orchard Lodge, Windmill Lane	No	Yes
14 Hobb Lane	No	Yes
North of Botley Road, West End	No	Yes
Land at Hatch Farm, Barbe Baker Avenue, West End	Yes	No
Land at Firtree Lane Horton Heath	Yes	No
Land at Fair Oak Road Bishopstoke	Yes	No
The Mount Hospital Church Road Bishopstoke	Yes	No
Maddoxford Lane, Boorley Green	No	Yes
Crow's Nest Lane, Boorley Green	No	Yes
Land west and south of Horton Heath, Burnetts Lane	Yes	No
Land south of Long Garden Cottage	No	Yes

* Or within 100m of headwaters & tributaries draining into the SAC

^ BO5 Botley bypass is >100m from Solent Maritime SAC but is included because it will involve a new bridge over the Hamble. S11 Transport infrastructure is included for the same reason and because the Sunday's Hill bypass crosses Hungerford stream, which drains into the SAC

N.B. Sites within 100m of Monks brook are excluded from the above table because the watercourse drains into the lower (tidal) Itchen downstream of the SAC

6.8.15 The proposals listed in Table 6.6 are taken forward for assessment in view of the River Itchen SAC and Solent Maritime SAC conservation objectives.

6.9 Water Abstraction

6.9.1 This impact pathway relates to the direct and in combination effects of water abstraction on River Itchen SAC (see Appendix I). As a strategically operating impact it is assumed that all proposed allocations with residential use will contribute to the effect; as such the screening assessment at Appendix I does not list water abstraction as an LSE for proposed allocations, focusing instead on site specific impacts.

Impact mechanisms

6.9.2 Eastleigh borough lies with Southern Water's Hampshire South Water Resource Zone (WRZ). This section draws upon Southern Water's Water Resource Management Plan (WRMP; Southern Water, 2019) and the PfSH Integrated Water Management Study (IWMS; Amec Foster Wheeler, 2018) in understanding the sources of water supply and constraints in meeting demand.

6.9.3 Southern Water has forecast 'baseline' demand and supply across its supply network for the period 2020 to 2070 in its WRMP. The supply demand balance calculations consider the difference between the supplies available (water sources) and anticipated demands (water use) over each year of the planning period for a given planning scenario . The WRMP includes the results of the baseline supply demand balances calculations for each individual WRZ. These calculations include allowances for:

- Housing and population growth;
- Industrial and commercial demand for water;
- The effects of climate change; and
- The impact of new legislation.

6.9.4 The results denote whether an individual WRZ is going to have a surplus or deficit in water resource availability over the planning period. To examine the potential water constraints (and pressure that new developments and population increases can exert on water resources) it is necessary to consider the wider area from which resources are drawn. For the PfSH area, Southern Water's resources are contained within the geographical area except where there are pre-agreed water transfers. There are no transfers between Southern Water's Western Sources area and its Central and Eastern Sources, so the review of the Western Sources baseline and final planning option scenario calculations can be considered separately from the rest of Southern Water's WRZ.

Understanding supply in the Western Sources

6.9.5 In the Western Sources area, water is abstracted from both groundwater and surface water (river) sources. The bulk of the groundwater sources are located in the Chalk aquifer which underlies much of Hampshire and the Isle of Wight. The transmission and storage of groundwater in the Chalk aquifer is mainly a function of the distribution and continuity of

fissures, which leads to uncertainty in how these sources may react in times of very low groundwater levels. These sources are often highly reliant on winter rainfall recharge. There are three river sources in the Western Sources; the Test and Itchen surface water abstractions which lie in Hampshire South WRZ and the Eastern Yar in the Isle of Wight WRZ.

6.9.6 There is no water currently sourced from bulk imports from other water companies and there are no raw-water reservoirs in the Western Sources area. The significant proportion of river abstractions in the Hampshire South and Isle of Wight WRZ means that the Western Sources are most susceptible to the "minimum resource period", known as the Dry Year Minimum Deployable Output period, and to the Dry Year Critical Period (i.e. peak demand period). As a result, when discussing both baseline and final planning calculations for each zone, both the Dry Year Minimum Deployable Output (MDO) and Dry Year Critical Period (CP) are considered.

Hampshire South

6.9.7 Water in the Hampshire South WRZ is sourced from 37% groundwater sources which abstract from the Chalk aquifer, and 63% from river sources. The surface water abstractions are from the River Test and River Itchen. The Hampshire South WRZ is the largest in the company's supply area with dry year demands typically around 150Ml/d, which includes an inter-zonal bulk export to the Isle of Wight WRZ (Cross-Solent main) which has a capacity of 12Ml/d. The WRZ supplies around 615,000 people, with no bulk imports in the baseline scenario.

In combination effects

6.9.8 The following plans/projects may also contribute to water demand with consequent effects on the River Itchen SAC:

- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Welborne Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- South Downs Local Plan (emerging)
- Test Valley Borough Revised Local Plan 2011 – 2029 (adopted 2016)
- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034

Evidence of current or future impacts

6.9.9 There have been concerns about the quantity of water flow in the River Itchen and resulting impacts to the SAC which supports an abundant and exceptionally species rich aquatic flora. Additional pressure for water abstraction could result in adverse effects on the ecological

integrity of the River Itchen SAC both via direct abstractions from the river and indirectly through groundwater abstractions.

6.9.10 Following publication of its previous WRMP (2014), Southern Water appealed against abstraction licence changes proposed by the Environment Agency. The changes were proposed in order to avoid ecological damage within the River Test and Itchen but Southern Water was concerned that the changes would limit its ability to undertake its statutory duties with respect to water supply particularly in periods of drought. A Public Inquiry took place in March 2018 and focused on a proposed operating agreement[35] between Southern Water and the Environment Agency under Section 20 of the Water Resources Act 1991 ("the s20 agreement"). The s20 agreement was signed and presented to the Inquiry at its closure on 29 March 2018 (Southern Water, 2019). The Southern Water 2019 WRMP, which covers the period 2020 to 2070, reflects the commitments of the s20 agreement, including the abstraction licence changes as proposed by the EA and a modified drought permit determination process and the inclusion of force majeure clauses in the proposed new River Test licence.

6.9.11 At the start of the planning period, with the Environment Agency's licence changes implemented, Southern Water estimate that water available for use (WAFU) in the Western area in a 1 in 200 year drought would be 119.02Ml/d as shown in Figure 6.9 (Southern Water, 2019).

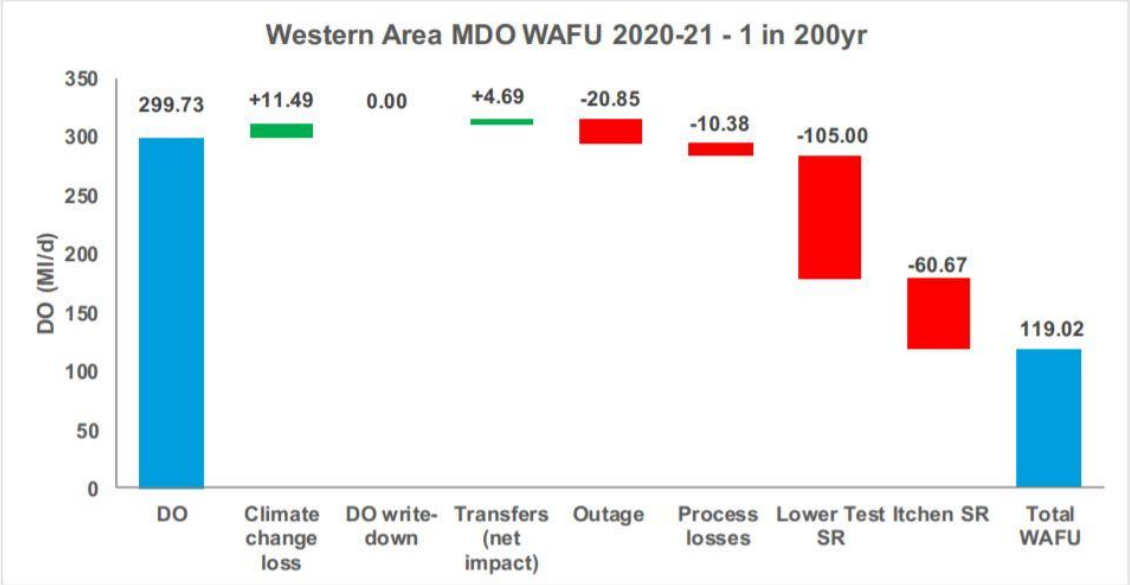


Figure 6.9: Western Area WAFU for 1 in 200 Year Drought (MDO) at Start of WRMP Planning Period (Southern Water, 2019)

6.9.12 By the end of the planning period (2070) Southern Water estimate WAFU for the Western area as 78.12 Ml/d as shown in Figure 6.10. This accounts for anticipated further licence changes at

[35] Joint statement from the Environment Agency and Southern Water Services Ltd, 26 March 2018: Proposed Changes to Four Abstraction Licences held by Southern Water Authorising Abstraction from the Rivers Itchen and Test, and One Abstraction Licence held by Environment Agency Affecting the Candover Stream. Accessed online [14/04/2021] at: http://www.hwa.uk.com/site/wp-content/uploads/2017/12/EA-and-SWS-joint-statement-26-March-2018-final-1.pdf

other sources in the Western area by 2027 proposed by the Environment Agency to comply with the Water Framework Directive (Southern Water, 2019).

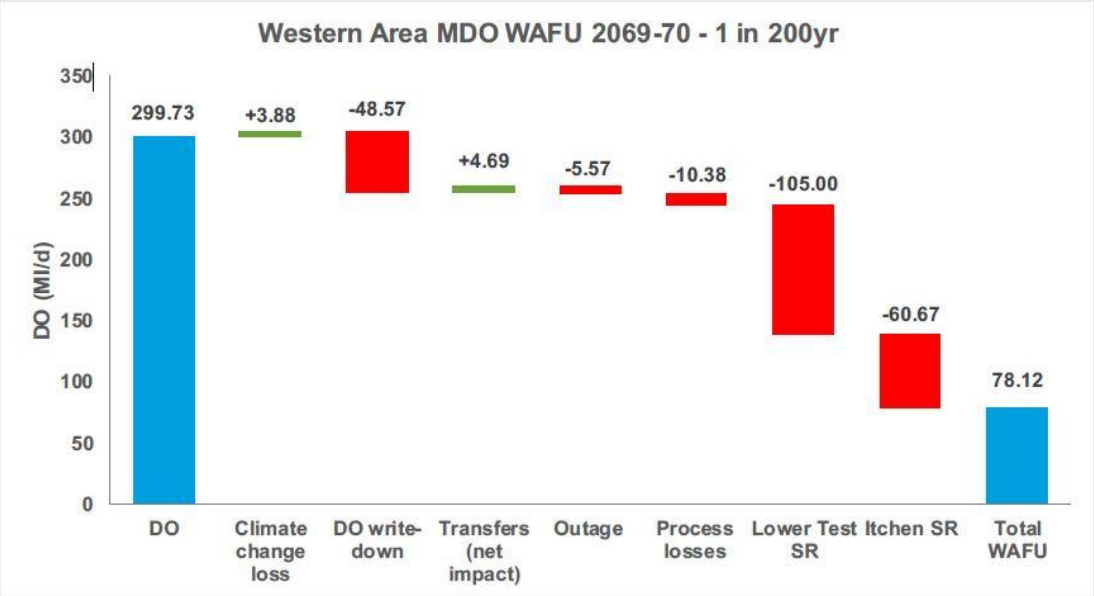


Figure 6.10: Western Area WAFU for 1 in 200 Year Drought (MDO) at End of Planning Period (Southern Water, 2019)

6.9.13 In the Western Area, despite an expected reduction in the demand for water, there will be a significant supply demand deficit throughout the planning period during a 1 in 200 drought event as shown in Figure 6.11. The "0" line across the top of the graph represents a balance between supply and demand and where the coloured bands go below this line new demand management or resource development schemes need to be implemented to restore the supply demand balance.

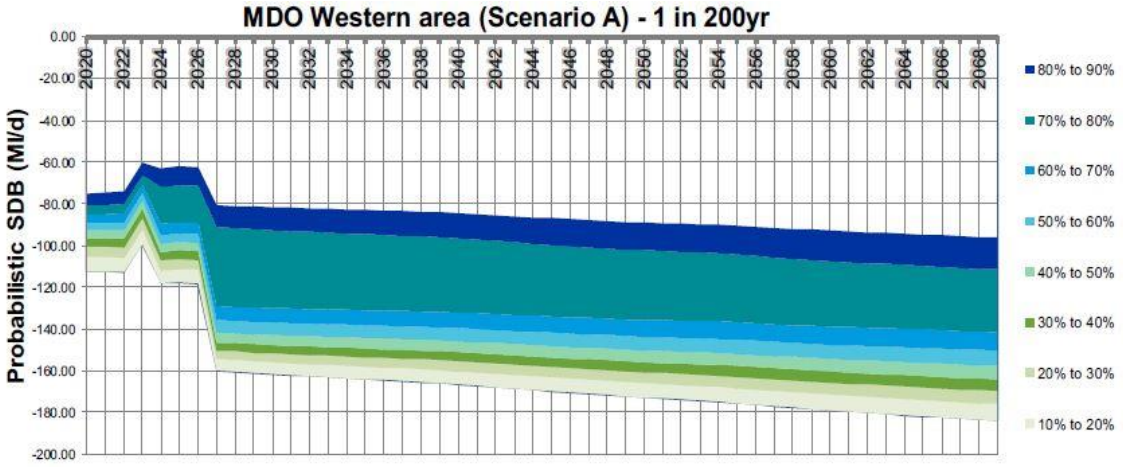


Figure 6.11: Baseline Supply-Demand Balance Distributions at the 'Severe Drought' Level (Southern Water, 2019)

6.9.14 Southern Water has considered options to address this deficit and maintain resilient supplies for their customers, incorporating an HRA of the alternatives considered. As part of the s20

agreement an interim abstraction scheme was agreed in recognition of the potential need to rely more frequently on Drought Permits and Drought Orders until new water resources can be developed. Southern Water committed to use "all best endeavours" to implement a long term water resources scheme, based on the preferred programme (Strategy A in the draft WRPMP) shown in Figure 6.12, to provide the necessary new water resources infrastructure to respond to the impact on supply as a result of the licence changes. The interim abstraction scheme can only be utilised for the term of the s20 agreement (until 2030), ideally with long term schemes to reduce and remove the need to use the interim abstraction scheme in place by 2027. In order to demonstrate confidence in delivering a long term scheme within this time frame, Southern Water is progressing alternative strategies (Southern Water, 2019).

6.9.15 The Stage 1 Screening Assessment of the HRA identified four options in the preferred strategy for the Western Area with likely significant effects to one or more European sites and which required Appropriate Assessment, including Bournemouth Water Import, Additional import from Portsmouth Water (Havant Thicket reservoir development), Fawley Desalination (75Ml/d) and Southampton Link Main. In addition, likely significant effects were identified for a number of strategic alternatives which may be required if a strategic option in the preferred programme cannot be delivered following more detailed planning and further environmental assessment studies; these include Fawley desalination (modular to 100Ml/d), Test Estuary Industrial Reuse, and the two Itchen indirect water reuse schemes. These were also subject to Appropriate Assessment.

6.9.16 The Appropriate Assessment concluded that none of these options would, individually, lead to any adverse effects on the integrity of a European site taking account of the proposed mitigation measures (which are not available for publication). It was also concluded that no significant in-combination effects are likely due to the implementation of multiple options concurrently.

6.9.17 The 2019 WRMP enables sustainability reductions to protect the River Itchen SAC to be implemented while ensuring that Southern Water can meet its statutory duties, and provides a degree of certainty that planned growth in Eastleigh borough, in combination with growth elsewhere in south Hampshire, can be delivered without adverse effects on the SAC. However, Southern Water continues to explore the deliverability of options in the preferred strategy for the Western Area. Taking account of the continuing uncertainty while the final options are developed, this impact pathway is taken forward for assessment in view of the River Itchen SAC conservation objectives.

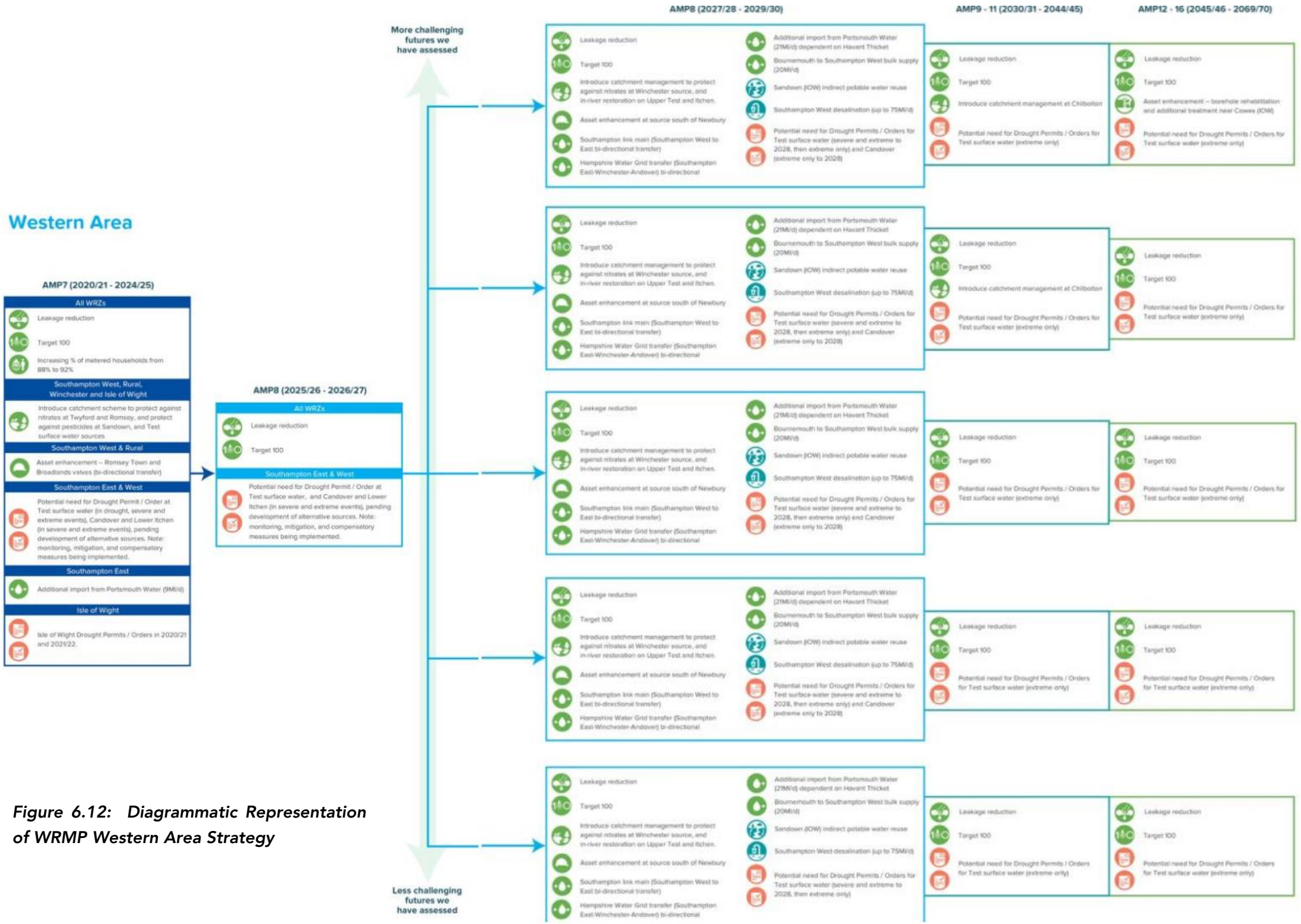


Figure 6.12: Diagrammatic Representation of WRMP Western Area Strategy

6.10 Water Pollution

6.10.1 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, 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). As a strategically operating impact it is assumed that all proposed allocations with residential use will contribute to the effect; as such the screening assessment at Appendix I does not list water quality as an LSE for proposed allocations, focusing instead on site specific impacts.

Impact mechanisms

6.10.2 Eastleigh borough is served by Southern Water's Chickenhall, Portswood and Peel Common Waste Water Treatment Works (WWTW) catchments. This section draws upon the PfSH Integrated Water Management Study (IWMS; Amec Foster Wheeler, 2018) in understanding WWTW capacity constraints, the ability of receiving waters to accept additional discharges without adverse effects and the nature of required changes to discharge permits or treatment infrastructure.

6.10.3 The IWMS collates data on projected growth in the number of households resulting from the EBLP and other Local Plans in the south Hampshire area, together with estimates of river flow, river quality, and WWTW effluent flow and quality. For river and effluent quality the main focus was on phosphate, ammonia, Biological Oxygen Demand (BOD, a proxy for Dissolved Oxygen in rivers) and nitrate.

Phosphate

6.10.4 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. Furthermore, the assessment of air quality impacts on southern damselfly in the Itchen valley examined the role of nutrients in maintaining suitable habitat conditions for the species. This concluded that phosphate is likely to be the limiting nutrient in preventing marginal aquatic vegetation communities becoming dominated by coarser ruderal plants which are unsuitable for egg laying (see paragraphs 6.2.16 to 6.2.17 and 7.2.27 to 7.2.29).

Nitrate

6.10.5 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.

6.10.6 The 23 WWTW serving south Hampshire discharge into 15 Water Framework Directive (WFD) waterbodies. Of these, the Environment Agency has assessed 13 waterbodies as having less than Good ecological status in its South East River Basin Management Plan (Environment Agency, 2016). The main elements found to be at less than Good were phosphate, dissolved inorganic nitrogen, fish, macrophytes and phytobenthos. Table 6.7 lists the WWTW serving Eastleigh borough, together with the ecological status of receiving waters.

Table 6.7: WFD classifications for river, transitional and coastal water bodies (2015 Cycle) (Source: Amec Foster Wheeler, 2018): Eastleigh borough

WWTW	Receiving watercourse	WFD catchment	WFD waterbody	Waterbody status	Reason
Chickenhall	River Itchen	Itchen	Itchen	Good	n/a
Portswood	River Itchen Estuary	Southampton Water	Southampton Water	Moderate	Dissolved inorganic nitrogen; tributyltin compounds
Peel Common	The Solent	Solent	Solent	Moderate	Angiosperms; dissolved inorganic nitrogen; mitigation measures assessment

In combination effects

6.10.7 The following plans/projects may also contribute to water pollution with consequent effects on the River Itchen SAC, Solent Maritime SAC, and Solent and Southampton Water SPA/Ramsar:

- Fareham Borough Development Sites and Policies Plan (adopted 2015)
- Fareham Borough Welborne Plan (adopted 2015)
- Fareham Borough Local Plan Review 2016-2036 (emerging)
- Southampton Core Strategy Partial Review (adopted 2015)
- Southampton City Centre Action Plan (adopted 2015)
- South Downs Local Plan (emerging)
- Test Valley Borough Revised Local Plan 2011 – 2029 (adopted 2016)

- Winchester District Local Plan Part 1 - Joint Core Strategy (adopted 2013)
- Winchester District Local Plan Part 2 – Development Management and Site Allocations (adopted 2013)
- PfSH Spatial Position Statement 2016-2034

Evidence of current or future impacts

Freshwater habitats: River Itchen SAC

6.10.8 Despite the River Itchen's Good WFD status, there is evidence of high nutrient nitrogen in the water flow (Amec Foster Wheeler, 2018). Additionally, there are concerns with regard to the quantity of water flow in the River Itchen; as water quantity interacts with water quality, it is important to consider both in relation to impacts on the SAC. Natural England's supplementary advice[37] for River Itchen SAC makes specific mention of water quality in relation to the following features and attributes:

- Supporting processes (water quality –nutrients): Elevated nutrient levels interfere with competitive interactions between higher plant species and between higher plants and algae, leading to dominance by attached forms of algae and a loss of characteristic plant species (which may include lower plants such as mosses and liverworts). Through changes to plant growth and plant community composition and structure they also affect the wider food web, altering the balance between species with different feeding and behavioural strategies. The respiration of artificially large growths of benthic or floating algae may generate large diurnal sags in dissolved oxygen and poor substrate conditions (increased siltation) for fish and invertebrate species. The management focus is typically on phosphorus in rivers, on the assumption that it can be more easily controlled at levels that limit the growth of plant species. However, nitrogen may also be important in river eutrophication and ideally co-limitation would be the management aim. The River Itchen often suffers from growth of filamentous algae, believed to be caused by excessive levels of phosphate from a variety of sources. Nutrient targets for the River Itchen should reflect natural/ background concentrations and limit enrichment to levels at which adverse effects on characteristic biodiversity are unlikely. Phosphorus targets vary from individual SSSI units and are as follows:
    - For unit 143 the phosphorus target is 20µg/l soluble reactive phosphorous (SRP).
    - For unit 142 the phosphorous target is 40µg/l SRP.
    - For unit 105 the phosphorous target is 20µg/l SRP.
    - For unit 106-107 the phosphorous target is 20µg/l SRP.
    - For unit 108 the phosphorous target is 50µg/l SRP.
- Supporting processes (water quality –organic pollution): Organic pollution effects the biota in a number of ways, including direct toxicity (from ammonia and nitrite), reduced

[37] Natural England (2019): *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features: River Itchen Special Area of Conservation.* 21 March 2019 [accessed online 14/04/2021]: http://publications.naturalengland.org.uk/publication/5130124110331904?category=6528471664689152

dissolved oxygen levels (from microbial breakdown of organic material), and nutrient enrichment. Reducing organic pollution levels reduces toxic effects but unmasks enrichment effects. Controlling the continuous input of low levels of organic material is critical to controlling the enrichment effect… A Diffuse Water Pollution Plan identifies numerous issues with water quality, from point sources from Waste Water Treatment Works to road runoff. The Plan is a critical document to achieve favourable condition. Pollution causes excessive algal growth, smothering macrophytes, and increased BOD, decreasing oxygen availability for spawning gravels used by salmon and trout.

- Supporting habitat structure/function (nutrient status): Phosphate concentration is generally less than 0.025 mg l-1 in most watercourses occupied by the southern damselfly in England. General target to restore phosphate concentrations to below this level, but specific targets also set for individual management units (see above).

Saline habitats: Solent European Sites

6.10.9 The Solent and Southampton Water were both assessed as of Moderate ecological status. Natural England's supplementary advice[38] for Solent Maritime SAC makes specific mention of water quality in relation to the following features and attributes, which could have knock-on effects for wintering bird assemblages within the SPA/Ramsar:

- Supporting processes (water quality – contaminants): Intertidal and subtidal habitats: High levels of the priority hazardous substance tributyl tin and its compounds are present in the Southampton Water Water Framework Directive waterbody. There is no evidence available for aqueous contaminant levels in the Western Yar, Lymington or Newtown River estuaries. The target is to reduce aqueous contaminants to levels equating to High / Good WFD Status, avoiding deterioration from existing levels.
- Supporting processes (water quality –nutrients): Intertidal and subtidal habitats: The site has been assessed as at risk of eutrophication, leading to opportunistic macroalgae and phytoplankton blooms which can smother the sediment, preventing aeration and causing anoxia (lack of oxygen). This can impact sensitive fish, epifauna and infauna communities. The target is to restore water quality to mean winter dissolved inorganic nitrogen levels.
- Supporting processes (water quality): Saltmarsh, dunes and vegetated shingle: Poor water quality and inadequate quantities of water can adversely affect the structure and function of these habitat types. Water quality should be restored to mean winter dissolved inorganic nitrogen levels at which biological indicators of eutrophication do not affect the integrity of the site and its features.
- Supporting processes (water quantity/quality): Desmoulin's whorl snail: can be vulnerable to the effects of poor water quality. Elevated levels of nitrates and phosphates could change the vegetation community on which the snail relies.

6.10.10 All WWTW are permitted to discharge a set volume of treated effluent based on the population size they serve. This is generally referred to as the Dry Weather Flow (DWF), which is the base

[38] Natural England: Designated Sites View: Solent Maritime SAC supplementary advice [accessed online 14/04/2021]: https://designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030059&SiteName=solent&SiteNameDisplay=Solent+Maritime+SAC&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=

flow going to a WWTW of raw sewage with a small amount of groundwater infiltration and with no surface water drainage inputs. The DWF is used to help determine the quality of effluent required to protect the water environment and can also be used as an indicator of when a WWTW is reaching its volumetric design capacity and requires an upgrade. An initial assessment of the current volumes of treated effluent discharged by the main WWTW (Amec Foster Wheeler, 2018) indicated that five were already discharging volumes in excess of the permits and a further three had less than 10% spare capacity; these were mostly located on the Isle of Wight but also include Peel Common WWTW which serves Eastleigh (<10% capacity).

6.10.11 The IWMS used projected future housing numbers to calculate increases in effluent discharges based on assumed occupancy rates for the new housing, added to the current volume of treated effluent discharged from the relevant WWTW. The occupancy rates and flow estimates were based on a worst case scenario. The impact of this increase in treated sewage effluent on the receiving watercourses and coastal waters was then modelled and the results assessed against the current condition of the receiving waters. Where a potentially significant deterioration was identified, indicative permit standards were calculated to prevent the deterioration[39].

South Hampshire assessment

6.10.12 This assessment of impacts on water quality, WWTW and sewer capacity considered 20 WWTW and their associated sewer networks. Some were considered likely to need upgrading by 2020 in order to ensure that future housing growth in the PfSH area will not have a detrimental impact on water quality. In addition, there are currently gaps in the evidence base that require further investigation, monitoring and potentially action, to ensure future growth is compliant with the Habitats and Water Framework Directives. This includes the potential for cumulative impacts within WFD catchments receiving discharges from more than one WWTW, such as Southampton Water and Portsmouth Harbour. To address these issues there has been voluntary WWTW monitoring undertaken by Southern Water over the last year (awaiting results) and an EA permit review has been agreed in principle for the Solent area, but the need for infrastructure upgrades is still at an early stage of gathering evidence and considering options.

6.10.13 Four WWTW will require improvements to reduce ammonia, and eleven to reduce phosphate. Although no WWTW were identified as requiring improvements to reduce nitrate (N) loading from their discharges due to direct impacts from future house growth, it should be noted that at least four WWTW will require standstill for N once their existing permitted flow limit is reached. Permitted flow limits will also need to be reviewed for another six WWTW in 2022, to assess if standstill for N is required at these locations. In addition following the assessment of potential cumulative impacts including diffuse sources, the IWMS identifies where catchment measures to reduce diffuse pollution should be implemented in order to ensure the water body and designated area can achieve their objectives based on the current condition of the area irrespective of housing growth; these include Southampton Water and Portsmouth Harbour.

[39] N.B. An exceedance of a flow permit is not in itself an issue as the sewerage undertaker could apply to the Environment Agency for a new flow permit. This may be permitted where it is matched by an equivalent improvement in the quality of the water being discharged, thus protecting the receiving waters (i.e. overall there would be load standstill to the receiving waters).

Eastleigh borough assessment

6.10.14 The growth areas in the Eastleigh borough are predicted to drain to the Chickenhall Eastleigh, Peel Common or Portswood WWTW; see Figure 6.13. The water quality assessments indicated that there are no significant constraints to prevent future housing growth related to Chickenhall Eastleigh or Portswood, although they will require upgrades to their sewer networks; see Table 6.8. However, phosphate concentrations are problematic within the River Itchen SAC to which Chickenhall WWTW is a major contributor.

6.10.15 Although overall no significant impact or deterioration is predicted due to future housing growth, the Peel Common WWTW may require capacity improvements by 2025, which will be subject to review in 2022. The possible need for an improved N discharge limit will also be reviewed in 2022. Sewer capacity upgrades are also likely to be required. The catchment is affected by nitrate pollution and catchment level nitrate measures are required now.

6.10.16 To address the uncertainty relating to catchment measures, the IWMS recommended that Local Plans acknowledge the gaps in the evidence base and recognise it will be necessary to respond to emerging evidence to determine whether housing development would require mitigation.

Table 6.8: Summary of growth pressures on WWTW serving Eastleigh borough (Source: Amec Foster Wheeler, 2018)

WWTW	Measured flow 2013-15 (m3/day)	Consented flow (m3/day)	DWF exceedance predicted	Mitigation for N	Sewer capacity required	Freshwater mitigation required
Portswood	16133	27700	No	No	Yes	n/a
Chickenhall	23067	32000	No	No	Yes	Tightening of P permit
Peel Common	55180	59683	Reaches capacity in 2025 (currently <10%)	Review in 2022	Yes	n/a

6.10.17 River Itchen main river channel (SSSI unit 108) into which Chickenhall discharges is in unfavourable no change condition due to the SAC river feature including water quality failures of revised common standards monitoring (rCSMG) targets. For unit 108 the agreed interim goal is the same as the long term target which is 50micrograms/litre upstream of Chickenhall with an interim goal of 74µg/l P downstream of Chickenhall. The dominant source of P in the lower Itchen is Chickenhall (with Harestock also a very significant contribution). This interim target took account of the current over performance of Chickenhall against the P permit specifications and P concentrations are improving. Phosphate stripping to 1µg/l came into effect in 2009/2010, however, rCSMG targets are not currently being achieved. Additional P limits have been placed on industry further up in catchment (cress and fish farms).

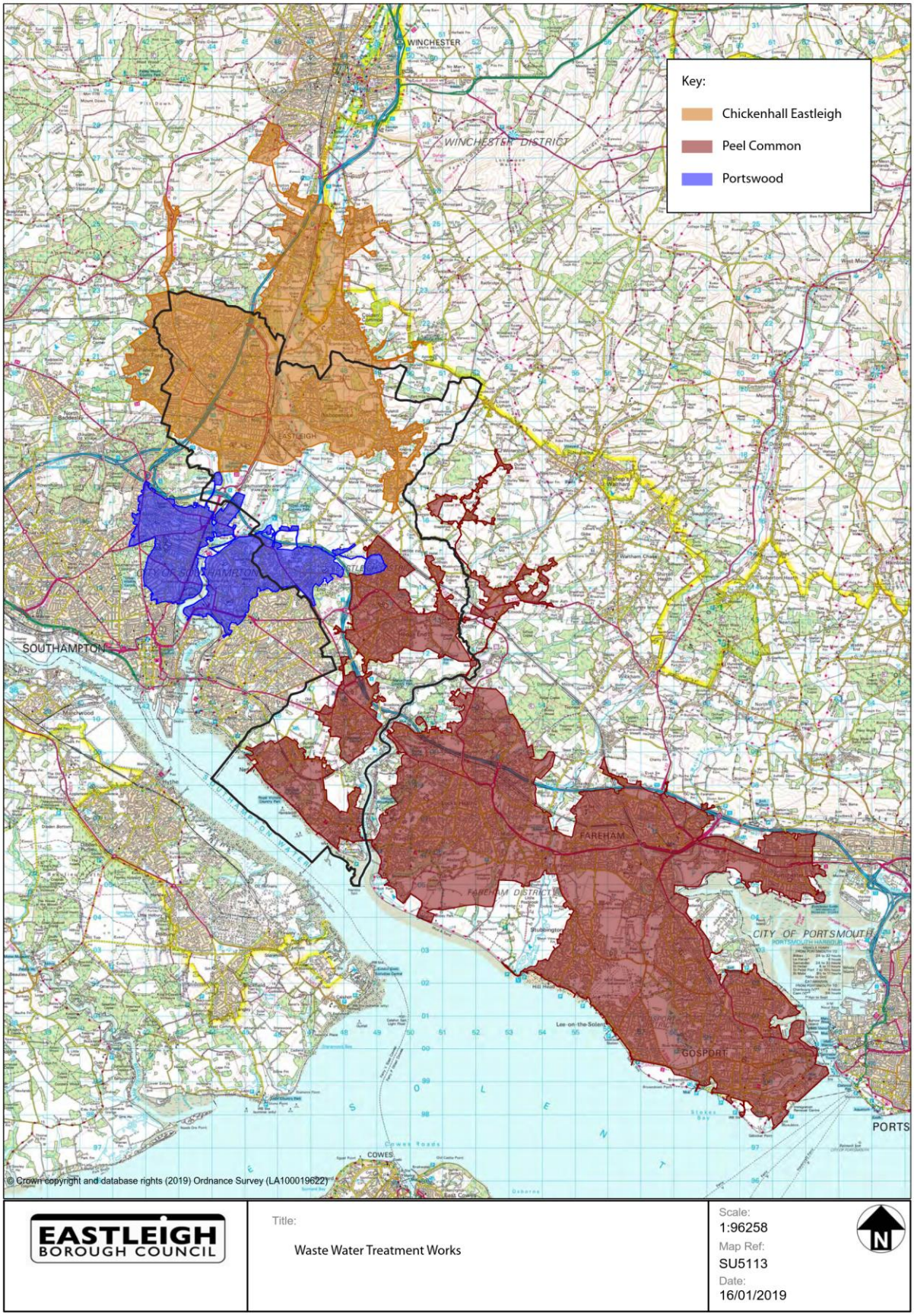


Figure 6.13: Wastewater treatment catchments in Eastleigh borough

6.10.18 This is contributing to improving P concentrations in the waterbody and the measures need more time. However, at permitted values the Chickenhall contribution to P would result in failure of both the rCSMG interim and long term targets alone (without other sources). Growth within the permit headroom significantly risks achievement of the interim progress goal. For this reason Natural England has recommended that the permit headroom is reduced to TAL (technically achievable limit) with a stretch target for phosphorous.

Nutrient neutrality

6.10.19 In light of the ongoing uncertainty in relation to the ability of the PfSH region to accommodate future housing growth without having a detrimental effect upon the water environment, and in response to recent case law including the CJEU judgements on *People over Wind* (see paragraph 2.4.3) and the case known as the Dutch case[40], Natural England advises that all developments resulting in any net increase in dwellings or overnight accommodation uses should prepare a nutrient budget to demonstrate how they will achieve nutrient neutrality.

Nitrogen budget

6.10.20 To address Natural England's latest advice a nutrient budget has been calculated for the EBLP. Nitrogen is the principal nutrient driving eutrophication in the marine environment and therefore the budget is focused on nitrogen. The nitrogen budget was calculated using the Natural England methodology (version 5) published in June 2020[41]. A detailed explanation of how the methodology has been applied to the EBLP is presented in Appendix VII. The results indicate that the total nitrogen budget for Eastleigh Borough is 7,432.76 kg/TN/yr; see Table 6.9. A positive figure indicates a surplus of nitrogen resulting from development proposed in the EBLP and therefore mitigation will be required to achieve nutrient neutrality and avoid any impact to internationally designated sites in the Solent. A breakdown between the different categories of proposed development sites is set out in Table 6.9.

Table 6.9: Eastleigh Borough Local Plan nitrogen budget

Development Site Category	Nitrogen Budget (kg/TN/yr)
Residential (excluding windfall)	1,763.07
West of Horton Heath	2,053.27
Overnight tourism	93.99
Open space, recreation	137.49
Large employment sites	397.86
Windfall sites	2,987.09
Overall N budget	***7,432.76***
Positive figure indicates surplus N and hence mitigation is required. Negative figure indicates a deficit and so no mitigation required.	

[40] 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.*

[41] Natural England (2020): Advice on achieving nutrient neutrality for new development in the Solent region. Version 5 – June 2020.

Phosphates

6.10.21 During a meeting with Natural England in February 2019 the HRA authors queried whether a nutrient budgeting exercise should also be undertaken in relation to phosphates, principally in relation to potential impacts on freshwater habitats and qualifying features in the River Itchen.

6.10.22 Natural England[42] advised that Farmscoper modelling commissioned from ADAS for the Poole Harbour catchment found that agricultural source control measures focused on reducing N had a much bigger percentage reduction effect on agricultural diffuse P (-13% and -27% respectively). This aligns with other academic modelling work and also scientific observation that country actions to reduce agricultural diffuse eutrophication are having much more success at reducing P than in reducing N. This suggests a focus of action on reducing N source losses from farming to address nitrogen enrichment in the Solent sites will coincidentally deliver a high degree of agricultural diffuse P reduction on the River Itchen SAC. In the upper Itchen other sources of P including cress farming, fish farming, and non-mains drainage were the dominant sources of P. However at the bottom of the River Itchen agricultural diffuse and the waste water treatment works are the dominant sources. Therefore development offsetting of N from agriculture will also deliver offsetting of the relatively (compared to other catchments) limited amounts of agricultural P – although this will vary depending on geology type and distance and there are some additional agricultural measures that can be deployed to reduce P that have little effect on reducing N. In addition, actions to address flooding and action on misconnections and other urban sources are successful at reducing urban diffuse P contributions.

6.10.23 As we have concluded that there are likely to be significant effects from water pollution, this impact pathway is taken forward for assessment in view of the River Itchen SAC, Solent Maritime SAC and Solent and Southampton Water SPA/Ramsar conservation objectives.

6.11

6.11 Solent & Dorset Coast SPA

6.11.1 No likely significant effects were identified in relation to the Solent and Dorset Coast SPA.

[42] Pers. Comm. (2019): Email correspondence within the Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England; 25/2/19.

7 Appropriate Assessment

7.1 Introduction

7.1.1 The following assessment uses the conservation objectives and ecological data for each European site defined in Chapters 3 and 4, and considers these against the range of impact pathways described in Chapter 6, in light of the EBLP incorporated mitigation measures at the Proposed Main Modifications stage (section 5.3).

7.2 River Itchen SAC

Atmospheric pollution

7.2.1 The following analysis was included in the HRA for the EBLP Submission Plan and attributed the source of atmospheric pollution impacts to the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)
- S4 Employment provision (and by implication proposed employment allocations)
- S5 New Communities, land north of Bishopstoke and land north and east of Fair Oak
- S6 Allbrook Hill, Bishopstoke and Fair Oak link road
- S11 Transport infrastructure

7.2.2 However, policies S5 and S6 in relation to the SGO north of Bishopstoke and Fair Oak and its associated link road have been deleted from the plan at the Proposed Main Modifications stage. The conclusions of this part of the Appropriate Assessment have been amended to reflect the deletion of policies S5 and S6, but the analysis has been retained for completeness and because revised transport and air pollution modelling have not been undertaken. Nevertheless, it is considered reasonable to conclude that deletion of 3,350 dwellings during the plan period will to reduce the volume of traffic and hence air pollution, and is therefore compatible with the conclusion of the Submission Plan HRA that there would be no adverse effect on integrity.

7.2.3 Five of the six Conservation Objectives for River Itchen SAC (section 3.5) relate to qualifying species, in this case the southern damselfly. These refer to the extent and distribution of the habitat used by these species, the structure and function of these habitats, the supporting processes upon which the species' habitats rely, the populations of the species and their distribution within the site.

Population and distribution

7.2.4 The population of southern damselfly within Eastleigh Borough was surveyed by Arcadian Ecology in 2017 (Rushbrook, 2017). This identified a number of water courses within the Borough from where southern damselfly were recorded. Each water course was walked as part

of the survey and was given a unique transect number. Southern damselfly were recorded from water courses within and outside of the River Itchen SAC boundary. The numbers of southern damselfly recorded on each of the survey transects was recorded to provide the basis of an assessment of the current population distribution and size.

Habitat distribution

7.2.5 The vegetation of the Itchen Valley flood plain was surveyed in detail during 2002 by Richard Collingridge as part of the Itchen Sustainability Study[44]. This remains the most comprehensive survey of vegetation within the Itchen flood plain and although quite old is still considered to be reliable. Data from this survey has been used to assess the effects of air quality on potential habitat of the southern damselfly. In addition, walk over surveys were undertaken of the main road crossings of the River Itchen in May 2018 to better understand the distribution of southern damselfly habitat in the potentially impacted water courses.

Air quality assessment

7.2.6 Taking a precautionary approach, the worse-case scenario (see section 6.2.20-6.2.21) for nitrogen deposition was used to identify areas of the Itchen Valley where NDep exceeded the 1% threshold (>0.15 kg N/ha/yr) and where the Critical Load of 15 kg N/ha/yr was also exceeded using the local plan (including the SGO) in combination scenario and both the Defra and ST pollution models. The results of this model produced by AQC (June 2018) are reproduced in Figure 7.1 and Figure 7.2.

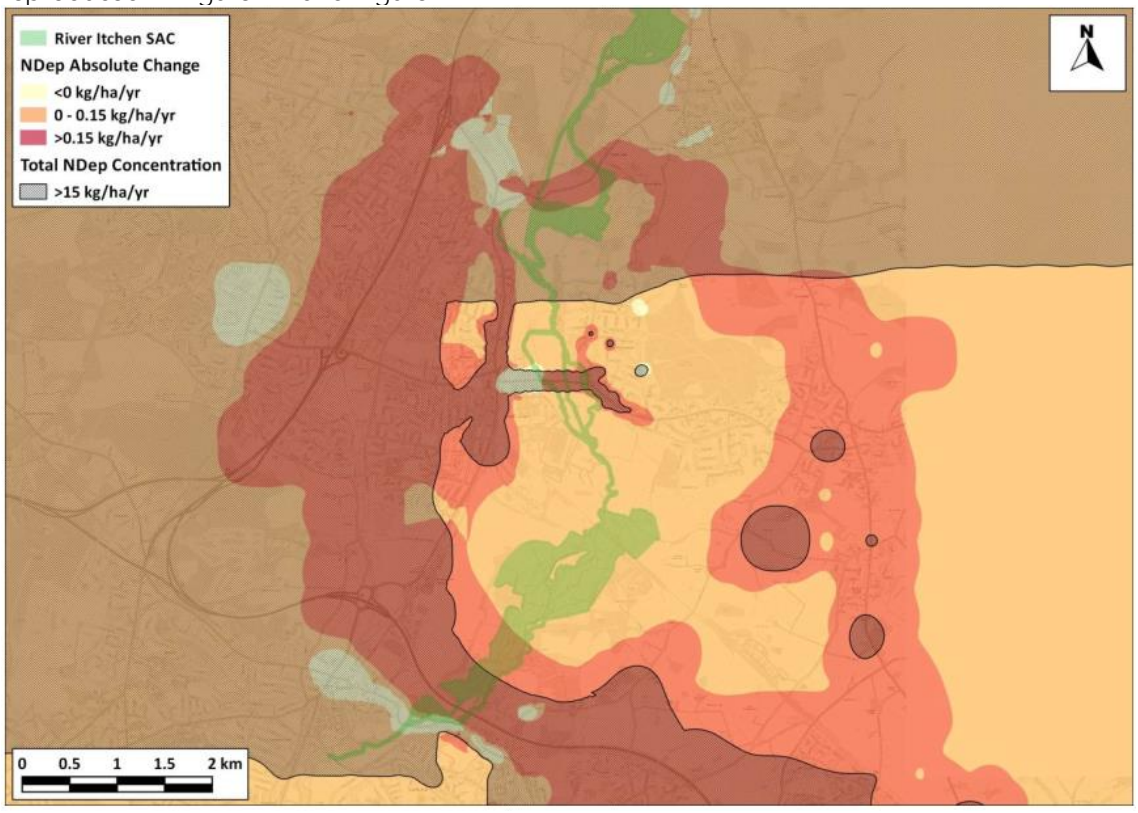


Figure 7.1: River Itchen nitrogen deposition, absolute changes in-combination and total nitrogen deposition (Defra model)

[44] Collingridge, R. (2002): *River Itchen wet grassland NVC survey*. Report to the River Itchen Steering Group, November 2002.

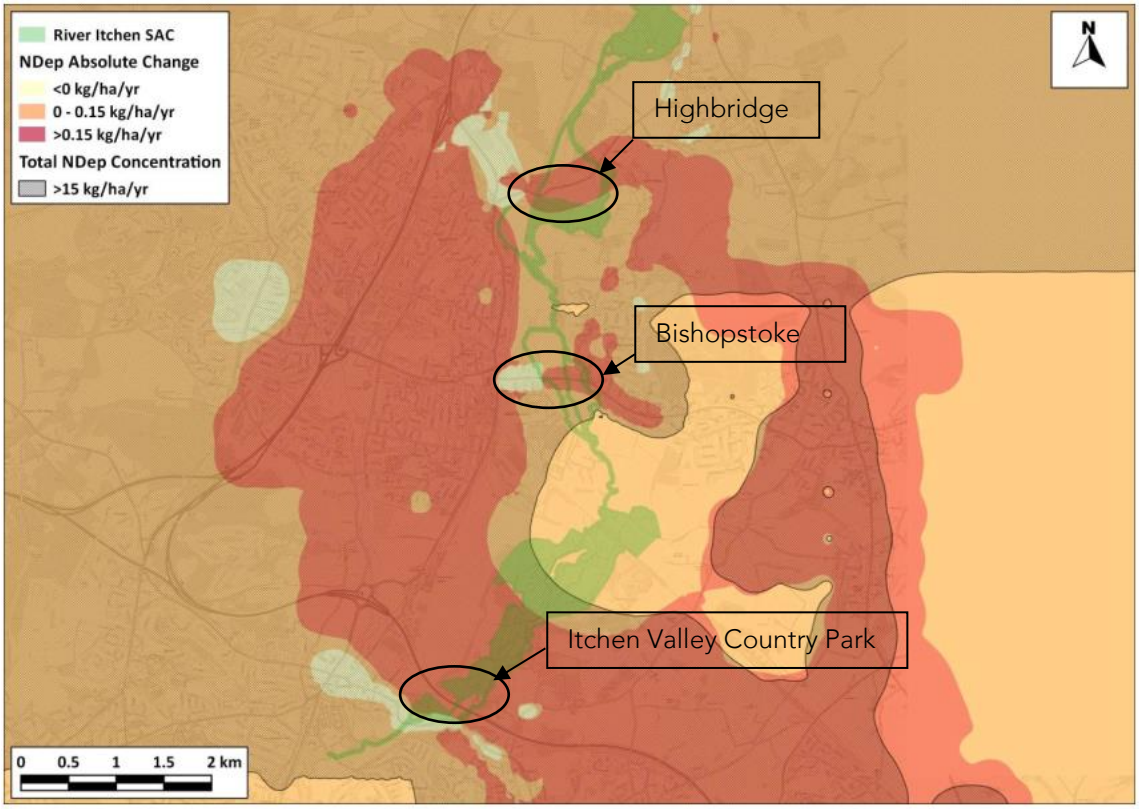


Figure 7.2: River Itchen nitrogen deposition, absolute changes in-combination and total nitrogen deposition (ST model)

7.2.7 The air quality modelling predicts that the environmental concentration (PEC) for nitrogen will exceed the critical load for Fen, Marsh and Swamp habitat of 15kg N/ha/yr over the majority of Eastleigh Borough in both baseline and future year predictions, as shown by the dark edged grey polygons in the above figures. However, the extent of the Critical Load contour is much greater using the ST traffic model, extending further from the road at both Bishopstoke and Itchen Valley Country Park. The areas over which the local plan in combination contribution (including the SGO) will further increase the nitrogen load by >1% of the critical load is shown by the red hatched polygons. This is referred to as the Process Contribution (PC) in Defra guidance[45] and is the trigger for more detailed assessment. Using these criteria, areas of the Itchen Valley where the 1% PC threshold were predicted to be exceeded and the PEC was in excess of the critical load were identified and overlain with the location of southern damselfly transects identified by Rushbrook (2017) as shown in Figure 7.3 and Figure 7.4. The analysis identified three areas of the Itchen Valley where nitrogen deposition could have an impact on southern damselfly habitats. These were at the following locations:

[45] Defra (2016): *Air emissions risk assessment for your environmental permit*. Accessed online [14/04/2021] at: https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screen-out-insignificant-pcs

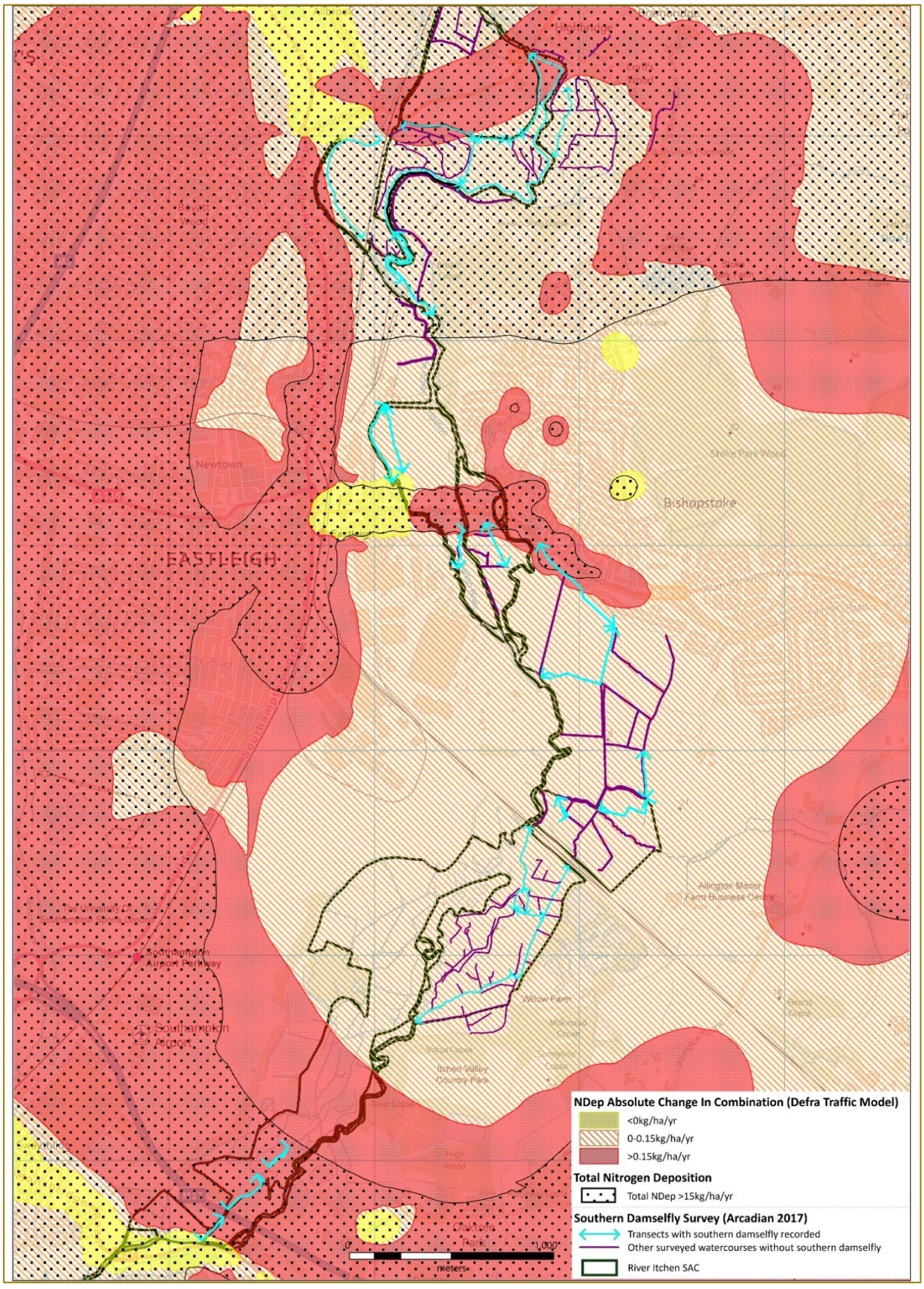


Figure 7.3: Distribution of southern damselfly transects in relation to NDep 15kg/ha/yr critical load for Rich Fen and 1% exceedance contour in the lower Itchen Valley. In combination assessment using Defra traffic model

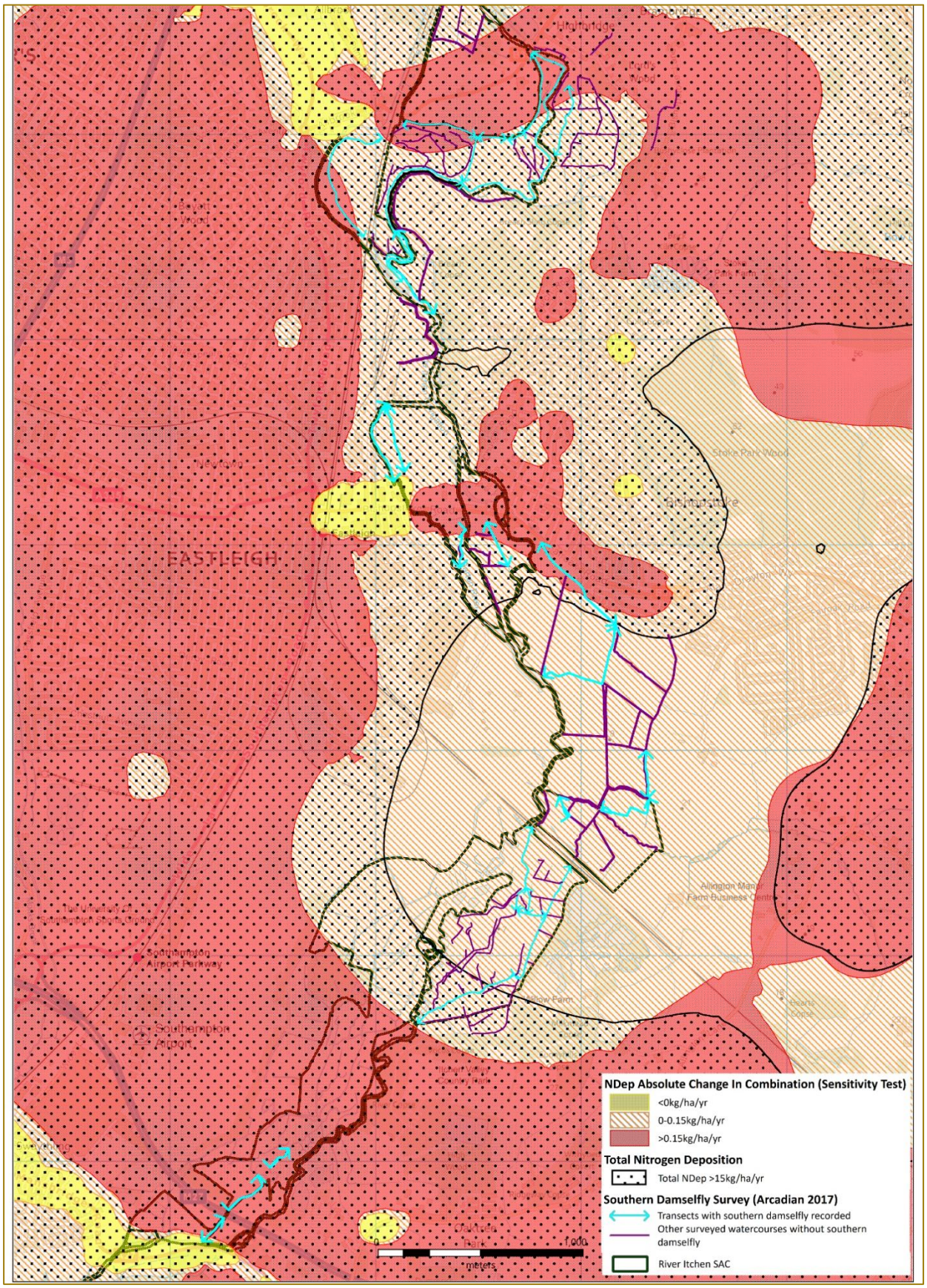


Figure 7.4: Distribution of southern damselfly transects in relation to NDep 15kg/ha/yr critical load for Rich Fen and 1% exceedance contour in the lower Itchen Valley. In combination assessment using Sensitivity Test model

- B3335 at Highbridge Farm;
- Morris's land and Ashtrim Nursery, Bishopstoke Road, Bishopstoke; and
- M27 crossing of the Itchen Valley Country Park.

7.2.8 The extent of different vegetation types present within the vicinity of these three locations was determined by overlaying the vegetation mapping data from the Itchen Sustainability Study survey (Collingridge, 2002). This provided information on the extent of various habitats within the 1% threshold area at each of the three locations and potential habitat suitability for southern damselfly.

Assessment results

Southern damselfly transects

7.2.9 Table 7.1 shows the length of survey transect supporting southern damselflies (Rushbrook, 2017) at the three locations listed above, based on the worst-case (Sensitivity Test) model results as illustrated in Figure 7.4. More detailed maps showing the location of the southern damselfly transects in relation to predicted air pollution contours are shown in Appendix II. The transects at Highbridge Farm (except 32) and the Itchen Valley Country Park were all within the River Itchen SAC boundary. However, the transects at Morris's Land/Ashtrim Nursery, Bishopstoke (and Highbridge transect 32) were all outside of the SAC.

Table 7.1: Length of southern damselfly transects within the 1% threshold contour and >15kg/ha/year (NDep in combination using the ST traffic model)

Site	Trans No.	Length (m)	Length (m) SD transect impacted	In SAC
Highbridge	1	416	336	Y
Highbridge	2b	133	69	Y
Highbridge	2c	387	387	Y
Highbridge	3	229	33	Y
Highbridge	4 (river)	1,371	423	Y
Highbridge	32	759	368	N
Morris' Land Bishopstoke	6	237	99	N
Ashtrim, Bishopstoke	1	200	39	N
Dunford's Land	1	553	346	N
IVCP	1	140.9	141	Y
IVCP	2	246.3	246	Y
IVCP	3	157	120	Y
IVCP	1 mon*	231	102	Y
Total length SD transect	**-**	***4,301.2***	***2,341.2***	**-**

* Population monitored by Itchen Valley Country Park

7.2.10 The greatest lengths of southern damselfly transects affected are at Highbridge Farm where a total of 1,616m of water course from which southern damselfly were recorded is within the 1% NDep threshold for Rich Fen habitat. The highest densities of southern damselfly are

associated with transects 2b, 3 and 4 (Table 7.2). Transect 1 supported moderate densities of southern damselfly. Only two individuals were recorded in transect 2c; these are believed to have been vagrants from the adjacent transect 2b as the habitat in 2c is not suitable to support southern damselfly. A ditch outside the SAC (transect 32) also falls within the 1% contour, however, only four individuals were recorded in this water course which was assessed as being largely unsuitable habitat for southern damselfly with low potential for enhancement.

Table 7.2: Population of southern damselfly associated with survey transects within affected areas of the Itchen Valley. Transects at Ashtrim Nursery, Morris' Land and Dunford's Land, Bishopstoke, are outside of the SAC boundary

Site	Trans No.	Length (m)	Abundance (males)	Density (males per 100m)
Highbridge Farm	1	421	34	8.08
Highbridge Farm	2b	149	72	48.32
Highbridge Farm	2c	397	2	0.50
Highbridge Farm	3	229	135	59.08
Highbridge Farm	4	1,371	194	14.04
Highbridge Farm	32	759	4	0.53
Morris' Land	6	237	2	0.84
Ashtrim Nursery	1	200	53	26.47
Dunford's Land	1	553	3	0.54
IVCP	1	136	27	19.85
IVCP	2	262	19	7.25
IVCP	3	157	2	1.27

7.2.11 Three water courses were within the 1% NDep threshold polygon at Bishopstoke, based on Local Plan development in combination with other development and including the SGO. These occur in three different monitored sites; Ashtrim Nursery (transect 1), Morris' Land (transect 6) and Dunford's Land (transect 1) over a total of 484m of water course. Highest densities of southern damselfly were recorded at Ashtrim Nursery, with very low numbers recorded at Morris' Land (2 individuals) and Dunford's Land (3 individuals) (Table 7.2). It is thought that the southern damselfly recorded at Morris' Land were transient individuals probably from the adjacent Ashtrim Nursery ditch. The stream at Dunford's Land is also of poor quality and assessed as being sub-optimal to unsuitable for southern damselfly.

7.2.12 The survey undertaken by Rushbrook (2017) did not include all water courses within the Itchen Valley Country Park (IVCP) known to support southern damselfly, with four additional transects being monitored by the Country Park staff. A total of 609m of watercourse were within the 1% NDep contour in the IVCP. The three transects surveyed by Rushbrook (2017) to the south of the Country Park, in the vicinity of the M27, are within the 1% NDep threshold contour. Highest densities of southern damselfly were recorded in transect 1, located furthest from the M27. Transect 2 to the north of the motorway had lower densities of southern damselfly whilst transect 3, to the south of the motorway, had the lowest recorded density at this site (Table 7.2).

7.2.13 In total, therefore, 1,857m of southern damselfly supporting watercourses within River Itchen SAC are expected to fall within the 1% NDep threshold contour (Local Plan in combination

including SGO, Sensitivity Test), with an additional 852m of southern damselfly supporting watercourses falling within the contour but outside of the SAC. Further analysis was undertaken of the amount by which the screening threshold (1% of the Critical Load) is expected to be exceeded in these locations; plans illustrating this analysis are shown in Appendix II. The analysis shows that, across much of the area covered by 1% NDep threshold contour, the amount of exceedence is limited to between 1% and 1.33% of the Critical Load, or between 0.15 and 0.2 kg N/ha/yr. In other words the amount of exceedence over the screening threshold is not substantial, even under the worst-case in combination Sensitivity Test scenario.

Review of southern damselfly habitat at River Itchen crossing points

7.2.14 Field surveys were undertaken during May 2018 to review the habitat conditions for southern damselfly at the three River Itchen road crossings discussed in section 7.2.9. Site visits were made by Jonathan Cox and Ben Rushbrook of the Hampshire and Isle of Wight Wildlife Trust. Visits to the Itchen Valley Country Park were guided by Eastleigh Borough Council staff responsible for the management of this site. Photos from the site visits are shown in Appendix IV.

Itchen Valley Country Park

7.2.15 Water courses in the vicinity of the M27 within the Itchen Valley Country Park were visited to the north and south of the motorway. Transect 2 to the north of the motorway was found to be in relatively poor condition for southern damselfly with marginal vegetation dominated by tall reed and sedge species including reed sweet-grass (*Glyceria maxima*), lesser pond-sedge (*Carex acutiformis*), common reed (*Phragmites australis*) and clumps of water-dock (*Rumex hydrolapathum*). These had all developed on wide silt berms that had accumulated along the margins of the water course. This appeared likely to be due to the effect of the motorway bridge on flow rate upstream of the bridge leading to increased silt deposition. Downstream of the bridge, Transect 3 was also in relatively poor condition, again with the marginal berms dominated by tall fen species dominated by lesser pond-sedge.

7.2.16 On both transects adjacent to the motorway bridge, the soft fleshy aquatic plants preferred for egg laying by the southern damselfly were rare or absent with the habitat being dominated by tall fen vegetation. It was apparent that silt deposition, water quality and fluvial processes were the predominant influences on the habitat. There was no evidence of elevated nutrient enrichment affecting the marginal swamp vegetation on these two transects in the vicinity of the motorway.

7.2.17 A small ditch on the west side of the flood plain was investigated on the south side of the motorway bridge. This is reported by the Country Park staff to take some surface water drainage from the motorway. It was found to have imperceptible levels of flow at the time of survey, but had a heavily silted bed and supported a dense growth of branched bur-reed (*Sparganium erectum*). This is a swamp community of eutrophic conditions that is tolerant of pollution by sewage and some industrial effluents (Haslam, 1978[46]). If air pollution was having a significant effect on the margins of Transect 2 and 3, it might be expected that these would also

[46] Haslam, S.M. (1978) *River Plants*. Cambridge University Press.

show an increased growth of branched bur-reed. The absence of this species suggests they are not subject to the elevated nutrient levels seen in the ditch that takes drainage from the motorway.

7.2.18 Transect 1 is furthest away from the motorway and has the highest density of southern damselfly recorded in the 2017 survey of the Country Park. This had much better developed marginal swamp vegetation for southern damselfly with a greater abundance of both fools watercress (*Apium nodiflorum)* and watercress (*Rorippa nasturtium-aquaticum*). This more suitable habitat is likely to be related to better flow conditions on this section of the watercourse, and possibly more recent marginal vegetation management.

Highbridge Farm

7.2.19 Three southern damselfly transects occur within the 1% exceedance contour at Highbridge Farm - transects 1, 2 and 4. Transect 2 is divided into three sub-sections (2a, 2b and 2c). Previous assessments had considered only parts of 2c, 1 and 4 to be within the 1% exceedance threshold, based on initial air pollution modelling (AQC, February 2018). The most recent modelling suggests a greater extent of the 1% exceedance polygon might include a greater length of transect 1, 2 and 4, but was made available after the site visits.

7.2.20 The ditch in Transect 2c was largely dry and overgrown in May 2018 and unsuitable for southern damselfly. The two individuals recorded at the eastern end of this transect in 2017 may have been vagrants from the neighbouring ditch (2b).

7.2.21 Transects 1, 2a, 2b and 3 follow the course of a single water meadow drain that is fed from the main river just upstream of the High Bridge giving good perennial flow. Transect 1, 2a and 2b follow the line of a hedge. It has steep banks and water flows some distance below the level of the flood plain. Despite this, it has a good diverse marginal vegetation and tall uncut ruderal vegetation along its banks. These provide a reasonable southern damselfly habitat although shading from the hedge and scrub is reducing habitat quality.

7.2.22 Transect 4 follows the bank of the main river Itchen. The marginal vegetation along the main river is managed more intensively by the local angling club. This maintains a dense mixed fen vegetation dominated by yellow iris (*Iris pseudacorus*) and reed canary grass (*Phalaris arundanacea*) with a diversity of tall fen species. Marginal growth of watercress, water mint (*Mentha aquatica*) and other species used by ovipositing southern damselfly is abundant.

7.2.23 None of the water courses at Highbridge Farm show signs of nutrient enrichment related to the proximity of the road. Ditch 2c is largely dry and is unsuitable habitat for southern damselfly. Ditches 1, 2a and 2b are influenced by shading and current vegetation management, but show no signs of eutrophication closer to the road such as increasing dominance of coarser ruderal plants including stinging nettle (*Urtica dioica)*, woody nightshade (*Solanum dulcamara)*, bind-weed (*Convolvulus* spp.) and greater growth of grasses. The marginal vegetation along the main river in Transect 4 is influenced by river management practices and river water quality, and shows no evidence of a link with nutrient enrichment derived from the road.

Bishopstoke (Ashtrim Nursery)

7.2.24 A visit was made to the Ashtrim Nursery site at Bishopstoke. This is a strategically important location linking the southern damselfly populations to the north and south of Eastleigh. Although not included within the SAC, this site has an important role in maintaining the range and meta population of southern damselfly in the Itchen Valley. The ditch through Ashtrim Nursery (Transect 1) was excavated by Eastleigh Borough Council to enhance its nature conservation value. It has created ideal conditions for southern damselfly with well-developed marginal growth of watercress, water forget-me-not (*Myosotis scorpioides*) and water mint.

7.2.25 Scrub growth to the south of the ditch and high water flows at the northern end of the ditch limit the use of this watercourse by southern damselfly to its middle reaches. However, it provides very good quality southern damselfly habitat over much of its length. There is no evidence of any nutrient enrichment or eutrophication of the marginal habitat due to proximity to the road.

Conclusion of site visits and effects of atmospheric nitrogen deposition on southern damselfly habitats

7.2.26 Site visits to the three locations where roads crossing the Itchen Valley will result in the 1% exceedance threshold being breached, based on EBLP development (including the SGO) in combination with other developments, revealed a number of important factors relating to the southern damselfly habitat condition in these locations.

7.2.27 The marginal swamp vegetation associated with southern damselfly habitat falls within the broad habitat type of Rich Fen. However, this encompasses a wide range of vegetation types from the nutrient poor sedge rich and brown moss fens to eutrophic fen communities in which plant nutrients are much more abundant. This includes the tall fen vegetation recorded along the water courses within the Itchen Valley Country Park and at Highbridge as well as the specific emergent marginal swamp vegetation used for egg laying by southern damselflies. This conforms to the NVC community S23 'Other water-margin vegetation', which is described as a vegetation of mesotrophic to eutrophic waters. It might be anticipated that the Critical Load (CL) for nitrate in these eutrophic vegetation types will be greater than the 15kg/ha/year identified for the Rich Fen broad habitat type, which includes the nitrate sensitive sedge and brown moss fens.

7.2.28 The marginal swamp vegetation upon which the southern damselfly depends for egg laying is an aquatic vegetation type that grows from within the watercourse and hence largely derives its nutrients from the water in which it grows. Nitrate is in excess in these environments with phosphate being the limiting plant nutrient. Nitrate concentrations in the River Itchen are in the range of 4.5-5.5 mg/l[47] whilst phosphate levels are <0.1 mg/l. Small increases (0.15-0.4kg/ha) in nitrogen deposition from air pollution in restricted locations close to the road corridors are therefore unlikely to have a significant adverse effect on the growth of this vegetation.

7.2.29 The APIS website provides guidance on nitrate critical loads for standing waters. It states; "*Deposition of ammonia, nitrate and other forms of nitrogen from the atmosphere is unlikely to*

[47] River Itchen Sustainability Study (2004), Water Quality Technical Appendix, Halcrow Ltd

be the largest source of this nutrient to eutrophic standing waters (Gibson et al. 1992, Gibson et al. 1995, Jordan 1997[48]) and, therefore, in general, N deposition is unlikely to be very harmful to eutrophic standing waters, even when close to sources." Although the water in which the southern damselfly habitat grows is flowing it can be concluded that, in the small slow flowing water courses in which this habitat is found, nitrogen deposition is unlikely to be harmful.

7.2.30 The APIS website does not provide guidance on nitrate critical loads for flowing waters, but states; "*In most lowland rivers and burns, nitrogen inputs from catchment land-use, not deposition from the atmosphere, are likely to be much more significant (Strong et al. 1997, Smith & Stewart 1989, Foy et al. 1982[49]).*"

7.2.31 There is no apparent transition or gradient in marginal swamp vegetation composition or structure related to the distance from the highway at any of the three sites visited. The vegetation is far more affected by fluvial process in the water course, in particular sediment deposition, bank shading and vegetation management intervention, including grazing by livestock and ditch clearance. Against these factors, the relatively small changes in nitrogen deposition predicted to result from changes in road traffic - based on EBLP development (including the SGO) in combination with other developments – are considered to be insignificant.

Assessment against the River Itchen SAC conservation objectives

7.2.32 Table 7.3 assesses the impacts of predicted changes in air quality against the conservation objectives for the River Itchen SAC southern damselfly population. It is concluded that there will be no adverse effect on the integrity of the SAC for this species as a consequence of predicted changes in air quality arising from implementation of the Eastleigh Borough Local Plan including the SGO, either alone or in combination with other plans and projects.

7.2.33 The SGO (including 3,350 dwellings within the plan period) represented a significant proportion of the overall development proposed in the submission plan. It is considered reasonable to conclude that deletion of the SGO from the EBLP will decrease predicted traffic flows along the M27, B3037 Bishopstoke Road and B3335 Highbridge Road used in the AQC (June 2018) air pollution modelling, and thus reduce the area and/or magnitude of exceedence over the 1% Process Contribution threshold. Furthermore it is reasonable to conclude that the deletion of the link road will result in a significant drop in overall traffic and air pollution levels in the Highbridge area (one of the areas with a high concentration of southern damselfly). It is unclear whether the deletion of the link road, but also the deletion of the SGO, will result in more or less traffic using the existing Bishopstoke Road. However the main other development sites in

[48] Gibson, C.E.; Smith, R.V.; Stewart, D.A. 1992 nitrogen cycle in Lough Neagh, N. Ireland, 1975 to 1987 Int. Revue ges. Hydrobiol 77 73-83
Gibson, C.E.; Wu, Y.; Smith, S.J.; Wolfe-Murphy, S.A. 1995 Synoptic limnology of a diverse geological region: catchment and water chemistry Hydrobiologia 306 213-227
Jordan, C. 1997 Mapping of rainfall chemistry in Ireland 1972-94 Biology and Environment: Proceedings of the Royal Irish Academy 97B 53-73

[49] Foy, R.; Smith, R.V.; Stevens, R.J. 1982 Identification of factors affecting nitrogen and phosphorus loadings to Lough Neagh Journal of Environmental Management 15 109-129
Smith, R.V.; Stewart, D.A. 1989 A regression model for nitrate leaching in Northern Ireland. Soil Use and Management 5 71-76
Strong, K.M.; Lennox, S.D.; Smith, R.V. 1997 Predicting nitrate concentrations in Northern Ireland rivers using time series analysis Journal of Environmental Quality 26 1599-1604

the north and centre of the Borough which might use Bishopstoke Road (West of Horton Heath, Woodhouse Lane Hedge End and Uplands Farm Botley) all have planning permission. Therefore it is reasonable to conclude that the adoption of the Local Plan, without the SGO or its link road, will not lead to further adverse effects in this regard. Deletion of the SGO from the plan is therefore compatible with the earlier conclusion that there will be no adverse effect from nitrogen deposition on the River Itchen SAC.

Table 7.3: Assessment against the River Itchen SAC conservation objectives

Conservation Objectives	Highbridge	Bishopstoke	IVCP
The extent and distribution of qualifying natural habitats and habitats of qualifying species	A total of 1,248m of existing SD habitat within the SAC (plus 368m outside the SAC) was within the 1% exceedance threshold when the SGO was included in the assessment, however, characteristics of habitat and other external influences on habitat quality led to a conclusion that changes in air quality would not affect the extent and distribution of SD habitat. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not result in adverse effects.	A total of 484m of existing SD habitat outside the SAC was within the 1% exceedance threshold when the SGO was included in the assessment, however, characteristics of habitat and other external influences on habitat quality led to a conclusion that changes in air quality were not likely to affect the extent and distribution of SD habitat. Deletion of the SGO from the plan is likely to reduce the scale and magnitude of emissions, and will not result in adverse effects.	A total of 609m of existing SD habitat within the SAC was within the 1% exceedance threshold when the SGO was included in the assessment, however, characteristics of habitat and other external influences on habitat quality led to a conclusion that changes in air quality were not likely to affect the extent and distribution of SD habitat. Deletion of the SGO from the plan is likely to reduce the scale and magnitude of emissions, and will not result in adverse effects.
The structure and function of the habitats of qualifying species	The structure and function of SD habitat are overwhelmingly influenced by other external factors including river water quality, fluvial characteristics and river and land management practices. Changes in atmospheric nitrogen deposition are not likely to have a significant effect on the SD habitat structure and function.	The structure and function of SD habitat are overwhelmingly influenced by other external factors including river water quality, fluvial characteristics and river and land management practices. Changes in atmospheric nitrogen deposition are not likely to have a significant effect on the SD habitat structure and function.	The structure and function of SD habitat are overwhelmingly influenced by other external factors including river water quality, fluvial characteristics and river and land management practices. Changes in atmospheric nitrogen deposition are not likely to have a significant effect on the SD habitat structure and function.
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely	River and land management processes and natural succession have overwhelming influence on SD habitat quality. Nitrogen deposition levels are already exceeding Critical Load and likely to be in excess in aquatic environment. Increased nitrogen deposition will not have a significant effect on processes supporting the SD habitat. It	River and land management processes and natural succession have overwhelming influence on SD habitat quality. Nitrogen deposition levels are already exceeding Critical Load and likely to be in excess in aquatic environment. Increased nitrogen deposition will not have a significant effect on processes supporting the SD habitat. It	River and land management processes and natural succession have overwhelming influence on SD habitat quality. Nitrogen deposition levels are already exceeding Critical Load and likely to be in excess in aquatic environment. Increased nitrogen deposition will not have a significant effect on processes supporting the SD habitat. It

Conservation Objectives	Highbridge	Bishopstoke	IVCP
	is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.
The populations of qualifying species	SD populations are dependent upon the conservation of a meta-population across multiple sites within the Itchen Valley. Air quality and nitrogen deposition will not have a significant effect on the maintenance of the SD meta-population. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	SD populations are dependent upon the conservation of a meta-population across multiple sites within the Itchen Valley. Air quality and nitrogen deposition will not have a significant effect on the maintenance of the SD meta-population. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	SD populations are dependent upon the conservation of a meta-population across multiple sites within the Itchen Valley. Air quality and nitrogen deposition will not have a significant effect on the maintenance of the SD meta-population. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.
The distribution of qualifying species within the site	The site has an important role in the conservation of the meta-population of SD linking the lower Itchen Valley with populations to the north around Twyford Moors. However, increased aerial N deposition will not have a significant effect on the quality of the habitat at this site. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	This site is critical to the conservation of the meta-population of SD within the lower Itchen Valley linking fragmented populations to north and south of Bishopstoke. However, increased aerial N deposition will not have a significant effect on the quality of the habitat at this site. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.	This site at the southern edge of the SD distribution in the Itchen Valley and has a high population density. It is therefore critical to the conservation of the species range. However, increased aerial N deposition will not have a significant effect on the quality of the habitat at this site. It is considered reasonable to conclude that deletion of the SGO from the plan will reduce the scale and magnitude of emissions, and will not alter this conclusion.

Noise and vibration

7.2.34 The source of noise and vibration impacts derives from the following policies (Appendix I):

- S3 Location of new Housing
- S4 Employment provision
- S11 Transport infrastructure
- AL1 Land east of Allbrook Way
- BO2 Land north-east of Winchester Street, Botley
- BO3 East of Kings Copse Avenue
- BU1 Land north of Providence Hill
- BU2 Heath House Farm
- BU3 South east of Windmill Lane
- BU6 Riverside Boatyard
- CF1 Common Road Industrial Estate, Chandler's Ford
- CF3 Central Precinct, Chandler's Ford
- CF4 Steele Close, Chandler's Ford
- E1 Civic Offices, Eastleigh
- E6 Eastleigh River Side
- E7 Eastleigh River Side adjacent land
- E9abcd Southampton Airport (employment allocation)
- FO1 West of Durley Road, Horton Heath
- FO2 East of Allington Lane
- HA2 Mercury Marina
- HE1 West of Woodhouse Lane
- HE2 Sunday's Hill / Pewett Hill Close
- HE4 Peewit Hill Close / Dodwell Ln
- HH1 Land west of Horton Heath
- WE3 Tollbar Way / Berrywood Park
- Sites with planning permission / resolution to grant (in combination effects)

7.2.35 Limited information is currently available on the precise form of these developments, construction methods or timeframe. Consequently the risk of adverse effects on the integrity of River Itchen SAC will need to be reconsidered at the planning application stage. However, an assessment of the EBLP against the site's conservation objectives is presented below.

Assessment of impacts on the River Itchen SAC conservation objectives
The extent and distribution of qualifying natural habitats and habitats of qualifying species The EBLP proposals listed above are unlikely to alter the extent and distribution of the habitats of qualifying species.
The structure and function (including typical species) of qualifying natural habitats The EBLP proposals listed above are unlikely to alter the structure and function of the qualifying habitats.
The structure and function of the habitats of qualifying species In the absence of mitigation, noise/vibration emanating from these proposals could create an acoustic barrier which impedes the function of the habitats in providing a migration or dispersal route for qualifying species including Atlantic salmon and European otter. Landscape corridors between neighbouring catchments used by otter may be threatened by increased disturbance at strategic locations. This effect may act in combination with extant planning permissions.
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The EBLP proposals listed above are unlikely to alter the supporting processes on which the habitats of the qualifying species rely.
The population of qualifying species Obstructions to the movement of qualifying fish species including Atlantic salmon within the SAC, as a result of loud or percussive noise and vibration, could severely disrupt the species' productivity, particularly if it occurs during key migratory periods, resulting in population declines. Otter is likely to be more resilient to disturbance via noise/vibration and population effects are unlikely to occur.
The distribution of qualifying species within the site In the absence of mitigation, for qualifying species including Atlantic salmon and European otter, noise/vibration impacts could result in avoidance of the affected areas and potentially lead to range contractions. For the majority of the proposals listed this effect is likely to be relatively short term and reversible as it would occur during site preparation and construction phases only.

Land outside of European site boundaries

7.2.36 The source of impacts to land outside of the SAC boundary derives from the following policies (Appendix I):

- S3 Location of new housing
- S4 Employment provision
- S11 Transport infrastructure
- Sites with planning permission / resolution to grant (in combination effects)

7.2.37 Limited information is currently available on the precise form of these developments, construction methods or timeframe. Consequently the risk of adverse effects on the integrity of River Itchen SAC will need to be reconsidered at the planning application stage. However, an assessment of the EBLP against the site's conservation objectives is presented below.

Assessment of impacts on the River Itchen SAC conservation objectives
The extent and distribution of qualifying natural habitats and habitats of qualifying species
Residential and commercial development and transportation infrastructure are unlikely to result in a loss of otter habitats.
The structure and function of the habitats of qualifying species
Landscape corridors used by otter to move between neighbouring catchments (Figure 6.8) may be impeded by increasing traffic movement associated with residential, commercial and infrastructure development where existing or new roads pass close to strategic locations.
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
Residential and commercial development and transportation infrastructure are unlikely to adversely affect the supporting processes on which otter relies.
The population of qualifying species
Increased road accident deaths could result in a reduction in population size.
The distribution of qualifying species within the site
The distribution of otters within the Itchen catchment could be constrained by increased traffic movements at critical locations in the catchment affecting landscape corridors used by otter for dispersal.

Invasive non-native species and site-specific hydrological impacts

7.2.38 The source of site-specific impacts from invasive non-native species and water quality derives from the following policies (Appendix I):

- S3 Location of new Housing
- S4 Employment provision
- S11 Transport infrastructure
- AL1 Land east of Allbrook Way
- E6 Eastleigh River Side
- E7 Eastleigh River Side adjacent land
- E9abcd Southampton Airport (employment allocation)
- FO2 East of Allington Lane
- HH1 Land west of Horton Heath
- Sites with planning permission / resolution to grant (in combination effects)

7.2.39 Limited information is currently available on the precise form of these developments, construction methods or timeframe. Consequently the risk of adverse effects on the integrity of River Itchen SAC will need to be reconsidered at the planning application stage. However, an assessment of the EBLP against the site's conservation objectives is presented below.

Assessment of impacts on the River Itchen SAC conservation objectives

The extent and distribution of qualifying natural habitats and habitats of qualifying species

The release of invasive non-native species such as Japanese knotweed, giant hogweed or Himalayan balsam into riparian habitats linked to the SAC is unlikely to directly affected the extent and distribution of in-channel vegetation (e.g. stream water-crowfoot *R. penicillatus ssp. pseudofluitans*, a species especially characteristic of calcium-rich rivers, and river water-crowfoot *R. fluitans)* forming the Annex 1 habitat. These species could, however, directly affect bankside vegetation and potentially in-channel species composition through increased shading and siltation (through increased erosion).

Floating pennywort, creeping water primrose and other aquatic species (e.g. New Zealand swamp stonecrop *Crassula helmsii*, parrot's feather *Myriophyllum aquaticum* and curly waterweed *Lagarosiphon major*) generally prefer static or slow-moving waterbodies. However, they could affect botanical composition among emergent vegetation at the margins, or forming floating mats behind obstacles such as fallen trees. Signal crayfish consume large quantities of plant material in their native habitat; they may have an impact on macrophyte communities.

Invasive species causing changes to the structure of bankside vegetation and increased shading in side channels and field drains used by southern damselfly could have serious deleterious effect on the extent and distribution of its breeding habitat. All of the qualifying fish species (bullhead, brook lamprey and salmon) require coarse sediment substrate (gravel/cobble/pebble) for spawning, although brook lamprey also requires soft marginal silt or sand for the larvae. White-clawed crayfish also require a cobbly substrate which it uses for refuge alongside tree root systems. Increased siltation could reduce the extent and distribution of these habitats.

A major pollution event during construction of a site close to the SAC could theoretically be so severe as to reduce the extent and distribution of the Annex 1 habitat, though such events are unusual and there is limited evidence for damage from contaminants in recent site condition assessments.

The structure and function (including typical species) of qualifying natural habitats

The structure and function of the Annex 1 habitat could be indirectly affected by non-native species through increased shading and siltation, or by a major pollution event.

The structure and function of the habitats of qualifying species

As stated above, the breeding habitats of southern damselfly are at risk of severe impacts if invasive species out-compete bankside vegetation in the side channels. Habitats of bullhead, brook lamprey, salmon and white-clawed crayfish could be negatively affected through siltation but such impacts are likely to be less dramatic, more gradual and influenced by a variety of other factors, in particular water flow volumes and velocity.

The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely

Non-native species are unlikely to directly or fundamentally affect the supporting processes on which the Annex 1 habitat or Annex 2 species rely. A major pollution event during construction of a site close to the SAC could alter water chemistry, though there is limited evidence for damage from contaminants in recent site condition assessments, and such an effect is likely to be temporary. Small scale cumulative effects are more likely as a result of changes in water flow, turbidity and chemical loading in surface water run-off from multiple operational developments but such impacts are likely to be gradual and influenced by a variety of other factors.

The population of qualifying species

The populations of southern damselfly (in particular) and bullhead, brook lamprey, salmon and white-clawed crayfish could all be reduced by non-native species and deterioration in water quality, though such changes are likely gradual in the latter group and reflective of a combination of factors.

Assessment of impacts on the River Itchen SAC conservation objectives

The distribution of qualifying species within the site

The distributions of bullhead, brook lamprey, salmon and white-clawed crayfish could all be reduced by non-native species and deterioration in water quality, though such changes are likely gradual in the latter group and reflective of a combination of factors. Range contractions are possible for southern damselfly. The loss of critical stepping stone habitats for southern damselfly such as those around Bishopstoke (a strategically important location linking the populations of southern damselfly to the north and south) through invasive species would be likely to have a serious adverse effect on the species' distribution.

Water abstraction

7.2.40 The source of water abstraction impacts derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)
- S4 Employment provision (and by implication proposed employment allocations)

Assessment of impacts on the River Itchen SAC conservation objectives

The extent and distribution of qualifying natural habitats and habitats of qualifying species

Unrestricted abstractions from the River Itchen could reduce the extent and distribution of stream water-crowfoot, river water-crowfoot and Callitricho-Batrachion communities, particularly in dry years and during periods of peak water demand. Low water flows and reduced extent/distribution of vegetation would also constitute a reduction in the extent and distribution of the habitats of white-clawed crayfish, southern damselfly, bullhead, brook lamprey and Atlantic salmon. Otter is likely to be more resilient but may be adversely affected by reduced food availability.

However, abstraction licences on the lower Itchen and related water sources have been amended and agreed between the Environment Agency and Southern Water to avoid adverse effects on integrity. As part of the agreement the water company is still able to obtain authorisation from the Agency for abstractions over and above the revised licence under certain conditions, but a series of ecological monitoring, mitigation and compensation measures have been detailed to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected. The HRA for Southern Water's WRMP 2019 has shown that none of the preferred options for meeting the supply-demand deficit caused in part of the sustainability reductions will result in adverse effects on the integrity of affected European sites.

The structure and function (including typical species) of qualifying natural habitats

Low water flows could adversely affect the structure of the Annex 1 habitat. However, revised abstractions licences have been agreed and ecological monitoring, mitigation and compensation measures are in place to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected.

The structure and function of the habitats of qualifying species

Low water flows could adversely affect the structure of the Annex 1 habitat and its function in supporting white-clawed crayfish, southern damselfly, bullhead, brook lamprey and Atlantic salmon. However, revised abstractions licences have been agreed and ecological monitoring, mitigation and compensation measures are in place to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected.

The supporting processes on which qualifying natural habitats and the habitats of qualifying

Assessment of impacts on the River Itchen SAC conservation objectives
species rely Unrestricted abstractions from the River Itchen would undermine the supporting process on which the Annex 1 habitat and populations of white-clawed crayfish, southern damselfly, bullhead, brook lamprey, Atlantic salmon and otter rely, particularly in dry years and during periods of peak water demand. However, revised abstractions licences have been agreed and ecological monitoring, mitigation and compensation measures are in place to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected.
The population of qualifying species The populations of white-clawed crayfish, southern damselfly, bullhead, brook lamprey and Atlantic salmon could suffer a decline if abstractions from the River Itchen continue unrestricted in in dry years and during periods of peak water demand. Otter is likely to be more resilient but may be adversely affected by reduced food availability. However, revised abstractions licences have been agreed and ecological monitoring, mitigation and compensation measures are in place to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected.
The distribution of qualifying species within the site The distributions of white-clawed crayfish, southern damselfly, bullhead, brook lamprey and Atlantic salmon could suffer a contract if abstractions from the River Itchen continue unrestricted in in dry years and during periods of peak water demand. Otter is likely to be more resilient but may shift its distribution in response to reduced food availability. However, revised abstractions licences have been agreed and ecological monitoring, mitigation and compensation measures are in place to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected.

Water pollution

7.2.41 The source of water pollution impacts derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)

Assessment of impacts on the River Itchen SAC conservation objectives
The extent and distribution of qualifying natural habitats and habitats of qualifying species Growth projections are not expected to lead to impacts on the SAC via nutrient nitrogen pollution, however, unrestricted growth even within the existing discharge permit for Chickenhall WWTW could result in adverse effects via phosphate pollution. Other sources (agriculture, fish farms and upstream WWTW) also contribute significant quantities of phosphate. 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. River water-crowfoot is likely to be much more sensitive to nutrient enrichment under low flow conditions (Hatton-Ellis & Grieve, 2003).
The structure and function (including typical species) of qualifying natural habitats The structure and function of Callitricho-Batrachion communities is likely to deteriorate as a result of excess phosphate concentrations.
The structure and function of the habitats of qualifying species Excess phosphate may result in increasing dominance of coarser ruderal plants altering the structure and function of marginal aquatic vegetation communities used by southern damselfly for egg laying.

Assessment of impacts on the River Itchen SAC conservation objectives
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The supporting processes (trophic status) of Callitricho-Batrachion communities are likely to be degraded as a result of excess phosphate concentrations, although species composition, extent and condition are also heavily influenced by water flow, shading and base status.
The population of qualifying species The southern damselfly population is likely to decrease if suitable reproductive conditions are not maintained as a result of excess phosphate concentrations.
The distribution of qualifying species within the site Southern damselfly may undergo a range contraction within the site if the distribution of suitable egg laying habitats is adversely affected by excess phosphate concentrations.

Appropriate Assessment conclusion

7.2.42 In the absence of mitigation it cannot currently be concluded that development proposed in the Eastleigh Borough Local Plan will not have an adverse effect on the integrity of the River Itchen SAC as a result of the following impacts: noise and vibration; land outside of European site boundaries (otter corridors); invasive non-native species and site-specific hydrological impacts; water abstraction; and water pollution. Chapter 8 sets out the mitigation strategy to prevent adverse effects on integrity.

7.3 Solent Maritime SAC

Invasive non-native species and site-specific hydrological impacts

7.3.1 The source of site-specific impacts from invasive non-native species and water quality derives from the following policies (Appendix I):

- S3 Location of new Housing
- S4 Employment provision
- S11 Transport infrastructure
- BO2 Land north-east of Winchester Street, Botley
- BO3 East of Kings Copse Avenue
- BO5 Botley bypass
- BU1 Land north of Providence Hill
- BU2 Heath House Farm
- BU3 South east of Windmill Lane
- BU6 Riverside Boatyard
- FO1 West of Durley Road, Horton Heath
- HA2 Mercury Marina

- HE1 West of Woodhouse Lane
- HE2 Sunday's Hill / Pewett Hill Close
- HE4 Peewit Hill Close / Dodwell Ln
- WE3 Tollbar Way / Berrywood Park
- Sites with planning permission / resolution to grant (in combination effects)

7.3.2 Limited information is currently available on the precise form of these developments, construction methods or timeframe. Consequently the risk of adverse effects on the integrity of River Itchen SAC will need to be reconsidered at the planning application stage. However, an assessment of the EBLP against the site's conservation objectives is presented below.

Assessment of impacts on the Solent Maritime SAC conservation objectives
The extent and distribution of qualifying natural habitats and habitats of qualifying species The extent and distribution of qualifying natural habitats are unlikely to be adversely affected by non-native species; species of concern within the SAC were introduced via pathways other than residential or commercial development (e.g. shipping, aquaculture and natural dispersal). However, a major pollution event during construction of a site close to the SAC could theoretically be so severe as to reduce the extent and distribution of the Annex 1 habitat, though such events are unusual and there is limited evidence for construction-related impacts in recent site condition assessments. Desmoulin's whorl snail is unlikely to be affected due to its restricted distribution (Fishbourne Channel in Chichester Harbour) and possible local extinction (see section 4.3.25).
The structure and function (including typical species) of qualifying natural habitats The structure and function of Annex 1 habitats are unlikely to be adversely affected by non-native species, but could be indirectly affected by a major pollution event.
The structure and function of the habitats of qualifying species Desmoulin's whorl snail is unlikely to be affected due to its restricted distribution (Fishbourne Channel in Chichester Harbour) and possible local extinction (see section 4.3.25).
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely The supporting processes on which Annex 1 habitats rely are unlikely to be adversely affected by non-native species. A major pollution event during construction of a site close to the SAC could alter water chemistry, though there is limited evidence for construction-related impacts in recent site condition assessments, and such an effect is likely to be temporary. Small scale cumulative effects are more likely as a result of changes in water flow, turbidity and chemical loading in surface water run-off from multiple operational developments but such impacts are likely to be gradual and influenced by a variety of other factors.
The population of qualifying species Desmoulin's whorl snail is unlikely to be affected due to its restricted distribution (Fishbourne Channel in Chichester Harbour) and possible local extinction (see section 4.3.25).
The distribution of qualifying species within the site Desmoulin's whorl snail is unlikely to be affected due to its restricted distribution (Fishbourne Channel in Chichester Harbour) and possible local extinction (see section 4.3.25).

Water pollution

7.3.3 The source of water pollution impacts derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)

Assessment of impacts on the Solent Maritime SAC conservation objectives
The extent and distribution of qualifying natural habitats and habitats of qualifying species
Growth projections are not expected to result in impacts on the SAC via nutrient nitrogen pollution in the short term, however, Peel Common WWTW (serving Eastleigh, Fareham, Gosport, Test Valley and Winchester) is predicted to reach capacity by 2025 at which point a review of N permit will be required. Recently implemented (2014/2015) measures for improvements at Pennington WWTW, Peel Common WWTW, Eastney/Budds Farm WWTW and several in Southampton Water, will all reduce N inputs into the Solent. No adverse effects to the extent and distribution of qualifying natural habitats or habitats of qualifying species are likely in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period. The nitrogen budget for the EBLP suggests that developments allocated in the plan will lead to a surplus of 7,432.76 kg/TN/yr over the plan period; this scale of excess nitrogen entering the marine environment will require mitigation to prevent adverse effects on site integrity.
The structure and function (including typical species) of qualifying natural habitats
No adverse effects on the structure and function of qualifying natural habitats are likely in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period.
The structure and function of the habitats of qualifying species
No adverse effects on the structure and function of habitats of qualifying species are likely in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period.
The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
The supporting processes on which qualifying habitats/species rely is unlikely to be adversely affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period.
The population of qualifying species
The population of qualifying species (Desmoulin's whorl snail) is unlikely to be significantly affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period.
The distribution of qualifying species within the site
The distribution of Desmoulin's whorl snail is unlikely to be significantly affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for adverse effects later in the plan period.

Appropriate Assessment conclusion

7.3.4 In the absence of mitigation it cannot currently be concluded that development proposed in the Eastleigh Borough Local Plan will not have an adverse effect on the integrity of the Solent Maritime SAC as a result of the following impacts: invasive non-native species and site-specific

hydrological impacts; and water pollution. Chapter 8 sets out the mitigation strategy to prevent adverse effects on integrity.

7.4 New Forest SPA

Disturbance (strategic impacts)

7.4.1 The source of (strategically-operating) disturbance impacts to the SPA derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)

Assessment of impacts on the New Forest SPA conservation objectives
The extent and distribution of the habitats of qualifying features
The EBLP is unlikely to alter the extent and distribution of the habitats of the New Forest SPA breeding populations of nightjar, woodlark and Dartford warbler as a result of increased disturbance.
The structure and function of the habitats of qualifying features
The plan has the potential to alter the structure and function of the habitats of the New Forest SPA's breeding populations of nightjar, woodlark and Dartford warbler. The impact is likely to be indirect, intermittent and reversible due to increased human/dog activity leading to displacement of the birds from otherwise suitable nesting habitats. The impact is very likely act in combination with other plans and projects. The magnitude of the potential impact is uncertain but potentially large (approximately 14,580 dwellings within c.20km of the New Forest SPA), especially in combination, and is likely to be most severe during the spring and summer months. The risk of adverse effects on integrity is high. However, counteracting measures are being devised in cooperation with Natural England and other local planning authority members of the New Forest International Designation Working Group, and have been incorporated into the plan via proposed policy DM11, and are considered likely to effectively avoid and mitigate the impact. The Council is also committed to implementing its interim approach to mitigating the effects of residential development in advance of a joint strategic mitigation programme being agreed, which is sufficient to prevent adverse effects on integrity over the short-term.
The supporting processes on which the habitats of qualifying features rely
The plan is unlikely to significantly undermine the supporting processes on which the habitats of the New Forest SPA breeding populations of nightjar, woodlark and Dartford warbler rely, although minor indirect impacts are possible through trampling, soil compaction, erosion and localised eutrophication.
The population of each of the qualifying features
The New Forest SPA breeding populations of nightjar, woodlark and Dartford warbler could potentially be reduced via increased predation of eggs, trampling and thermal stress, leading to reduced breeding success as a result of increased disturbance. The magnitude of the potential impact is uncertain but likely to be significant, and is very likely act in combination with other plans and projects. However, counteracting measures have been incorporated into the plan and are considered likely to effectively avoid and mitigate the impact.
The distribution of qualifying features within the site
Without mitigation, the distribution of the New Forest SPA breeding populations of nightjar, woodlark

Assessment of impacts on the New Forest SPA conservation objectives
and Dartford warbler populations within the site is likely to be altered as birds are displaced from otherwise suitable habitats in response to increased disturbance, and the impact is very likely act in combination with other plans and projects. However, counteracting measures have been incorporated into the plan and are considered likely to effectively avoid and mitigate the impact.

Appropriate Assessment conclusion

7.4.2 In the absence of mitigation it cannot currently be concluded that development proposed in the Eastleigh Borough Local Plan will not have an adverse effect on the integrity of the New Forest SPA as a result of disturbance (strategic impacts). Chapter 8 sets out the mitigation strategy to prevent adverse effects on integrity.

7.5 Solent & Southampton Water SPA/Ramsar

Disturbance (strategic impacts)

7.5.1 The source of (strategically-operating) disturbance impacts to the SPA/Ramsar derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)

Assessment of impacts on the Solent & Soton Water SPA/Ramsar conservation objectives
The extent and distribution of the habitats of qualifying features The EBLP is unlikely to alter the extent and distribution of the habitats of the Solent & Southampton Water SPA/Ramsar overwintering (dark-bellied Brent goose, black-tailed godwit, ringed plover and teal) bird populations as a result of increased disturbance.
The structure and function of the habitats of qualifying features The plan has the potential to alter the structure and function of the habitats of the Solent & Southampton Water SPA/Ramsar overwintering bird populations. The impact could be indirect and permanent or reversible as a result of increased footfall within the site, leading to trampling of vegetation, soil compaction and erosion; or be direct, intermittent and reversible due to increased human/dog activity leading to displacement of the birds from otherwise suitable feeding or roosting habitats. The impact is very likely act in combination with other plans and projects. The magnitude of the potential impact is uncertain but potentially large (a minimum of 1,387 dwellings within 5.6km of the SPA/Ramsar), especially in combination, and is likely to continue year-round. The risk of adverse effects on integrity is high. However, counteracting measures were devised in cooperation with Natural England and other local planning authority members of the Solent Recreation Mitigation Partnership, and have been incorporated into the plan via proposed policy DM11, and are considered likely to effectively avoid and mitigate the impact.
The supporting processes on which the habitats of qualifying features rely The plan is unlikely to significantly undermine the supporting processes on which the habitats of the Solent & Southampton Water SPA/Ramsar overwintering bird populations rely, although minor indirect impacts are possible through trampling, soil compaction and erosion.

Assessment of impacts on the Solent & Soton Water SPA/Ramsar conservation objectives
The population of each of the qualifying features
The Solent & Southampton Water SPA/Ramsar overwintering dark-bellied Brent goose, black-tailed godwit, ringed plover and teal populations could potentially be reduced via increased energetic expenditure and starvation risk, leading to a fall in winter survival rates as a result of increased disturbance. The magnitude of the potential impact is uncertain but likely to be significant. The impact is very likely act in combination with other plans and projects.
However, counteracting measures have been incorporated into the plan and are considered likely to effectively avoid and mitigate the impact.
The distribution of qualifying features within the site
Without mitigation, the distribution of the Solent & Southampton Water SPA/Ramsar overwintering bird populations within the site is likely to be altered as birds are displaced from otherwise suitable habitats in response to increased disturbance, and the impact is very likely act in combination with other plans and projects.
However, counteracting measures have been incorporated into the plan and are considered likely to effectively avoid and mitigate the impact.

Noise and vibration

7.5.2 The source of noise and vibration impacts derives from the following policies (Appendix I):

- HA2 Mercury Marina

7.5.3 Limited information is currently available on the precise form of this development, construction methods or timeframe. Consequently the risk of adverse effects on the integrity of Solent & Southampton Water SPA/Ramsar will need to be reconsidered at the planning application stage. However, an assessment of the EBLP against the site's conservation objectives is presented below.

Assessment of impacts on the Solent & Soton Water SPA/Ramsar conservation objectives
The extent and distribution of the habitats of qualifying features
The EBLP proposal listed above is unlikely to alter the extent and distribution of the habitats of qualifying features.
The structure and function of the habitats of qualifying features
In the absence of mitigation, noise/vibration emanating from this proposal could render otherwise suitable habitats unusable by breeding gulls and terns and overwintering waders and wildfowl.
The supporting processes on which the habitats of qualifying features rely
The EBLP proposal listed above is unlikely to alter the supporting processes on which the habitats of the qualifying features rely.
The population of each of the qualifying features
In the absence of mitigation, very loud construction processes associated with this proposal could displace breeding gulls and terns and overwintering waders and wildfowl, and create a risk of reduced breeding success or overwinter survival rates. The impact from HA2 Mercury Marina is unlikely to result in a population scale effect, however, in combination the impact could still be adverse.
The distribution of qualifying features within the site

Assessment of impacts on the Solent & Soton Water SPA/Ramsar conservation objectives
Any displacement of breeding gulls and terns and overwintering waders and wildfowl would change the distribution of qualifying features within the site, although the impact is likely to be short term and reversible as it would occur during site preparation and construction phases only.

Water pollution

7.5.4 The source of water pollution impacts derives from the following policies (Appendix I):

- S3 Location of new housing (and by implication proposed residential allocations)

Assessment of impacts on the Solent & Soton Water SPA/Ramsar conservation objectives
The extent and distribution of the habitats of qualifying features
Growth projections are not expected to result in impacts on the SPA/Ramsar via nutrient nitrogen pollution in the short term, however, Peel Common WWTW (serving Eastleigh, Fareham, Gosport, Test Valley and Winchester) is predicted to reach capacity by 2025 at which point a review of N permit will be required. Recently implemented (2014/2015) measures for improvements at Pennington WWTW, Peel Common WWTW, Eastney/Budds Farm WWTW and several in Southampton Water, will all reduce N inputs into the Solent. No adverse effects to the extent and distribution of habitats of qualifying species are likely in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for indirect adverse effects later in the plan period. The nitrogen budget for the EBLP suggests that developments allocated in the plan will lead to a surplus of 7,432.76 kg/TN/yr over the plan period; this scale of excess nitrogen entering the marine environment will require mitigation to prevent adverse effects on site integrity.
The structure and function of the habitats of qualifying features
No adverse effects on the structure and function of habitats of qualifying species are likely in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for indirect adverse effects later in the plan period.
The supporting processes on which the habitats of qualifying features rely
The supporting processes on which habitats of qualifying species rely is unlikely to be adversely affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for indirect adverse effects later in the plan period.
The population of each of the qualifying features
The populations of qualifying species are unlikely to be significantly affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for indirect adverse effects later in the plan period.
The distribution of qualifying features within the site
The distributions of qualifying species are unlikely to be significantly affected in the short term, however, the capacity constraint at Peel Common means it is not possible to rule out the potential for indirect adverse effects later in the plan period.

Appropriate Assessment conclusion

7.5.5 In the absence of mitigation it cannot currently be concluded that development proposed in the Eastleigh Borough Local Plan will not have an adverse effect on the integrity of the Solent and Southampton Water SPA/Ramsar as a result of the following impacts: disturbance (strategic impacts); noise and vibration; and water pollution. Chapter 8 sets out the mitigation strategy to prevent adverse effects on integrity.

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8 Mitigation Strategy

8.1 Introduction

8.1.1 This chapter outlines the mitigation strategy of preventative measures which, together with incorporated mitigation (section 5.3), will be taken into account when determining whether there are adverse effects on the integrity of any European site. The mitigation strategy will be secured on adoption of the EBLP.

8.2 Disturbance: Strategic Impacts

Solent and Southampton Water SPA/Ramsar

8.2.1 The potential for adverse effects resulting from residential development within 5.6km of the SPA/Ramsar is adequately dealt with by DM11's (Nature conservation) requirement that contributions are made in line with the Solent Recreation Mitigation Strategy.

New Forest SPA

8.2.2 The potential for adverse effects resulting from residential development within c.20km of the SPA is adequately dealt with by DM11's (Nature conservation) requirement that contributions are made towards recreation mitigation for the New Forest. Although a recreation mitigation strategy for the New Forest has not yet been devised, this does not give rise to any realistic risk to this conclusion, given that Eastleigh Borough Council's membership of the New Forest International Designation Working Group demonstrates its commitment to implementing the strategy once agreed, and given that contributions or other mitigation measures pursuant to Policy DM11 are not contingent on a formal strategy being in place.

8.2.3 In addition Eastleigh Borough Council has developed an interim approach[50] to mitigating the effects of residential development within the borough in advance of a joint strategic mitigation programme being agreed. The extent of the mitigation required will be calculated based on the average number of visits generated by new homes and reflecting the estimated proportion of households who visit the New Forest and designated SPA/SAC/Ramsar sites each year. The interim approach to mitigation may include:

- Creating new open spaces / SANG within Eastleigh borough, including as part of new development;
- Implementing changes to existing open spaces and recreational routes within Eastleigh borough; and

[50] Eastleigh Borough Council (2019): *Interim New Forest Recreation Mitigation.* Accessed online [14/04/2021] at: https://www.eastleigh.gov.uk/media/5441/update-doc-4c-new-forest-interim-mitigation.pdf

- Contributing to visitor access management projects which are already in place in the New Forest to address the impact of extra visits from Eastleigh residents.

8.2.4 The interim strategy is sufficient to prevent adverse effects on integrity over the short-term.

8.3 Noise and Vibration

River Itchen SAC

8.3.1 Planning applications for sites within 100m of River Itchen SAC (including projects close to headwaters and tributaries used by otter when moving between catchments) and policy S11 listed in Table 6.5 which could result in adverse effects via noise/vibration will be required to:

- Adopt low impact construction methods such as vibro-piling;
- Incorporate noise attenuation measures to prevent exceedance of impact thresholds;
- Conduct a preconstruction habitat survey to be undertaken by a fisheries biologist to determine the likelihood of salmon spawning occurring in the relevant stretch of river;
- Restrict works to periods when qualifying species are not present or are less vulnerable to noise/vibration impacts (e.g. for Atlantic salmon avoid the following period: end of November to end of March when adults are migrating upstream for egg laying);
- Protect potential otter holts such as wet woodland and reed bed from disturbance;
- Protect corridors linking the Itchen, Test and Hamble catchments from disturbance, in particular the Tadburn Stream and Monks Brook and the Bow Lake Stream;
- Undertake project-level HRA to show that the above or other devised measures are capable of preventing adverse effects on integrity.

8.3.2 These measures are likely to be effective, will adequately mitigate for noise/vibration impacts potentially affecting the River Itchen SAC, and have been incorporated into the EBLP via modifications to policy DM11 and supporting text.

Solent and Southampton Water SPA/Ramsar

8.3.3 The potential for adverse effects resulting from development at HA2 (Mercury Marina) is adequately dealt with by the DM8 (Pollution) supporting text requirement that *"construction noise should be kept below 69dBA max either alone or in combination with other developments (measured at the sensitive receptor which is the nearest point of the SPA/Ramsar or supporting habitat) during the bird overwintering period, or works timed so that they do not coincide with the wintering bird season"*.

8.4 Impacts on Otter outside European Site Boundaries

River Itchen SAC

8.4.1 Mitigation is required to prevent impacts on otters using dispersal corridors outside of the SAC boundaries in order to enable a conclusion of no adverse effect on the integrity of the River Itchen SAC to be reached. Mitigation is needed to achieve the following objectives:

- Reduce risk of road traffic accidents where water courses are crossed by existing or new roads through the provision of suitable under bridge high water pathways, appropriate fencing and roadside signage.
- These measures should in particular be focused upon the Tadburn Stream and Monks Brook and the Bow Lake Stream, which link the Itchen, Test and Hamble catchments.
- Planning applications for development along these corridors will be required to undertake project-level HRA to show that the above or other devised measures are capable of preventing adverse effects on integrity.

8.4.2 These measures are likely to be effective, will adequately mitigate for otter dispersal corridors in relation to the River Itchen SAC, and have been incorporated into the EBLP via modifications to policy DM11 and supporting text.

8.5 Non-native Species and Site-specific Hydrological Impacts

River Itchen SAC

8.5.1 Planning applications for sites within 100m of River Itchen SAC (including projects close to headwaters and tributaries draining into the SAC) listed in Table 6.6 which could result in adverse effects via non-native species and hydrological impacts will be required to:

- Control the risk of introduction of non-native species through careful site design, ensuring that access to the riverside is restricted and, where allowed, adequately overlooked by development frontages to discourage fly-tipping;
- Provide adequate facilities for the responsible disposal of garden waste such as community composting schemes;
- Circulate information leaflets to future residents advising them of the sensitivity of riparian habitats and facilities provided for responsible waste management;
- Incorporate monitoring and, where necessary, remediation commitments from the developer through its estate management programme to identify and rectify incidents of non-native species introductions;
- Prepare and implement Construction Environmental Management Plans to prevent water quality impacts, coupled with utilisation of standard pollution control measures (e.g. storage of chemicals and fuel away from the watercourse);
- Provide a separate construction-phase surface water drainage system which adopts forms of naturalised filtration to attenuate water flows (volume/velocity) and ensure water discharge quality (turbidity, chemical loading, pH, nutrient content, dissolved oxygen

content) affecting the River Itchen SAC, including its Annex 1 habitat and Annex 2 species;

- Provide an operational-phase surface water drainage system which adopts forms of naturalised filtration to attenuate water flows (volume/velocity) and ensure water discharge quality (turbidity, chemical loading, pH, nutrient content, dissolved oxygen content) affecting the River Itchen SAC, including its Annex 1 habitat and Annex 2 species; and
- Undertake project-level HRA to show that the above or other devised measures are capable of preventing adverse effects on integrity.

8.5.2 These measures are likely to be effective, will adequately mitigate for non-native species and hydrological impacts potentially affecting the River Itchen SAC, and have been incorporated into the EBLP via modifications to policies DM6 and DM11 and supporting text.

Solent Maritime SAC

8.5.3 Planning applications for sites within 100m of Solent Maritime SAC (including headwaters and tributaries draining into the SAC) and site BO5 / policy S11 listed in Table 6.6 which could result in adverse effects via hydrological impacts will be required to:

- Prepare and implement Construction Environmental Management Plans to prevent water quality impacts, coupled with utilisation of standard pollution control measures (e.g. storage of chemicals and fuel away from the watercourse);
- Provide a separate construction-phase surface water drainage system which adopts forms of naturalised filtration to attenuate water flows (volume/velocity) and ensure water discharge quality (turbidity, chemical loading, pH, nutrient content, dissolved oxygen content);
- Provide an operational-phase surface water drainage system which adopts forms of naturalised filtration to attenuate water flows (volume/velocity) and ensure water discharge quality (turbidity, chemical loading, pH, nutrient content, dissolved oxygen content); and
- Undertake project-level HRA to show that the above or other devised measures are capable of preventing adverse effects on integrity.

8.5.4 These measures are likely to be effective, will adequately mitigate for hydrological impacts potentially affecting the Solent Maritime SAC, and have been incorporated into the EBLP via modifications to policy DM6 and supporting text.

8.6 Water Abstraction

River Itchen SAC

8.6.1 Southern Water's latest WRMP (2019) reflects the commitments of the s20 agreement, including the abstraction licence changes as proposed by the EA and a modified drought permit determination process and the inclusion of force majeure clauses in the proposed new River

Test licence. As part of the agreement the water company is still able to obtain authorisation from the Agency for abstractions over and above the revised licence under certain conditions, but a series of ecological monitoring, mitigation and compensation measures have been detailed to ensure there will be no adverse effects on integrity and that the overall coherence of the national site network is protected. The HRA for Southern Water's WRMP 2019 has shown that none of the preferred options for meeting the supply-demand deficit caused in part of the sustainability reductions will result in adverse effects on the integrity of affected European sites.

8.6.2 In addition policy DM10 requires development to be phased alongside the provision of new infrastructure required for water supply and in compliance with the Habitats Regulation. Policy DM2 seeks high sustainability standards from residential developments proposed in the EBLP, including a required standard for "predicted mains water consumption of no more than 110 litres/person/day" which betters the building regulations minimum requirement of 125 litres/person/day. This measure will help to avoid the need for drought orders affecting the River Itchen SAC by contributing to an overall reduction in water demand per dwelling.

8.7 Water Pollution

River Itchen SAC, Solent Maritime SAC and Solent & Southampton Water SPA/Ramsar

8.7.1 Although the IWMS does not identify any specific measures required for WWTW serving Eastleigh in the short term, there are concerns over the concentration of phosphate permitted to be discharged from Chickenhall WWTW (River Itchen SAC) and Peel Common WWTW is expected to reach overall capacity in 2025 (Solent Maritime SAC / Solent and Southampton Water SPA/Ramsar). In addition, the total nitrogen budget for development proposed by the Eastleigh Borough Local Plan is 7,432.76 kg/TN/yr. A positive figure indicates a surplus of nitrogen resulting from development proposed in the EBLP and therefore mitigation is required to achieve nutrient neutrality in accordance with Natural England's advice, and to avoid adverse effects on internationally designated sites.

8.7.2 The potential for adverse effects resulting from planned development in Eastleigh borough can be adequately dealt with by requirements for nutrient neutral development and associated measures as outline below, in line with the IWMS Action Plan (Amec Foster Wheeler, 2018), provided that EBC is committed to their implementation and provisions are made for infrastructure upgrades when required and/or adjustments to the phasing of development later in the plan period. A suite of mitigation measures is available including:

- Continued joint working between PfSH authorities, Environment Agency and Natural England, including production of a joint statement, as per the IWMS Action Plan;
- Establishment of a Water Quality Working Group to monitor progress and plan for required mitigation (infrastructure upgrades and nutrient management plans), as recommended by the IWMS Action Plan;
- Review of IWMS;
- Requirement for Local Plans to acknowledge the need for mitigation (e.g. nutrient neutral development), and identify where adjustments to the phasing of development may be necessary, as recommended by the IWMS Action Plan;

- Requirement for Local Plans to acknowledge uncertainty regarding the availability of water resources over the plan period, and include a policy standard on water efficiency of 110l/head/day, as recommended by the IWMS Action Plan;
- Development of a nutrient neutral policy (e.g. in a detailed Supplementary Planning Document), including offsetting measures and development contributions, as advised by Natural England. This will include specific measures to address phosphate loads affecting the River Itchen SAC, its Annex 1 habitat and Annex 2 species including southern damselfly, upstream of the Chickenhall WWTW discharge;
- The need to achieve nutrient neutral development to address uncertainty can be met through a combination of the following measures:
    - Requirement for developments (resulting in any net increase in dwellings or overnight accommodation uses) that eventually drain into the European sites to have a calculated nutrient budget and mitigation measures in order to achieve nutrient neutrality, as advised by Natural England;
    - Measures to remove nutrient (nitrogen/phosphorous) leaching from the development site, for example by provision of engineered wetlands or reedbeds;
    - Developer offsetting through the acquisition, or contributions to the acquisition, of land elsewhere within the river catchment area containing the development site and changing to land use with a lower nutrient (nitrogen/phosphorous) load in perpetuity (for example acquisition of agricultural land and the creation of woodland or conservation grassland). This could have the additional benefit of contributing to other biodiversity net gain objectives in the Borough for example the Southern Damselfly Strategic Conservation Plan (Rushbrook, 2018a);
    - Upgrading WWTWs to increase nutrient (nitrogen/phosphorous) removal capacity at the facility;
    - Measures to further decrease water consumption in the Borough as this has the additional benefit of decreasing nitrates entering WWTWs proportionally;
    - Additional measures to remove nutrients (nitrogen/phosphorous) in effluent discharged by the WWTW (such as wetlands or reedbeds);
    - Reducing the amount of nutrients (nitrogen/phosphorous) leaching from agricultural land in the wider Borough landholding through change in agricultural practices supported by catchment management officers working with local farmers; and
    - Taking agricultural land out of nutrient (nitrogen/phosphorous) intensive uses, e.g. where fertiliser is applied to crops, and converting to alternatives agricultural uses or other land uses.

8.7.3 These measures are likely to be effective, will adequately mitigate for water pollution impacts potentially affecting the River Itchen SAC, Solent Maritime SAC and Solent & Southampton Water SPA/Ramsar, and have been incorporated into the EBLP via modifications to policies DM2, DM10, DM11 and supporting text.

9 Determining Adverse Effects on Integrity

9.1 Introduction

9.1.1 Using the information presented in Chapters 6 and 7, the following sections consider whether, in light of the mitigation strategy outlined in Chapter 8, adverse effects on the integrity of European sites can be ruled out.

9.1.2 English Nature (2004; now Natural England) has produced guidance on determining site integrity which includes a 'simple, pragmatic checklist' for assessing likely effects on integrity. This requires the assessor to pose a series of five questions to consider whether the Appropriate Assessment has shown:

- That the area of Annex 1 habitats (or composite features) will not be reduced?
- That there will be no direct effect on the population of the species for which the site was designated or classified?
- That there will be no indirect effects on the populations of species for which the site was designated due to loss or degradation of their habitat (quantity/quality)?
- That there will be no changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?
- That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?

9.1.3 The guidance suggests that if the answer to all of these questions is 'Yes' then it is reasonable to conclude that there is not an adverse effect on integrity. If the answer is 'No' to one or more of the questions then further site-specific factors need to be considered in order to reach a decision. Such factors include:

- Scale of impact;
- Long term effects and sustainability;
- Duration of impact and recovery/reversibility;
- Dynamic systems;
- Conflicting feature requirements;
- Off-site impacts; and
- Uncertainty in cause and effect relationships and a precautionary approach.

9.1.4 This two-step process is applied to determine whether there will be adverse effects on the European sites as a result of the Eastleigh Borough Local Plan.

9.2 River Itchen SAC

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced? The appropriate assessment has shown that there will be no reduction in the area of annex I habitats or habitats of annex II species as a result of atmospheric pollution. Taking account of the mitigation strategy, there will be no reduction in the area of annex I habitats or habitats of annex II species from noise and vibration, hydrological impacts, otter dispersal corridors, non-native species, water abstraction or water pollution.	**Y**
That there will be no direct effect on the population of the species for which the site was designated or classified? The appropriate assessment has shown that there will be no direct effect on the population of annex II species as a result of atmospheric pollution. Taking account of the mitigation strategy, there will be no direct effects from noise and vibration, hydrological impacts, otter dispersal corridors, non-native species, water abstraction or water pollution.	**Y**
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)? The appropriate assessment has shown that there will be no indirect effect on the population of annex II species due to loss or degradation of their habitat as a result of atmospheric pollution. Taking account of the mitigation strategy, there will be no indirect effects from noise and vibration, hydrological impacts, otter dispersal corridors, non-native species, water abstraction or water pollution.	**Y**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)? The appropriate assessment has shown that there will be no changes to the composition of annex I habitats as a result of atmospheric pollution. Taking account of the mitigation strategy, there will be no changes in habitat composition from noise and vibration, hydrological impacts, otter dispersal corridors, non-native species, water abstraction or water pollution.	**Y**
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified? The appropriate assessment has shown that there will be no degradation of the physical, chemical or biological processes supporting annex I habitats or annex II species as a result of atmospheric pollution. Taking account of the mitigation strategy, there will be no degradation of supporting processes from noise and vibration, hydrological impacts, otter dispersal corridors, non-native species, water abstraction or water pollution.	**Y**

9.2.1.1 It can be concluded that there will be no adverse effects on the integrity of the River Itchen SAC, either alone or in combination with other plans and projects. The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations in this respect.

9.3 Solent Maritime SAC

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no reduction in the area of annex I habitats or habitats of annex II species from non-native species, site-specific hydrological impacts or water pollution.	**Y**
That there will be no direct effect on the population of the species for which the site was designated or classified? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no direct effect on the population of annex II species from non-native species, site-specific hydrological impacts or water pollution.	**Y**
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no indirect effect on the population of annex II species from non-native species, site-specific hydrological impacts or water pollution.	**Y**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no changes to the composition of annex I habitats from non-native species, site-specific hydrological impacts or water pollution.	**Y**
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no degradation of the physical, chemical or biological processes supporting annex I habitats or annex II species from non-native species, site-specific hydrological impacts or water pollution.	**Y**

9.3.1.1 It can be concluded that there will be no adverse effects on the integrity of the Solent Maritime SAC, either alone or in combination with other plans and projects. The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations in this respect.

9.4 New Forest SPA

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no reduction in the area of habitats of qualifying features as a result of disturbance.	**Y**
That there will be no direct effect on the population of the species for which the site was designated or classified?	**Y**

Has the Appropriate Assessment shown:	Y/N
The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no direct effect on the populations of qualifying features as a result of disturbance.	
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no indirect effect on the population qualifying features as a result of disturbance.	**Y**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)? The New Forest SPA does not contain designated habitats, its qualifying features instead comprise its breeding and non-breeding bird populations.	**Y**
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no degradation of the physical, chemical or biological processes supporting the qualifying features as a result of disturbance.	**Y**

9.4.1.1 It can be concluded that there will be no adverse effects on the integrity of the New Forest SPA, either alone or in combination with other plans and projects. The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations in this respect.

9.5 Solent & Southampton Water SPA/Ramsar

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no reduction in the area of qualifying habitats or habitats of qualifying features as a result of disturbance, noise and vibration or water pollution.	**Y**
That there will be no direct effect on the population of the species for which the site was designated or classified? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no direct effect on the populations of qualifying species as a result of disturbance, noise and vibration or water pollution.	**Y**
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no indirect effect on the populations of qualifying species as a result of disturbance, noise and vibration or water pollution.	**Y**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)? The appropriate assessment has shown that, taking account of the mitigation strategy, there	**Y**

Has the Appropriate Assessment shown:	Y/N
will be no changes to the composition of Ramsar qualifying habitats as a result of water pollution.	
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified? The appropriate assessment has shown that, taking account of the mitigation strategy, there will be no degradation of the physical, chemical or biological processes supporting the qualifying habitats or habitats of qualifying features as a result of disturbance, noise and vibration or water pollution.	**Y**

9.5.1.1 It can be concluded that there will be no adverse effects on the integrity of the Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects. The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations in this respect.

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10 Summary and Conclusions

10.1 Summary of Findings

10.1.1 This report presents the findings of the Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036. It establishes whether the EBLP, with Main Modifications agreed with the Inspector following Examination in Public, is likely to have a significant effect on or adversely affect the integrity of European sites within the scope of assessment, either alone or in combination with other plans and projects.

10.1.2 The HRA incorporates evidence on likely impact pathways and conducts an Appropriate Assessment in view of European site conservation objectives. Where adverse effects are identified, either alone or in combination with other plans and projects, the report defines a mitigation strategy capable of preventing adverse effects on ecological integrity. No reliance is placed on mitigation during the screening assessment.

10.1.3 In summary, the assessment of the EBLP finds that:

- No likely significant effects were identified in relation to Emer Bog SAC, Mottisfont Bats SAC, New Forest SAC/Ramsar or Solent and Dorset Coast SPA, either alone or in combination with other plans and projects.
- Significant effects through coastal squeeze are not likely for Solent Maritime SAC or Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects.
- Significant effects through atmospheric pollution are not likely for Solent Maritime SAC or Solent and Southampton Water SPA/Ramsar, either alone or in combination with other plans and projects.
- Significant effects through impacts to land outside the boundary of Solent and Southampton Water SPA/Ramsar (non-designated terrestrial wader and Brent goose sites) are not likely, either alone or in combination with other plans and projects.
- Significant effects resulting from recreation are not likely for River Itchen SAC, either alone or in combination with other plans and projects.
- There will be no adverse effect on the integrity of River Itchen SAC as a result of atmospheric pollution, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of River Itchen SAC as a result of noise and vibration, hydrological impacts, impacts to land outside the SAC boundary (otter dispersal corridors), non-native species, water abstraction or water pollution, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of Solent Maritime SAC as a result of non-native species,

site-specific hydrological impacts or water pollution, either alone or in combination with other plans and projects.

- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of New Forest SPA as a result of disturbance, either alone or in combination with other plans and projects.
- Taking account of the mitigation strategy, it can be concluded that there will be no adverse effect on the integrity of Solent and Southampton Water SPA/Ramsar as a result of disturbance, noise and vibration or water pollution, either alone or in combination with other plans and projects.

10.2 Conclusion

10.2.1 The Eastleigh Borough Local Plan can be considered compliant with the Habitats Regulations with regards to: Emer Bog SAC, Mottisfont Bats SAC, New Forest SAC/SPA/Ramsar; River Itchen SAC; Solent Maritime SAC; Solent & Dorset Coast SPA; and Solent & Southampton Water SPA/Ramsar.

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Appendix I: Screening Matrix

Please see insert.

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Eastleigh Borough Local Plan 2016-2036
Policies and Site Allocations at Proposed Main Modifications stage

	ID	Strategic Policies	MM ref.	Summary of Main Modification	Likely Significant Effects	Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
						SAC					SPA			Ramsar	
	S1	Delivering sustainable development	**MM6**	Small policy wording changes to strengthen and clarify policy on policy on active travel, climate change and environmental issues; and to give appropriate protection to the South Downs national park	-	B	B	B	B	B	B	B	B	B	B
	S2	Approach to new development	**MM10**	Changes to policy wording. Overall dwelling provision unchanged but changes to split between completed dwellings, dwellings with planning permission, windfall and dwellings on new site allocations. Reduced employment land provision	-	A	A	A	A	A	A	A	A	A	A
	S3	Location of new housing	**MM11**	Changes to policy and supporting text wording. Removal of strategic growth option and changes to dwelling numbers at some strategic sites	Atmospheric pollution; Disturbance; Hydrology; Land outside EU site (waders/brent goose/otter); Noise and vibration; Non-native species; Water abstraction; Water pollution	E	E	E	I	J	E	J	J	J	E
	S4	Employment provision	**MM12**	Changes to policy and supporting text wording to update status of individual sites; removal of proposed new policy for Botleigh Grange Office Campus; revised overall employment target	Atmospheric pollution; Hydrology; Land outside EU site (otter); Noise and vibration	E	E	E	I	J	E	J	E	J	E
	~~**S5**~~	~~New Communities, land north of Bishopstoke and land north and east of Fair Oak~~	**MM13**	Policy deleted, site removed from HRA	~~Atmospheric pollution; Bridging impacts; Disturbance; Hydrology; Land outside EU site (otter); Noise and vibration; Non-native species; Water abstraction; Water pollution~~	~~E~~	~~E~~	~~E~~	~~I~~	~~J~~	~~E~~	~~J~~	~~J~~	~~J~~	~~E~~
	~~**S6**~~	~~New Allbrook Hill, Bishopstoke and Fair Oak link road~~	**MM14**	Policy deleted, route removed from HRA	~~Atmospheric pollution; Bridging impacts; Hydrology; Land outside EU site (otter); Noise and vibration~~	~~E~~	~~E~~	~~E~~	~~I~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	S7	New development in the countryside	**MM26**	Policy wording changes to provide permissive approach to development in the countryside, subject to other policy provisions	-	B	B	B	B	B	B	B	B	B	B
	S8	Protection of settlement gaps	**MM27**	Policy wording changes to provide permissive approach to development in settlement gaps, subject to other policy provisions	-	D	D	D	D	D	D	D	D	D	D
	S9	The coast	**MM28**	Policy and supporting text wording changes related to sailing and clarifications about Solent BGW Mitigation Strategy	-	A	A	A	A	A	A	A	A	A	A
	New	[New Policy:] Historic environment	**MM29**	New strategic policy on the historic environment	-	D	D	D	D	D	D	D	D	D	D
	S10	Green infrastructure	**MM30**	Policy and supporting text wording changes to include reference to ecological network and physical activity strategy	-	A	A	A	A	A	A	A	A	A	A
	S11	Community facilities	**MM31**	Policy and supporting text wording changes following deletion of SGO and changes to proposed school provision	-	A	A	A	A	A	A	A	A	A	A
	S12	Transport infrastructure	**MM32**	Policy and supporting text wording changes to provide more emphasis on sustainable modes of travel, and implement consistent reference name for each scheme and corridor	Atmospheric pollution; Hydrology; Land outside EU site (otter); Noise and vibration	E	E	E	J	J	E	J	E	J	E
	S13	Strategic footpath, cycleway and bridleway links	**MM33**	Policy and supporting text wording changes to better clarify aims of policy and add reference to PRoWs	-	A	A	A	A	A	A	A	A	A	A
	ID	**Development Management Policies**	**MM ref.**	**Summary of Main Modification**	**Likely Significant Effects**										
	DM1	General criteria for new development	**MM35**	Policy and supporting text wording changes inc. to avoid significant adverse effects to biodiversity and requirement for Biodiversity Mitigation and Enhancement Plan (BMEP) for any development resulting in loss of habitat	-	B	B	B	B	B	B	B	B	B	B
	DM2	Environmentally sustainable development	**MM36**	Policy and supporting text wording changes to reflect optional technical standards and Building Regulations on water use	-	B	B	B	B	B	B	B	B	B	B
	DM3	Adaptation to climate change	**MM37**	Policy wording changes to recognise the role of trees and planting in climate change adaptation	-	B	B	B	B	B	B	B	B	B	B
	DM4	Zero or low carbon energy	**MM38**	Policy wording changes for consistency with NPPF	-	B	B	B	B	B	B	B	B	B	B
	DM5	Managing flood risk	**MM39**	Policy and supporting text changes to clarify flood management and natural flood management techniques	-	B	B	B	B	B	B	B	B	B	B
	DM6	Sustainable surface water management and watercourse management	**MM40**	Policy and supporting text changes to ensure appropriate protection of the River Itchen SAC and Solent Maritime SAC through inclusion of naturalised filtration in SUDS schemes. CEMP to be provided (with planning app for schemes subject to HRA)	Includes HRA mitigation measures not otherwise required for plan implementation (ref. *People Over Wind*)	D	D	D	M	M	D	M	D	M	D

Eastleigh Borough Local Plan 2016-2036 Policies and Site Allocations at Proposed Main Modifications stage						Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
						SAC					SPA			Ramsar	
	DM7	Flood defences, land reclamation and coast protection	**-**	-	-	D	D	D	D	D	D	D	D	D	D
	DM8	Pollution	**MM41**	Policy and supporting text changes inc. that construction noise should be kept below 69dBA in respect of the Solent and Southampton Water SPA and Ramsar sites and supporting habitat during bird overwintering period	Includes HRA mitigation measures not otherwise required for plan implementation (ref. *People Over Wind*)	D	D	D	D	D	D	M	D	M	D
	DM9	Public utilities and communications	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM10	Water and waste water	**MM42**	Policy and supporting text changes to provide more detailed guidance on the provision of water supply and waste water infrastructure, inc. compliance with Habs Regs	Includes HRA mitigation measures not otherwise required for plan implementation (ref. *People Over Wind*)	D	D	D	M	M	D	M	D	M	D
	DM11	Nature conservation	**MM43**	Policy redrafted to provide clearer guidance for the hierarchy of designations, inc. requirement for project level HRA for developments affecting an international or European nature conservation site. Policy provisions for: implementing Solent / New Forest Recreation Mitigation Strategies; preserving water quality/flows within the Itchen, Hamble, Southampton Water and Solent; protecting River Itchen SAC. Consequential changes to supporting text	Includes HRA mitigation measures not otherwise required for plan implementation (ref. *People Over Wind*)	D	D	D	M	M	D	M	M	M	D
	DM12	Heritage assets	**MM44**	Policy wording changes to ensure policy accords with national policy	-	D	D	D	D	D	D	D	D	D	D
	DM13	General development criteria - transport	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM14	Parking	**MM45**	Policy wording changes to provide greater clarification and correction of commercial parking standards	-	B	B	B	B	B	B	B	B	B	B
	DM15	Safeguarding existing employment sites	**MM46**	Policy wording changes to reflect new Use Classes Order	-	B	B	B	B	B	B	B	B	B	B
	DM16	Workforce training requirements and new jobs	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM17	Agricultural development	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM18	Extension and replacement of non- residential buildings in the countryside	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM19	Change of use of buildings in the countryside	**MM47**	Policy wording changes to reflect new Use Classes Order	-	B	B	B	B	B	B	B	B	B	B
	DM20	Boatyard and marina sites on the River Hamble	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM21	New retail development	**MM48**	Policy and supporting text changes to strengthen the policy on retail impact	-	B	B	B	B	B	B	B	B	B	B
	DM22	Changes of use in retail frontages in district centres	**MM49**	Policy and supporting text changes to provide guidance for all designated centres, and to reflect new Use Classes Order	-	B	B	B	B	B	B	B	B	B	B
	DM23	Residential development in urban areas	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	~~**DM24**~~	~~Housing sites with planning permission~~	**MM51**	Policy deleted - no longer required to bring forward development as sites are largely under construction or built out	-	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~
	~~**DM25**~~	~~Redevelopment of urban sites in unneighbourly use~~	**MM53**	Policy deleted - no longer required to bring forward development as sites are largely under construction or built out. [Three sites not started are proposed as individual site allocations (see below): - CF1: Land at Common Road Industrial Estate, Chandler's Ford (previously DM25c) - CF2: Land to the rear of 75-99 Hiltingbury Road (previously DM25b) - E2: Land at Toynbee Road, Eastleigh (previously DM25d)]	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	DM26	Creating a mix of housing	**MM54**	Policy and supporting text changes to clarify appropriate housing mix and the delivery of market rental and affordable housing	-	B	B	B	B	B	B	B	B	B	B

Eastleigh Borough Local Plan 2016-2036 Policies and Site Allocations at Proposed Main Modifications stage						Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
						SAC					SPA			Ramsar	
	DM27	Delivering older peoples housing	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM28	Residential extensions and replacement dwellings in the countryside	**MM55**	Policy wording changes to ensure consistency between policies	-	B	B	B	B	B	B	B	B	B	B
	DM29	Rural workers' dwellings	**MM56**	Policy wording changes to ensure consistency between policies	-	B	B	B	B	B	B	B	B	B	B
	DM30	Delivering affordable housing	**MM57**	Policy and supporting text changes to accord with national policy	-	B	B	B	B	B	B	B	B	B	B
	DM31	Dwellings with higher access standards	**MM58**	Policy and supporting text changes to provide flexibility in standards	-	B	B	B	B	B	B	B	B	B	B
	DM32	Internal space standards for new residential development	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM33	Gypsies, travellers and travelling showpeople	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM34	Protection of recreation and open space facilities	**MM60**	Policy wording change for clarity	-	B	B	B	B	B	B	B	B	B	B
	DM35	Provision of recreation and open space facilities with new development	**MM61**	Policy and supporting text wording change for clarity	-	B	B	B	B	B	B	B	B	B	B
	DM36	New and enhanced recreation and open space facilities	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM37	Recreational activity on the River Hamble	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM38	Community, leisure and cultural facilities	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM39	Cemetery provision	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	DM40	Funding infrastructure	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	ID	**Bishopstoke, Fair Oak and Horton Heath**	**MM ref.**	**Summary of Main Modification**	**Likely Significant Effects (site-specific only)**										
	Bi1	South of Stokewood Surgery, Bishopstoke	**-**	-	-	E	E	E	E	E	E	E	E	E	E
	FO1	West of Durley Road, ~~Fair Oak~~ Horton Heath	**MM64**	Policy wording changes for clarification about location of site and for consistency on water and waste water provision with other policies and site allocations in the plan	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	~~**FO2**~~	~~Land north of Mortimers Lane~~	**MM65**	Policy deleted - no longer required as site is under construction	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	FO3	East of Allington Lane	**MM66**	Policy wording changed to reflect higher dwelling numbers in planning permission and for consistency on water and waste water provision with other policies and site allocations in the plan	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	FO4	Lechlade, Burnetts Lane, ~~Fair Oak~~ Horton Heath	**MM67**	Policy wording changes for clarification about location of site and for consistency on water and waste water provision with other policies and site allocations in the plan	-	E	E	E	E	E	E	E	E	E	E
	~~**FO5**~~	~~Land East of Knowle Lane~~	**MM68**	Policy deleted - no longer required as site is under construction and largely complete	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	~~**FO6**~~	~~Foxholes Farm, Fair Oak~~	**MM69**	Policy deleted - no longer required as site is part of the new site allocation HH1	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	~~**FO7**~~	~~Land at Costalot Stables, Blind Lane, Horton Heath~~	**MM70**	Policy deleted - no longer required as site has planning permission	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	~~**FO8**~~	~~Hammerley Farm, Anson Road, Horton Heath~~	**MM71**	Policy deleted - site is no longer deliverable as an employment allocation as site has planning permission for residential uses	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	FO9	Junction improvements, Fair Oak and Horton Heath	**MM72**	Policy title amended for clarification about the location of improvements	-	C	C	C	C	C	C	C	C	C	C

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	ID	Horton Heath	MM ref.	Summary of Main Modification	Likely Significant Effects (site-specific only)	Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
						SAC					SPA			Ramsar	
	New HH1	[New Policy:] Land west of Horton Heath	MM73	New policy to bring forward site as a single strategic site (previously listed as DM24 sites 28 and 39, and FO6) for residential and employment uses	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	ID	**Bursledon, Hamble-le-Rice and Hound**	MM ref.	Summary of Main Modification	Likely Significant Effects (site-specific only)										
	BU1	Land north of Providence Hill	MM74	Policy wording changes for consistency on water and waste water provision with other policies and site allocations in the plan	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU2	Heath House Farm	MM75	Policy wording changes for consistency on water and waste water provision with other policies and site allocations in the plan	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU3	Land lying south east of Windmill Lane	MM76	Policy wording changes for consistency on water and waste water provision with other policies and site allocations in the plan	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BU4	Land at Tansfield Stud, Tanhouse Lane	-	-	-	E	E	E	E	E	E	E	E	E	E
	BU5	Land at Heath Green, Heath House Lane, Hedge End	-	-	-	E	E	E	E	E	E	E	E	E	E
	~~BU6~~	~~Land adjacent to Woodleigh, Windmill Lane, Bursledon~~	MM79	Policy deleted - no longer required as site has planning permission	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	BU7	Riverside Boatyard, Blundell Lane, Bursledon ~~(Special Policy Area)~~	MM80	Policy wording changes for consistency with other policies in plan and to provide greater protection for heritage asset	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	~~BU8~~	~~Open space at Long Lane, Bursledon~~	MM82	Policy deleted due to concerns raised about the deliverability of open space on the site	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	BU9	Residential extensions and replacement dwellings, Old Bursledon Special Policy Area	-	-	-	B	B	B	B	B	B	B	B	B	B
	HA1	Railway station parking, Hamble	-	-	-	E	E	E	E	E	E	E	E	E	E
	HA2	Mercury Marina and Riverside Camping and Caravan Park	MM84	Policy wording changes as hotel element of the policy not justified by the evidence base	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	J	E	J	E
	HA3	Hamble Airfield	-	-	-	C	C	C	C	C	C	C	C	C	C
	~~HO1~~	~~Country Park, land south of Bursledon Road~~	MM86	Policy no longer required as proposed country park is complete	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	ID	**Chandler's Ford and Hiltingbury**	MM ref.	Summary of Main Modification	Likely Significant Effects (site-specific only)										
	New CF1	[New Policy:] Land at Common Road Industrial Estate, Chandler's Ford [previously DM25c]	MM87	New policy to bring forward site previously listed in DM25c	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	New CF2	[New Policy:] Land to the rear of 75-99 Hiltingbury Road [previously DM25b]	MM88	New policy to bring forward site previously listed in DM25b	-	E	E	E	E	E	E	E	E	E	E
	CF1	Central Precinct, Chandler's Ford	MM89	Policy and supporting text wording changes for clarification on site area, location and mix of uses appropriate, for consistency with other site policies, and to reflect new Use Classes Order	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	CF2	Land at Steele Close, Chandler's Ford	MM90	Policy and supporting text wording changes for clarification about the revised site area available, the type of development, quantum of employment floorspace, appropriateness for major office development, and to reflect new Use Classes Order	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	~~CF3~~	~~Land south of the supermarket and east of Bournemouth Road, Chandler's Ford~~	MM91	Policy deleted - no longer required as site is under construction	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	ID	**Eastleigh**	MM ref.	Summary of Main Modification	Likely Significant Effects (site-specific only)										
	E1	Land at the former Civic Offices ~~and former Magistrates' Court~~, Leigh Road, Eastleigh	MM92	Policy and supporting text wording changes to clarify site area following changes to reflect development on part of the site	Noise and vibration	E	E	E	J	E	E	E	E	E	E
	New E2	[New Policy:] Land at Toynbee Road, Eastleigh [previously DM25d]	MM93	New policy to bring forward site previously listed in DM25d	-	E	E	E	E	E	E	E	E	E	E
	~~E2~~	~~Land at Woodside Avenue, Eastleigh~~	MM94	Policy deleted - no longer required as site is under construction and largely complete	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	E3	Eastleigh town centre	MM95	Policy and supporting text wording changes for clarity and consistency with DM21 and DM22	-	B	B	B	B	B	B	B	B	B	B

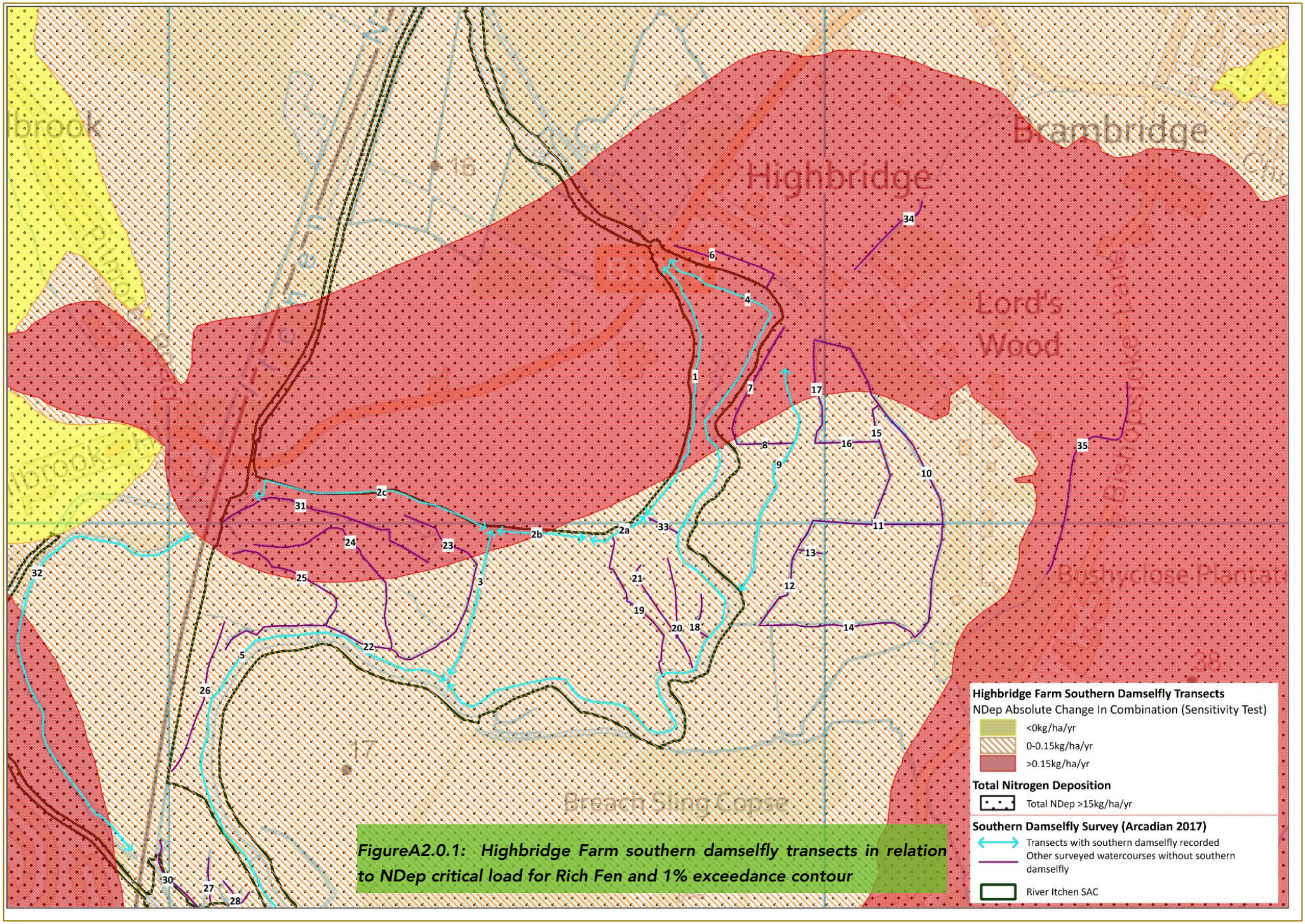
						Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
Eastleigh Borough Local Plan 2016-2036 Policies and Site Allocations at Proposed Main Modifications stage						**SAC**					**SPA**			**Ramsar**	
	E4	Urban renaissance quarter, Eastleigh	**MM96**	Policy wording changes to reflect planning permission and completed development, to provide more flexibility over taller building	-	B	B	B	B	B	B	B	B	B	B
	E5	Public realm improvements in and adjoining Eastleigh town centre	**-**	-	-	A	A	A	A	A	A	A	A	A	A
	E6	Eastleigh River Side	**MM97**	Policy and supporting text wording changes for consistency and for clarity about public transport provision and the quantum of employment floorspace	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	E7	Development opportunities adjoining Eastleigh River Side	**MM98**	Policy wording changes for clarification about the site area and for consistency and to clarify quantum of employment floorspace	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	E8	Junction improvements, Eastleigh	**-**	-	-	C	C	C	C	C	C	C	C	C	C
	E9	Southampton Airport (specifically, allocation of ~~21.6ha~~ 19.5ha under criteria a to d for airport-related / employment uses)	**MM100**	Policy wording changes for clarification about the site area and for consistency and to clarify quantum of employment floorspace	Hydrology; Noise and vibration; Non-native species	E	E	E	I	E	E	E	E	E	E
	~~E10~~	~~Land south of M27 Junction 5~~	**MM101**	Policy deleted - no longer required as the proposed open space is complete and open for public use	~~Noise and vibration~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	~~E11~~	~~Western extension to Lakeside Country Park, Eastleigh~~	**MM102**	Policy deleted - no longer required as the proposed open space is complete and open for public use	~~Noise and vibration~~	~~E~~	~~E~~	~~E~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	E12	Aviary Estate, Eastleigh	**-**	-	-	B	B	B	B	B	B	B	B	B	B
	AL1	Land east of Allbrook Way	**MM104**	Policy and supporting text wording changes to delete reference to the SGO link road and replace with a reference to providing a new relief road to address the existing constraints on Allbrook Hill	Hydrology; Noise and vibration; Non-native species	E	E	E	J	E	E	E	E	E	E
	AL2	Land west of Allbrook Way	**MM105**	Policy wording changes to delete reference to the SGO link road and replace with a reference to new relief road on Allbrook Hill provided by AL1	-	E	E	E	E	E	E	E	E	E	E
	ID	**Hedge End, West End and Botley**	**MM ref.**	**Summary of Main Modification**	**Likely Significant Effects (site-specific only)**										
	HE1	Land west of Woodhouse Lane, Hedge End	**MM106**	Update to reflect permitted scheme, for consistency on water and waste water provision with other policies and site allocations	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE2	Land at Sunday's Hill and Land north of Pewett Hill Close	**MM107**	Policy wording changes for consistency about water and waste water provision with other policies and site allocations	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE3	Land at Home Farm, St John's Road	**MM108**	Policy wording changes for consistency about water and waste water provision with other policies and site allocations	-	E	E	E	E	E	E	E	E	E	E
	HE4	Land off Peewit Hill Close and Dodwell Lane, Bursledon	**MM109**	Policy wording changes for clarification about the site area following boundary change and to clarify appropriateness of the site for office development and quantum of employment floorspace and for consistency with other policies on waste water	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	HE5	Land at Netley Firs, Kanes Hill, Hedge End	**MM110**	Policy wording change to clarify the quantum of employment floorspace	-	E	E	E	E	E	E	E	E	E	E
	~~HEX~~	~~[New Policy:] Land adjoining the Botleigh Grange business park, west of Woodhouse Lane, Hedge End~~	**MM12**	Further modifications at February 2021 to reflect the Inspector's decision not to allocate 7,600m2 of office floorspace at Botleigh Grange Office Campus (modified HE6)	~~Hydrology; Noise and vibration; Non-native species~~	~~E~~	~~E~~	~~E~~	~~J~~	~~J~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	~~HE7~~	~~Land at Kanes Hill, Hedge End~~	**MM111**	Policy deleted - no longer supported as provision is not needed and site is undeliverable for this use	-	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~	~~E~~
	HE6	Hedge End Railway Station, Hedge End	**-**	-	-	A	A	A	A	A	A	A	A	A	A
	WE1	Chalcroft Business Park, Burnetts Lane, West End	**MM112**	Policy wording changes to clarify re: appropriateness for major office development, and to reflect new Use Classes Order	-	B	B	B	B	B	B	B	B	B	B
	WE2	Land adjoining the Chalcroft Business Park	**MM113**	Policy wording changes to clarify re: quantum of floorspace and appropriateness for major office development, and to reflect new Use Classes Order	-	E	E	E	E	E	E	E	E	E	E
	WE3	Land west of Tollbar Way and south of Berrywood Business Park, Hedge End	**MM114**	Policy wording changes to clarify re: quantum of floorspace and appropriateness for major office development, and to reflect new Use Classes Order	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E

Eastleigh Borough Local Plan 2016-2036 Policies and Site Allocations at Proposed Main Modifications stage						Emer Bog	Mottisfont Bats	New Forest	River Itchen	Solent Maritime	Solent & Dorset Coast	Solent & Southampton Water	The New Forest	Solent & Southampton Water	The New Forest
						SAC					SPA			Ramsar	
	WE4	Land at Ageas Bowl and Tennis Centre, Botley Road, West End	**MM115**	Policy and supporting wording changes to cover wider site with flexibility within urban edge and to protect land within the countryside and settlement gap	-	B	B	B	B	B	B	B	B	B	B
	BO1	Land south of Maddoxford Lane and east of Crows Nest Lane	**MM116**	Policy and supporting text changes to ensure effective use of the site, for consistency about water and waste water provision with other policies and site allocations	-	E	E	E	E	E	E	E	E	E	E
	BO2	Land north-east of Winchester Street ~~west of Uplands Farm~~, Botley	**MM117**	Policy and supporting text changes to reflect proposed scheme as employment no longer proposed on this site and for consistency on water and waste water provision with other policies and site allocations	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BO3	Land east of Kings Copse Avenue and east of Tanhouse Lane	**MM118**	Policy and supporting text updated to reflect increased development capacity and for consistency on water and waste water provision with other policies and site allocations	Hydrology; Noise and vibration; Non-native species	E	E	E	J	J	E	E	E	E	E
	BO4	Land north of Myrtle Cottage, Winchester Road	**MM119**	Policy wording changed for consistency on water and waste water provision with other policies and site allocations	-	E	E	E	E	E	E	E	E	E	E
	BO5	Botley bypass	**MM120**	Policy wording change	Hydrology; Non-native species	E	E	E	E	J	E	E	E	E	E
	BO6	Junction Improvement, Botley Road/ Bubb Lane roundabout (Denham's Corner)	**-**	-	-	E	E	E	E	E	E	E	E	E	E
	BO7	Botley Mill	**-**	-	-	B	B	B	B	B	B	B	B	B	B

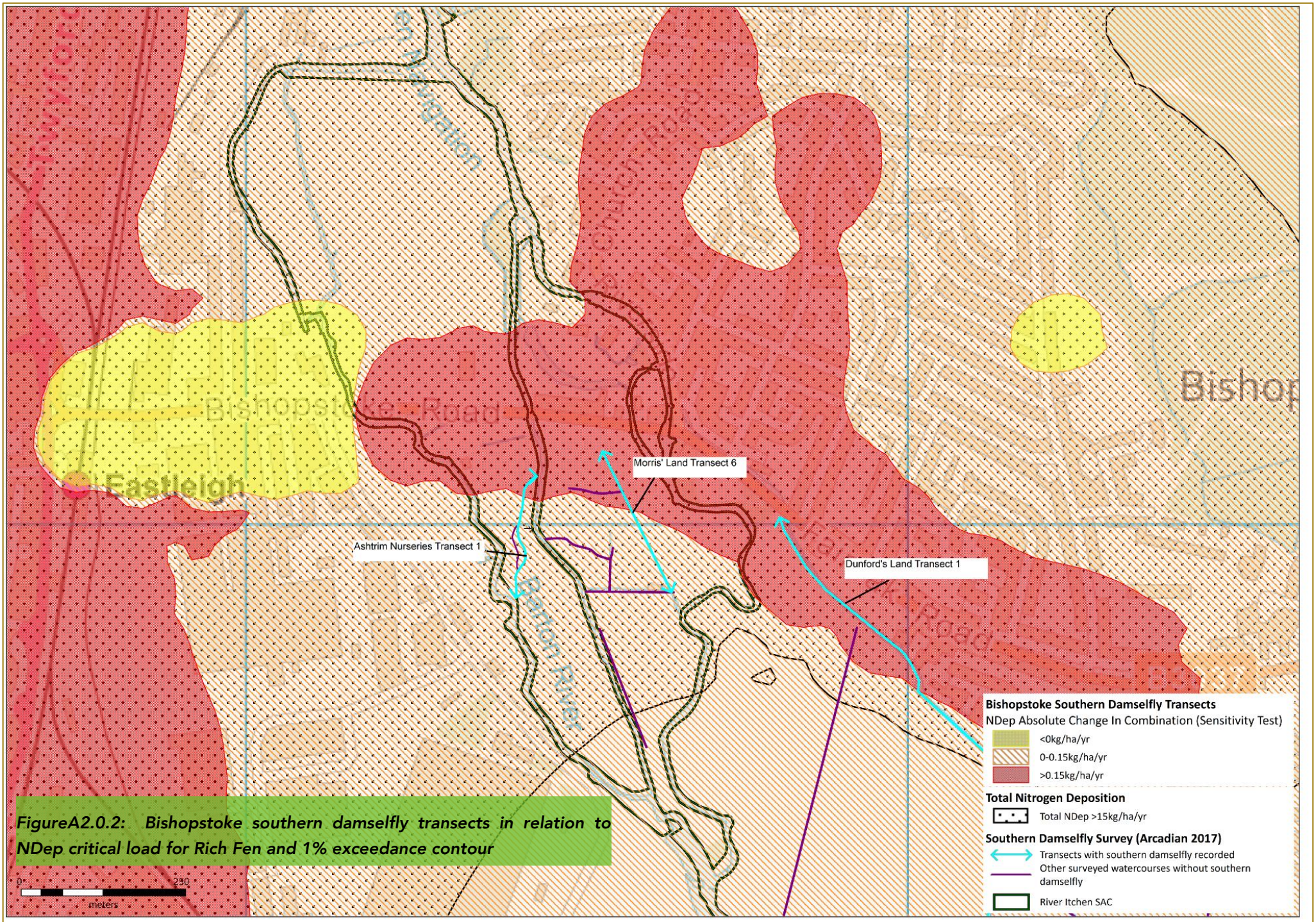
	Assessment Key	**Assessment Key**
	A	General statement of policy / aspiration
	B	Policy listing general criteria for testing the acceptability / sustainability of proposals
	C	Proposal referred to but not proposed by the plan
	D	Environmental protection / site safeguarding policy
	E	Policy/proposal steers change in such a way as to protect European sites from adverse effects
	F	Policy/proposal 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 policy/proposal intended to avoid or reduce harmful effects on a European site

Appendix II: Southern Damselfly Transects in relation to Predicted Air Pollution Contours

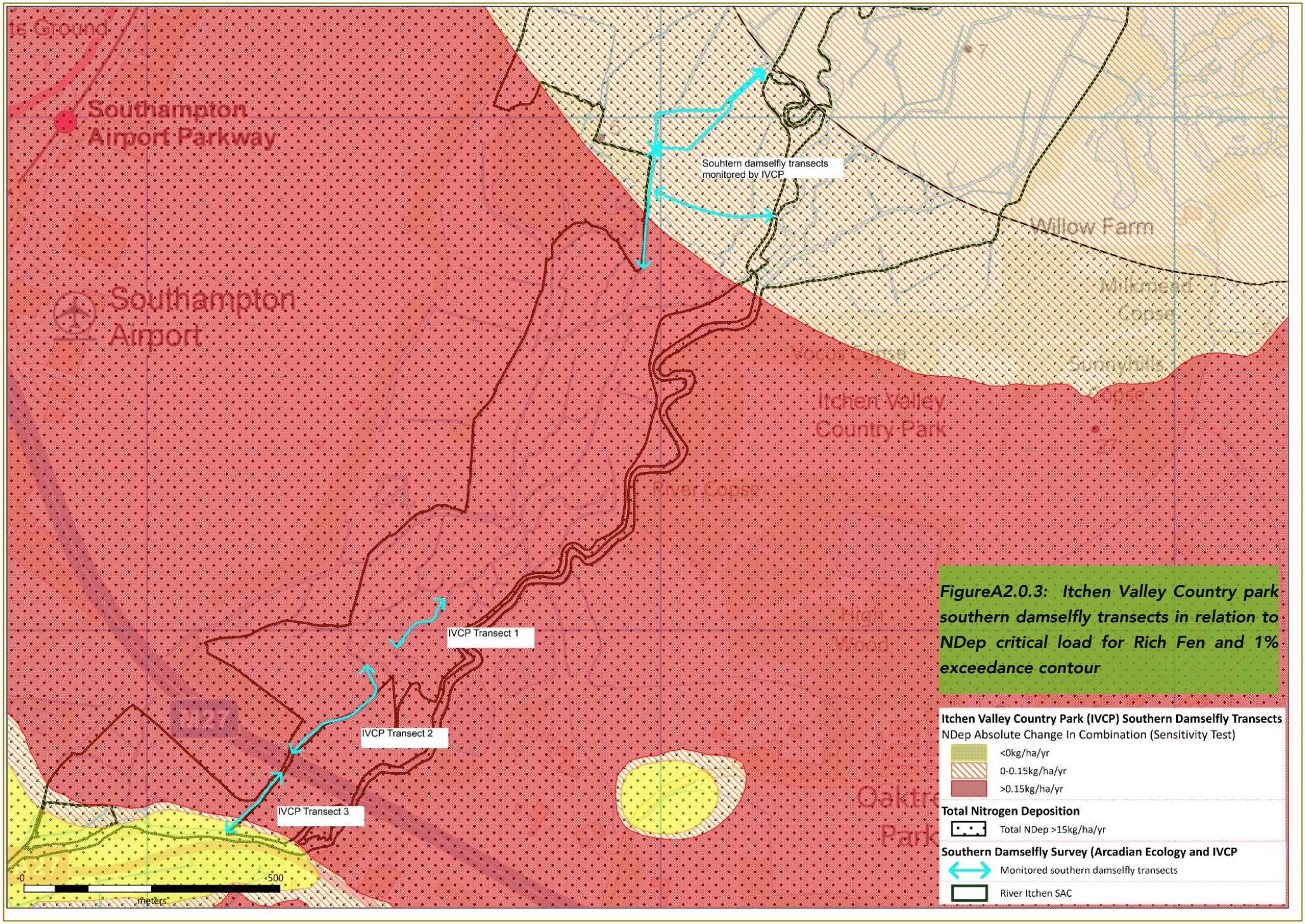
Please see following pages.



FigureA2.0.1: Highbridge Farm southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour



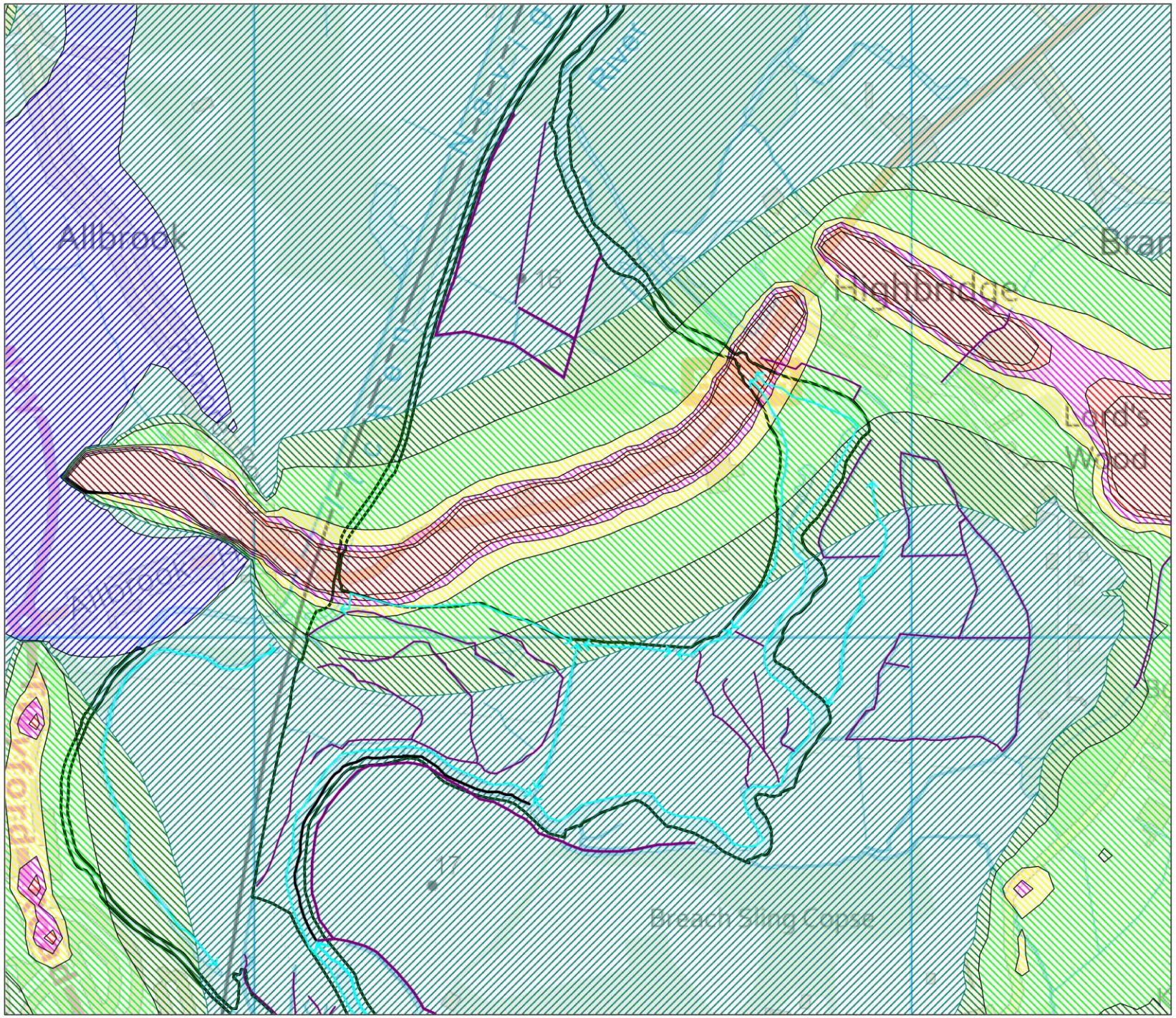
FigureA2.0.2: Bishopstoke southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour



FigureA2.0.3: Itchen Valley Country park southern damselfly transects in relation to NDep critical load for Rich Fen and 1% exceedance contour

Appendix III: Southern Damselfly Transects in relation to Predicted Nitrogen Deposition Fine Contours

Please see following pages.



NDep Absolute Change (Sensitivity Test)

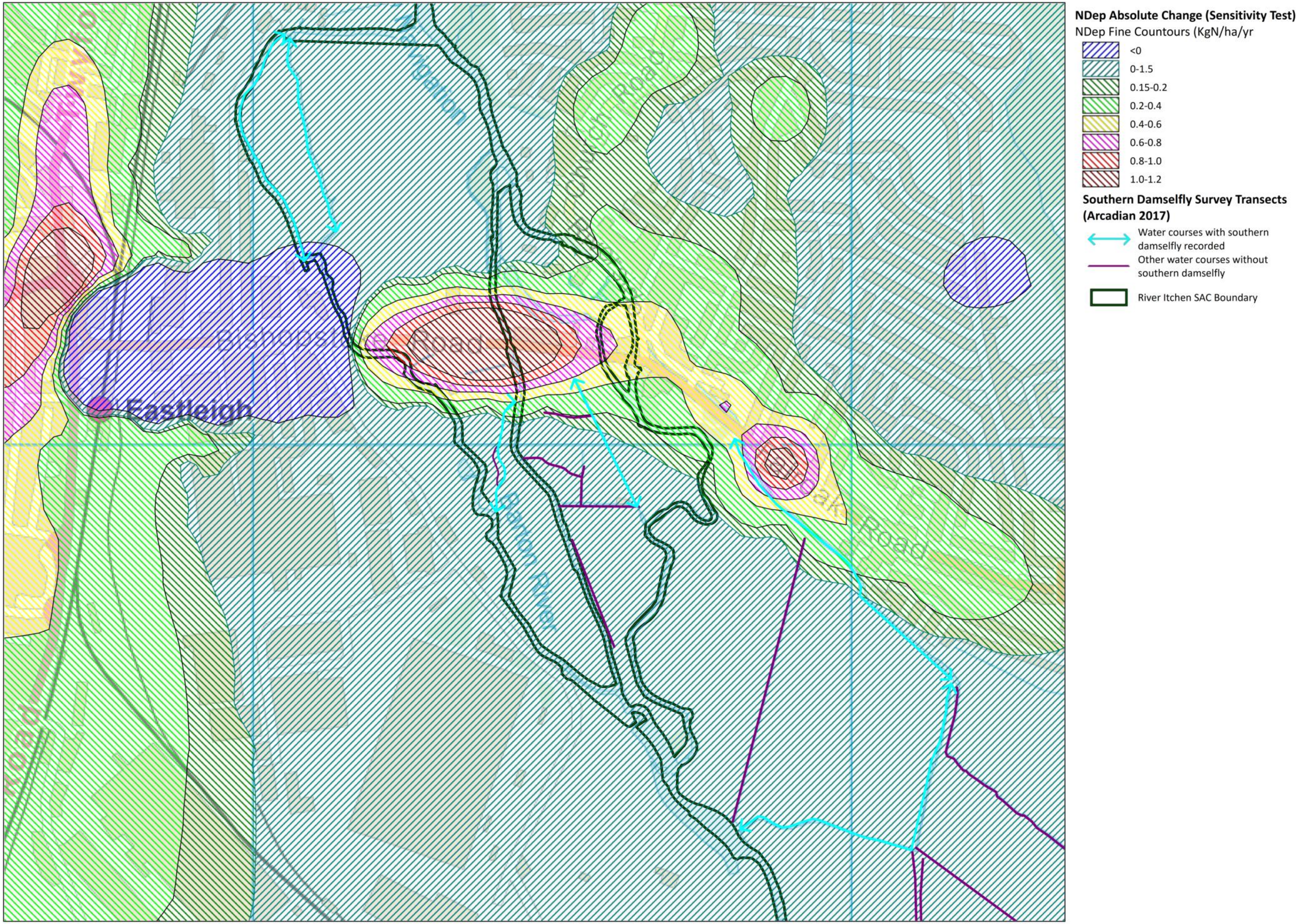
NDep Fine Countours (KgN/ha/yr

- <0
- 0-1.5
- 0.15-0.2
- 0.2-0.4
- 0.4-0.6
- 0.6-0.8
- 0.8-1.0
- 1.0-1.2

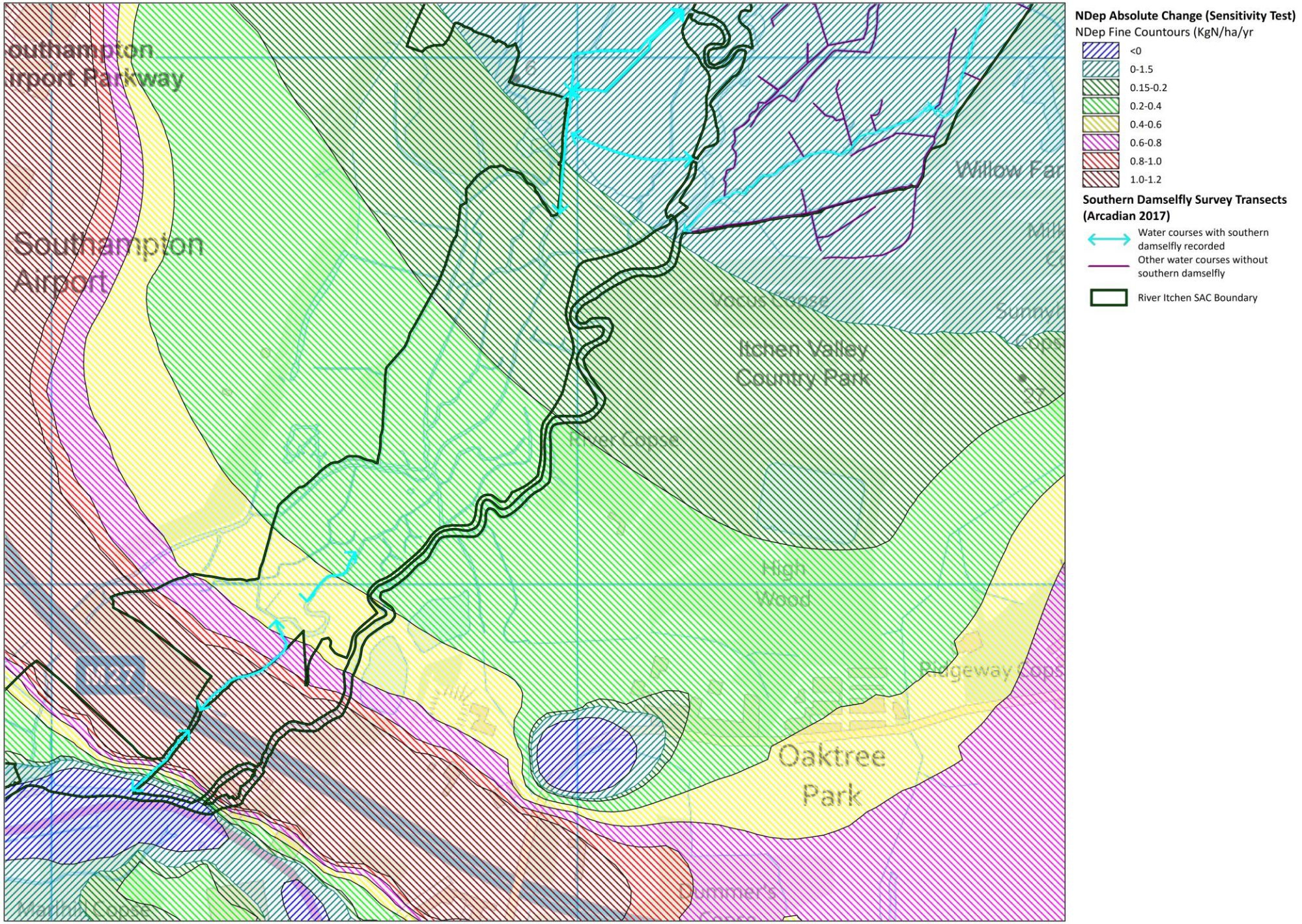
Southern Damselfly Survey Transects (Arcadian 2017)

- Water courses with southern damselfly recorded
- Other water courses withouth southern damselfly

River Itchen SAC Boundary



NDep Absolute Change (Sensitivity Test)
NDep Fine Countours (KgN/ha/yr
<0
0-1.5
0.15-0.2
0.2-0.4
0.4-0.6
0.6-0.8
0.8-1.0
1.0-1.2
Southern Damselfly Survey Transects (Arcadian 2017)
Water courses with southern damselfly recorded
Other water courses without southern damselfly
River Itchen SAC Boundary
Bishopstoke Road
Eastleigh
Barton River
Road


NDep Absolute Change (Sensitivity Test)
NDep Fine Countours (KgN/ha/yr
<0
0-1.5
0.15-0.2
0.2-0.4
0.4-0.6
0.6-0.8
0.8-1.0
1.0-1.2
Southern Damselfly Survey Transects (Arcadian 2017)
Water courses with southern damselfly recorded
Other water courses without southern damselfly
River Itchen SAC Boundary
Southampton Airport
Itchen Valley Country Park
River Copse
High Wood
Oaktree Park
Willow Far
Ridgeway Copse
Summer's

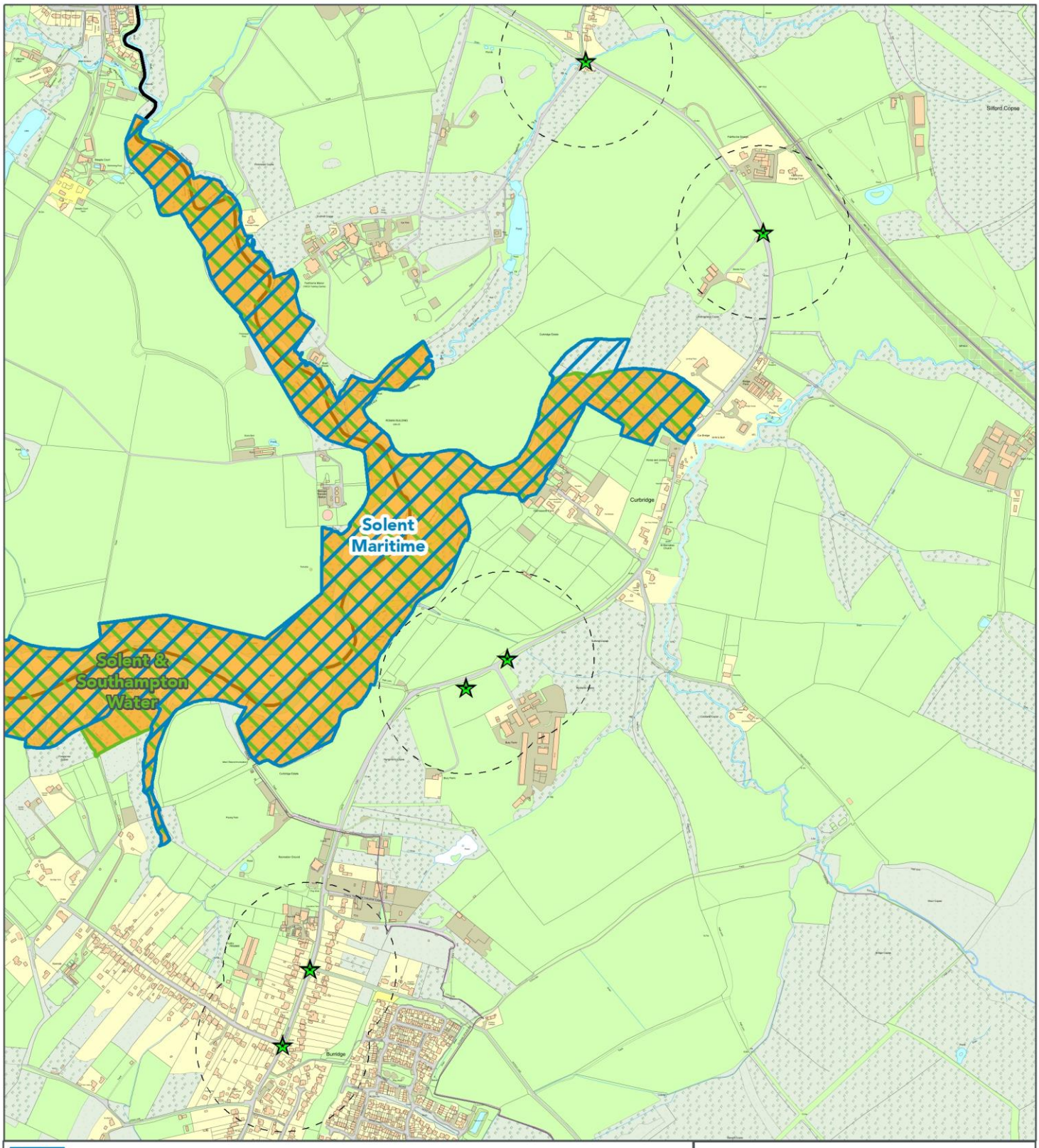
Appendix IV: Field Survey Photos

Transect 1 (left) and the main river (transect 4, right) below High Bridge. Southern damselfly are present on both transects. Vegetation structure and composition is dependent upon water quality and river management practices. There is no evidence of any eutrophication of habitat caused by proximity to the road

Ditch at Ashtrim Nursery (Transect 1) looking south, with well-developed mats of marginal vegetation providing good egg laying habitat for southern damselfly

Appendix V: Traffic Flow Increases outside Eastleigh Borough

Please see insert.



Special Areas of Conservation
Special Protection Areas
Potential Special Protection Area
Ramsar Sites
Borough
Winchester AADT Nodes
Winchester AADT Nodes 200m Buffer

0 0.2 0.4 Kilometers

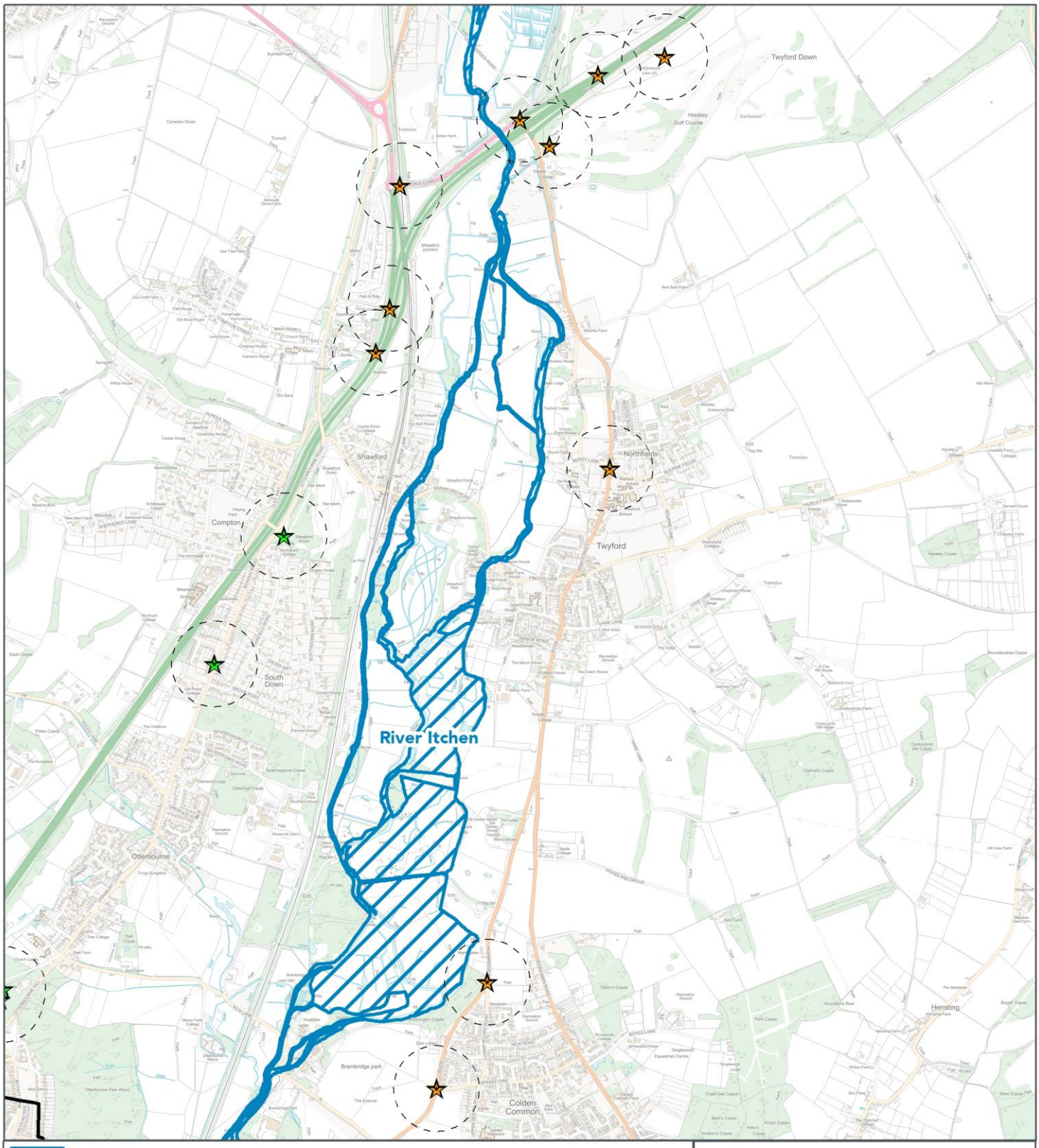
N

ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
1:11,500	Oct2018
Created by	**Reviewed by**
NP	NP

Drawing number
UE0247HRA-WinchAADT-A3051-1810

Eastleigh Local Plan HRA



Special Areas of Conservation

Borough

Winchester AADT Nodes Aug18

Winchester AADT Nodes Feb19

Winchester AADT Nodes 200m Buffer

0 0.45 0.9 Kilometers

N

ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
1:23,255	Mar2019
Created by	**Reviewed by**
NP	NP

Drawing number

UE0247HRA-WinchAADT-M3-190320

Eastleigh Local Plan HRA

AUGUST 2018 ANALYSIS: Includes M3 nodes which are not within 200m of River Itchen SAC

Vehicles

DMRB Screening Threshold: daily traffic flows will change by 1000 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			Vehicles	Nodes			Vehicles	Increase over DKF		Nodes			Vehicles	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38857	38858	M3 NB Mai	65196	38857	38858	M3 NB Mai	81081	15885	24.37	38857	38858	M3 NB Mai	82167	16971	26.03	1086	1.34	Not within 200m of SAC
43448	43449	M3 SB Mair	64828	43448	43449	M3 SB Mair	79396	14567	22.47	43448	43449	M3 SB Mair	78863	14035	21.65	-533	-0.67	Not within 200m of SAC
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
36331	36332	NB Botley F	4356	-	-	-	-	-		-	-	-	-	-		-		-
36332	89931	NB Botley F	4356	-	-	-	-	-		-	-	-	-	-		-		-
89931	38135	NB Botley F	4521	-	-	-	-	-		-	-	-	-	-		-		-
38135	89931	SB Botley R	6473	-	-	-	-	-		-	-	-	-	-		-		-
89931	36332	SB Botley R	6476	-	-	-	-	-		-	-	-	-	-		-		-
36332	36331	SB Botley R	6476	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	36331	36332	NB Botley F	1545	-2811	-64.53	36331	36332	NB Botley F	2441	-1914	-43.95	896	58.01	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	1545	-		36332	36315	NB Botley F	2441	-		896	58.01	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	2259	-		36315	89931	NB Botley F	3128	-		869	38.49	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	1251	-		89931	38014	NB Botley F	2190	-		940	75.14	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	2904	-		38014	89931	SB Botley R	2894	-		-9	-0.32	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	4171	-		89931	36315	SB Botley R	4138	-		-33	-0.79	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	3269	-		36315	36332	SB Botley R	3191	-		-78	-2.38	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	3269	-3207	-49.5163	36332	36331	SB Botley R	3191	-3284	-51	-78	-2.38	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

HGVs

DMRB Screening Threshold: HGV vehicle flows will change by 200 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			HGVs	Nodes			HGVs	Increase over DKF		Nodes			HGVs	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38857	38858	M3 NB Mai	7906	38857	38858	M3 NB Mai	8593	687	8.69	38857	38858	M3 NB Mai	8496	590	7.46	-97	-1.13	Not within 200m of SAC
43448	43449	M3 SB Mair	7756	43448	43449	M3 SB Mair	7861	105	1.35	43448	43449	M3 SB Mair	7817	61	0.78	-44	-0.56	Not within 200m of SAC
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
36331	36332	NB Botley F	217	-	-	-	-	-		-	-	-	-	-		-		-
36332	89931	NB Botley F	217	-	-	-	-	-		-	-	-	-	-		-		-
89931	38135	NB Botley F	209	-	-	-	-	-		-	-	-	-	-		-		-
38135	89931	SB Botley R	565	-	-	-	-	-		-	-	-	-	-		-		-
89931	36332	SB Botley R	640	-	-	-	-	-		-	-	-	-	-		-		-
36332	36331	SB Botley R	640	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	-	-	-	-	-		-	-	-	-	-		-		-
-	-	-	-	36331	36332	NB Botley F	114	-103	-47.61	36331	36332	NB Botley F	141	-76	-34.88	28	24.28	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	114	-		36332	36315	NB Botley F	141	-		28	24.30	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	122	-		36315	89931	NB Botley F	151	-		29	23.85	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	104	-		89931	38014	NB Botley F	133	-		29	27.54	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	338	-		38014	89931	SB Botley R	361	-		23	6.86	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	435	-		89931	36315	SB Botley R	459	-		24	5.42	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	374	-		36315	36332	SB Botley R	398	-		24	6.41	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	374	-266	-41.58571	36332	36331	SB Botley R	398	-242	-38	24	6.41	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

Speed

DMRB Screening Threshold: daily average speed will change by 10 kph or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			Speed	Nodes			Speed	Increase over DKF		Nodes			Speed	Increase over DKF		Increase over DOP		
A node	B node	Description	kph	A node	B node	Description	kph	kph	%	A node	B node	Description	kph	kph	%	kph	%	Notes
38857	38858	M3 NB Mai	94	38857	38858	M3 NB Mai	98	4	4.38	38857	38858	M3 NB Mai	97	4	3.82	-1	-0.54	Not within 200m of SAC
43448	43449	M3 SB Mair	94	43448	43449	M3 SB Mair	99	5	4.84	43448	43449	M3 SB Mair	99	5	5.09	0	0.23	Not within 200m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36331	36332	NB Botley F	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36332	89931	NB Botley F	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89931	38135	NB Botley F	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38135	89931	SB Botley R	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
89931	36332	SB Botley R	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36332	36331	SB Botley R	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	36331	36332	NB Botley F	40	0	1.25	36331	36332	NB Botley F	40	0	1.25	0	0.00	Not within 200m of SAC
-	-	-	-	36332	36315	NB Botley F	38	-		36332	36315	NB Botley F	38	-		0	-0.36	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36315	89931	NB Botley F	33	-		36315	89931	NB Botley F	34	-		1	4.02	Not within 200m of SAC
-	-	-	-	89931	38014	NB Botley F	31	-		89931	38014	NB Botley F	30	-		-2	-5.09	Passes within c.0m of Solent Maritime SAC
-	-	-	-	38014	89931	SB Botley R	40	-		38014	89931	SB Botley R	40	-		0	-0.01	Passes within c.0m of Solent Maritime SAC
-	-	-	-	89931	36315	SB Botley R	17	-		89931	36315	SB Botley R	17	-		0	0.92	Not within 200m of SAC
-	-	-	-	36315	36332	SB Botley R	40	-		36315	36332	SB Botley R	40	-		0	0.00	Passes within c.75m of Solent Maritime SAC
-	-	-	-	36332	36331	SB Botley R	39	0	-0.040699	36332	36331	SB Botley R	39	0	0	0	-0.06	Not within 200m of SAC

N.B. 36331 to 36332 is the only stretch of A3051 modelled in DKF, DOP and DPP

MARCH 2019 ANALYSIS: Includes M3 nodes which are within 200m of River Itchen SAC

Vehicles

DMRB Screening Threshold: daily traffic flows will change by 1000 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			Vehicles	Nodes			Vehicles	Increase over DKF		Nodes			Vehicles	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38833	43336	M3 at Junct	55158	38833	43336	M3 at Junct	68758	13600	24.66	38833	43336	M3 at Junct	69614	14456	26.21	856	1.24	Flow between nodes crosses SAC
43341	38802	M3 at Junct	56663	43341	38802	M3 at Junct	69208	12546	22.14	43341	38802	M3 at Junct	68634	11972	21.13	-574	-0.83	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	6896	38830	38838	A3090 adja	7517	620	9.00	38830	38838	A3090 adja	7372	475	6.89	-145	-1.93	Flow between nodes crosses SAC
38838	38830	A3090 adja	2224	38838	38830	A3090 adja	1538	-686	-30.84	38838	38830	A3090 adja	1672	-552	-24.82	134	8.70	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	7885	43318	43334	B3335 Nort	7742	-143	-1.81	43318	43334	B3335 Nort	7704	-180	-2.29	-37	-0.48	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	11020	43334	43318	B3335 Nort	12619	1599	14.51	43334	43318	B3335 Nort	12213	1194	10.83	-406	-3.21	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	2149	36836	36841	B3335 NW	2088	-61	-2.84	36836	36841	B3335 NW	1664	-485	-22.57	-424	-20.31	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	2525	36841	36836	B3335 NW	2059	-467	-18.48	36841	36836	B3335 NW	1890	-635	-25.15	-168	-8.18	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

HGVs

DMRB Screening Threshold: HGV vehicle flows will change by 200 AADT or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3								
Nodes			HGVs	Nodes			HGVs	Increase over DKF		Nodes			HGVs	Increase over DKF		Increase over DOP		
A node	B node	Description	24hr AADT	A node	B node	Description	24hr AADT	AADT	%	A node	B node	Description	24hr AADT	AADT	%	AADT	%	Notes
38833	43336	M3 at Junct	6652	38833	43336	M3 at Junct	6629	-23	-0.35	38833	43336	M3 at Junct	6618	-33	-0.50	-10	-0.15	Flow between nodes crosses SAC
43341	38802	M3 at Junct	7480	43341	38802	M3 at Junct	7541	61	0.81	43341	38802	M3 at Junct	7502	22	0.30	-38	-0.51	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	276	38830	38838	A3090 adja	349	73	26.35	38830	38838	A3090 adja	356	79	28.71	7	1.87	Flow between nodes crosses SAC
38838	38830	A3090 adja	45	38838	38830	A3090 adja	61	16	34.53	38838	38830	A3090 adja	136	91	200.66	75	123.49	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	456	43318	43334	B3335 Nort	432	-24	-5.31	43318	43334	B3335 Nort	500	44	9.59	68	15.73	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	900	43334	43318	B3335 Nort	1069	169	18.82	43334	43318	B3335 Nort	1036	136	15.12	-33	-3.11	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	189	36836	36841	B3335 NW	131	-57	-30.45	36836	36841	B3335 NW	132	-57	-30.22	0	0.34	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	213	36841	36836	B3335 NW	242	29	13.77	36841	36836	B3335 NW	227	14	6.58	-15	-6.32	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Speed

DMRB Screening Threshold: daily average speed will change by 10 kph or more

2015 DKF Baseline				2036 DOP Baseline						2036 DPP DS3							
Nodes			Speed	Nodes			Speed	Increase over DKF		Nodes			Speed	Increase over DKF		Increase over DOP		
A node	B node	Description	kph	A node	B node	Description	kph	kph	%	A node	B node	Description	kph	kph	%	kph	%	Notes
38833	43336	M3 at Junct	97	38833	43336	M3 at Junct	101	4	4.09	38833	43336	M3 at Junct	101	4	3.74	0	-0.33	Flow between nodes crosses SAC
43341	38802	M3 at Junct	97	43341	38802	M3 at Junct	101	4	4.61	43341	38802	M3 at Junct	102	5	4.82	0	0.20	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38830	38838	A3090 adja	47	38830	38838	A3090 adja	44	-3	-6.62	38830	38838	A3090 adja	45	-3	-5.53	1	1.17	Flow between nodes crosses SAC
38838	38830	A3090 adja	81	38838	38830	A3090 adja	81	0	0.00	38838	38830	A3090 adja	81	0	0.00	0	0.00	Flow between nodes crosses SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43318	43334	B3335 Nort	81	43318	43334	B3335 Nort	81	0	0.00	43318	43334	B3335 Nort	81	0	0.00	0	0.00	Flow between nodes passes within 55m of SAC
43334	43318	B3335 Nort	80	43334	43318	B3335 Nort	80	0	-0.04	43334	43318	B3335 Nort	80	0	0.02	0	0.06	Flow between nodes passes within 55m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36836	36841	B3335 NW	78	36836	36841	B3335 NW	78	0	-0.18	36836	36841	B3335 NW	78	0	0.06	0	0.24	Flow between nodes passes within 100m of SAC
36841	36836	B3335 NW	78	36841	36836	B3335 NW	78	0	0.10	36841	36836	B3335 NW	78	0	0.14	0	0.05	Flow between nodes passes within 100m of SAC
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix VI: Holohan Addendum

Please see insert.

Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	June 2019
Note	Addendum in reference to the CJEU Holohan judgement	**Ref**	UE0247
Author	Jonathan Cox / Nick Pincombe	**Page**	1 of 11
Status	For issue		

1. Introduction

On 7 November 2018, the Court of Justice of the European Union (CJEU) passed judgement on Case C-461/17 Holohan v An Bord Pleanala. The ruling is in relation to the interpretation of Article 6(3) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive'). The court concluded in paragraph 40 of the judgement that:

> *"Article 6(3) of the Habitats Directive must be interpreted as meaning that an 'appropriate assessment' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site."*

To gain a better understanding of the implications of the ruling, reference has been made to the Opinion of the Advocate General in relation to this case. Point 28 of the Opinion states (emphasis added):

> *"28. As the Czech Republic rightly submits, the effects on certain habitat types and species referred to in Annexes I and II to the Habitats Directive, and on migratory birds and birds referred to in Annex I to the Birds Directive, which are present on the protected site but are not covered by its conservation objectives do not, on the other hand, in principle, have to be assessed. However, this only applies if these occurrences are so insignificant that they do not for the sake of completeness have to be included in the conservation objectives of the area."*

Point 29 reinforces the need for an appropriate assessment to be free of lacunae (i.e. gaps) and must contain complete, precise and definitive findings. It also states that and appropriate assessment "*is not 'appropriate'… where updated data concerning the protected habitats and species is lacking.*"

Given that there remains some debate as to application of the CJEU ruling and the Opinion of the Advocate General, a precautionary approach has been taken to the identification of habitats and species to be included in the conservation objectives of the assessment. As a consequence, this technical note revises the

appropriate assessment to consider the implications of the Local Plan on three distinct groups of habitats and species as follows:

1. Habitat types and species for which the site is designated or classified. These are listed on the Standard Data Form submitted to the EU at the time of designation and list habitats and species for which the site has been selected. They are listed on the JNCC website as qualifying habitats and species.
2. Species present on the site that are not listed (as qualifying species). It is assumed this includes species listed on Annex II of the Habitats Directive as well as birds listed on Annex I of Council Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive'). This might include all habitats and species listed on the Standard Data Form as being hosted by the site and Annex I Birds Directive species not reaching qualifying population levels. It has been assumed that this could also include species that have colonised or been discovered in the site following designation.
3. Habitat types and species listed on Annex I and II of the EU Habitats Directive and Annex I of the EU Birds Directive that occur outside the boundaries of the designated site – provided there are implications that affect the conservation objectives for the site.

Earlier versions of the Habitats Regulations Assessment (HRA, including appropriate assessment) for the Eastleigh Borough Local Plan (EBLP) were completed before the Holohan judgement was made. This HRA Addendum provides information for appropriate assessment of relevance to habitats and species not already considered by the EBLP HRA, and which are associated with European sites addressed by the EBLP HRA. For each of the three categories of habitats and species listed above, this addendum considers firstly whether the EBLP will have a likely significant effect on them. For any habitats and species that are likely to be significantly affected, an appropriate assessment of the implications of the proposed Local Plan is undertaken in the light of the site's conservation objectives.

2. River Itchen Special Area of Conservation

The River Itchen SAC is designated for its representation of one Annex I habitat type and a total of six species listed on Annex II of the EU Habitats Directive, namely; Southern damselfly *Coenagrion mercuriale*, Freshwater crayfish *Austropotamobius pallipes*, Brook lamprey *Lampetra planeri*, Atlantic salmon *Salmo salar*, Bullhead *Cottus gobio* and Otter *Lutra lutra*.

Annex I Habitats

No additional non-qualifying Annex I habitat types are listed on the SAC Standard Data Form.

Annex II Species

An additional two Annex II fish species are listed on the River Itchen SAC Standard Data Form that could potentially be affected by the Eastleigh Borough Local Plan and should be assessed through the HRA following the Holohan Case. These are the River lamprey *Lampetra fluviatilis* and Sea lamprey *Petromyzon marinus*. Both species of lamprey are thought to breed in the River Itchen. As with the Brook lamprey, the River and Sea lamprey require a combination of clean well oxygenated river gravels for spawning and areas of deep silt in which the young lamprey develop. It is considered that measures taken to prevent impacts to

habitats of the Brook lamprey and Atlantic salmon would also avoid adverse effects on River lamprey and Sea lamprey.

The River Itchen SAC Standard Data Form also lists Desmoulin's whorl snail *Vertigo moulinsiana* as an Annex II species present within the site and will need to be assessed as part of the HRA following the Holohan Case judgement. This species is also a qualifying species of the Solent Maritime SAC. Survey information for it in the River Itchen has improved since the SAC was designated and it is thought to be quite widespread in suitable habitat within the Itchen Valley. Figure 1 shows the distribution of Desmoulin's whorl snail in the vicinity of Eastleigh Borough from the National Biodiversity Network on-line Atlas.

Desmoulin's whorl snail lives in permanently wet, usually calcareous swamps, fens and marshes, bordering rivers, lakes and ponds, or in river floodplains. It is most often found in open situations. Desmoulin's whorl snail has been recorded living on a wide range of plants, but is most usually found on tall monocotyledons, principally: Reed sweet grass (*Glyceria maxima*), sedges (*Carex riparia, C. acutiformis, C. paniculata, C. elata), Saw sedge (Cladium mariscus*), Reed (*Phragmites australis*), Reedmace (*Typha latifolia* and *T. angustifolia*), Branched bur reed (*Sparganium erectum*), Iris (*Iris pseudacorus*) and Reed canary grass (*Phalaris arundinacea*).

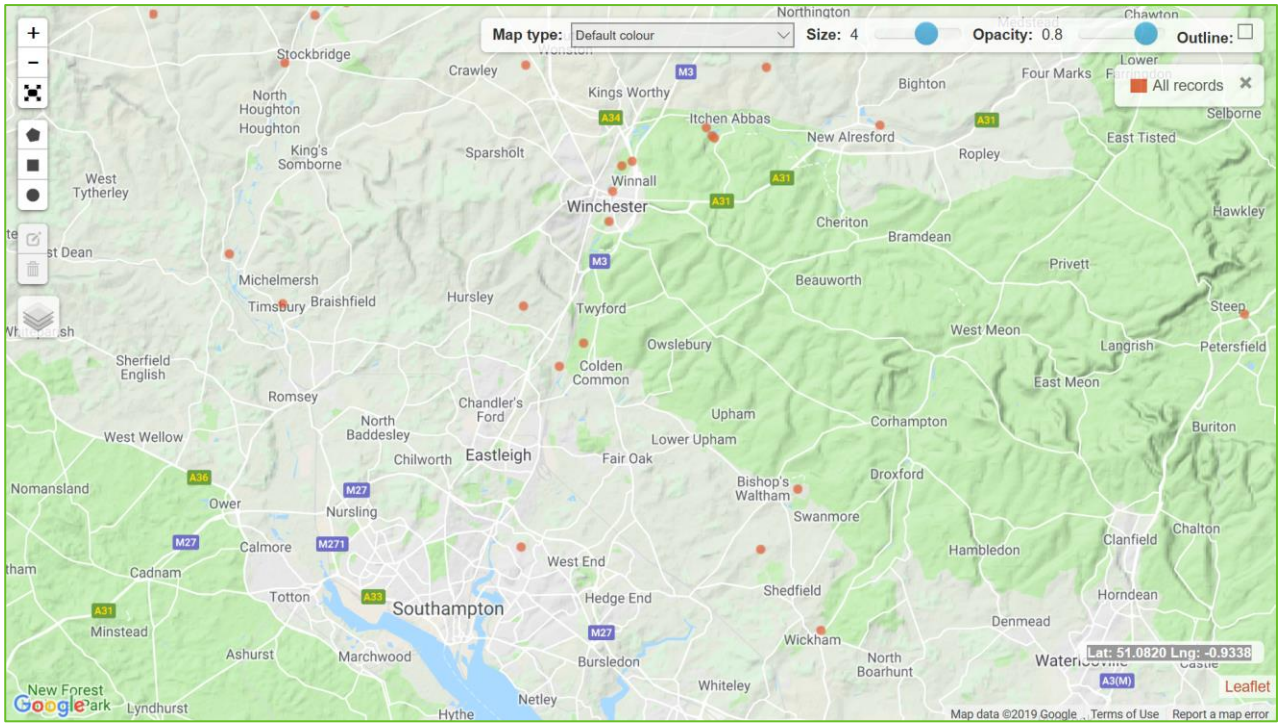


Figure 1: Distribution of Desmoulin's whorl snail in the vicinity of Eastleigh Borough (Source: NBN Gateway)

Reed sweet-grass and sedge swamps form the most typical Desmoulin's whorl snail habitat in most lowland river floodplains. The habitat occurs within natural swamps and marshes and around networks of small ditches, streams and depressions associated with open, relatively uncultivated land adjacent to rivers. Similar habitat also occurs frequently within areas of disused water meadows, grazing marshes and mill streams. The area of habitat may vary from a few tens of square metres to several hectares. This habitat is broadly similar to that used by the Southern damselfly and falls within the broad habitat type of Rich Fens.

Implications for Appropriate Assessment

The additional lamprey species have similar habitat requirements to the Brook lamprey which is a feature of the River Itchen SAC. It is concluded that the EBLP HRA assessment of impacts on Brook lamprey within the River Itchen SAC will also take account of the additional lamprey species. No additional assessment is therefore required.

The River lamprey and Sea lamprey are both migratory species passing through the estuary of Southampton Water to reach the River Itchen. Estuaries are a feature of the Solent Maritime SAC and the movement of migratory fish through the estuary is an important component of this habitat's ecological function. Impacts on the River Itchen affecting the successful completion of the lifecycle of these and the migratory Atlantic salmon could therefore have an adverse effect on the Estuary habitat within the Solent Maritime SAC. Avoidance of impact to these fish within the River Itchen will also ensure no impact on the Solent Maritime SAC.

The Desmoulin's whorl snail is associated with tall fen habitats similar in structure and composition to those used by the Southern damselfly. These are potentially vulnerable to changes in water and air quality. It is concluded that the EBLP HRA assessment of impacts on Southern damselfly will equally apply to Desmoulin's whorl snail. Measures taken to avoid or mitigate adverse impacts on Southern damselfly will also avoid adverse effects on Desmoulin's whorl snail. No additional assessment is therefore required.

Annex I Birds

Kingfisher *Alcedo atthis* are listed on Annex I of the EU Birds Directive. They are present in both the Solent and Southampton Water SPA and New Forest SPA, but are not listed as features of either SPA. Kingfisher also occur within the River Itchen SAC breeding in suitable nest sites along the valley. The last comprehensive survey of kingfisher in the Itchen Valley was undertaken by Cox and Combridge (2003)[1].

The 2003 survey of the Itchen identified 18 possible breeding pairs. The distribution of kingfisher along the valley is illustrated in Figure 2. It appears to show a relatively even spread of kingfisher but this masks the fact that the monitoring units in the lower valley are considerably larger than in the upper valley and hence the density of kingfisher down stream of Winchester is significantly lower than that in the upper Itchen above Winchester. There appears to be something of a concentration of kingfisher in the reach between the A33 and Ovington with two nests located within 200m of each other at Chilland. It may be that availability of suitable nest sites is a significant limiting factor for the kingfisher population in the valley. This is supported by evidence of kingfisher nesting in a sandpit at Casbrook Common (east of the Test Valley) and a chalk pit near Alresford (Clark and Eyre, 1994) both some distance from the nearest open water.

[1] Cox and Combridge (2003): River Itchen breeding bird surveys, River Itchen Sustainability Study

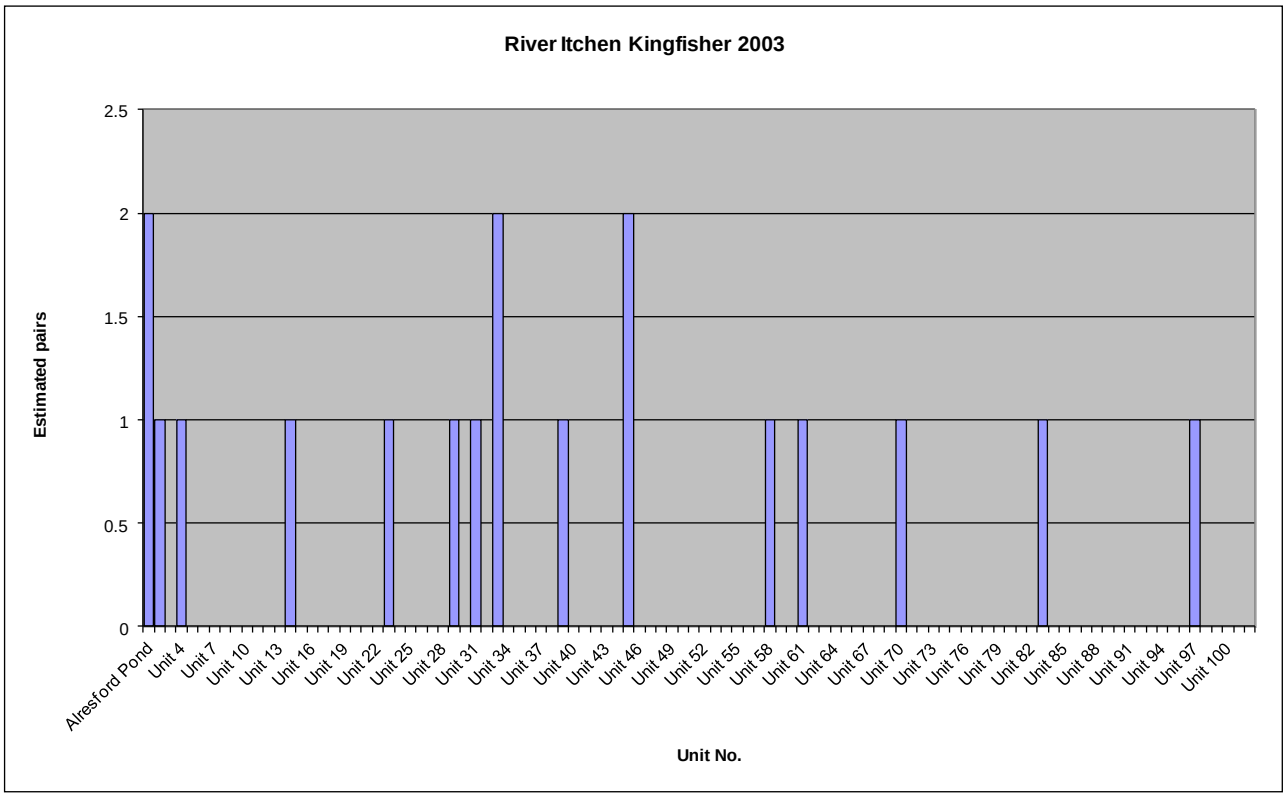


Figure 2: Estimated number of kingfisher pairs in the River Itchen SSSI listed by SSSI unit

Kingfisher is a non-qualifying Annex I bird species within both the Solent and Southampton Water SPA and New Forest SPA that breeds within the River Itchen SAC. Kingfisher breeding in the Itchen Valley are thought to move to the Solent and Southampton Water SPA in winter. Following the Holohan Case judgement, it is considered prudent to assess the impacts of the Eastleigh Borough Local Plan on kingfisher in the Itchen Valley as an off-site impact on the Solent and Southampton Water SPA. There is less obviously a relationship between kingfisher in Eastleigh Borough and the New Forest SPA. However, there are potential disturbance issues from increased recreation use of the New Forest on these birds. These impacts will be assessed as part of the New Forest SPA assessment within this HRA.

Kingfisher in the Itchen Valley are potentially vulnerable to the following impact pathways;

- Hydrological impacts
- Water pollution and water quality
- Loss of nest sites through river engineering and bank stabilisation

Measures taken to avoid hydrological and water quality impacts on the Floating Ranunculus habitat within the River Itchen SAC will also ensure no adverse effect from these impact pathways on kingfisher.

Bridge construction and other infrastructure projects could have impacts on kingfisher nest sites, but it is anticipated that none of the policies within the Local Plan will affect known kingfisher nest sites. Project level HRA of specific developments will need to consider implications for nesting kingfisher.

3. New Forest Special Protection Area

Annex I Birds

Following the outcome of the recent Holohan case, it has been necessary to review the list of Annex I birds that occur in the New Forest and identify any additional species that might need to be considered as part of the assessment. Table 1 lists the Annex I birds that regularly occur within the New Forest and identifies two species that are not currently features of the SPA, namely kingfisher and merlin *Falco columbarius*. Kingfisher are resident on many of the New Forest rivers and move to the coast during the winter to feed on the coastal saltmarshes and creeks. Merlin are present in the New Forest as an uncommon wintering bird. They tend to move into the Forest to roost at night after spending the day hunting on farmland and coastal marshes. Mostly single birds are recorded from the centre and north of the Forest.

Both merlin and kingfisher have been identified as additional bird species present within the New Forest that are not identified as features of the New Forest SPA. Both species are vulnerable to increased recreation pressure and will be considered in the wider assessment of impacts of recreation on SPA birds.

Table 1: Annex I birds regularly occurring in the New Forest. Species not currently identified as SPA features are highlighted in green.

Common name	Taxon name	Status within the New Forest SPA	Included under Art 4.1 qualification	Species not included within SPA features requiring separate assessment
Kingfisher	*Alcedo atthis*	Winter visitor & breeding bird	No	Yes
Nightjar	*Caprimulgus europaeus*	Breeding bird	Yes	No
Hen Harrier	*Circus cyaneus*	Winter visitor	Yes	No
Merlin	*Falco columbarius*	Winter visitor	No	Yes
Woodlark	*Lullula arborea*	Breeding bird	Yes	No
Honey Buzzard	*Pernis apivorus*	Breeding bird	Yes	No
Dartford warbler	*Sylvia undata*	Winter visitor & breeding bird	Yes	No

Implications for Appropriate Assessment

Impacts of increased recreation disturbance on birds within the New Forest SPA will apply equally to merlin and kingfisher as it does to the other Annex I birds that are a feature of the SPA. It can be assumed that measures taken to mitigate impacts of recreation on SPA birds will also ensure no adverse effects on merlin and kingfisher in the New Forest.

4. New Forest Special Area of Conservation

In addition to habitat types listed on Annex I of the EU Habitats Directive, the New Forest SAC also qualifies for its populations of three species listed on Annex II of the Directive, namely; Southern damselfly, Stag beetle *Lucanus cervus* and Great crested newt *Triturus cristatus*.

Annex II Species

As a consequence of the implications of the Holohan case, the list of Annex II species present within the New Forest has been reviewed to identify any additional species not previously listed as features of the New Forest SAC that occur within the site. Table 2 lists species identified from this review and considers if any of these require additional assessment due either to impacts generated by the Eastleigh Borough Local Plan within the SAC, or to populations of these species that extend beyond the boundary of the site that could have implications for their conservation within the SAC.

From the review of Annex II species in Table 2 it can be concluded that two additional species not listed as features of the SAC may require further consideration through this HRA, namely Bechstein's bat and Barbastelle bat.

Table 2: Annex II Species present within the New Forest

Common name	Taxon name	Status within the New Forest SAC	SAC designation feature	Requires further assessment?
Barbastelle Bat	*Barbastella barbastellus*	Information incomplete but maybe widespread in the SAC. Breeds in veteran trees.	No	Yes
Bechstein's bat	*Myotis bechsteinii*	Information incomplete but likely to be uncommon in the New Forest. Breeds in veteran trees.	No	Yes
Brook Lamprey	*Lampetra planeri*	Probably well distributed in New Forest streams	No	No
Bullhead	*Cottus gobio*	Frequent in New Forest streams and rivers	No	No
Early Gentian	*Gentianella anglica*	Confined to areas of imported chalk on former bombing range to the north of the New Forest	No	No
Floating water-plantain	*Luronium natans*	Very rare, confined to one site near	No	No

Common name	Taxon name	Status within the New Forest SAC	SAC designation feature	Requires further assessment?
		Brockenhurst. Maybe an introduction.		
Great crested newt	*Triturus cristatus*	Populations tend to be associated with more base enriched ponds around the periphery of the New Forest SAC	Yes	No
Otter	*Lutra lutra*	Breeds in the lower reaches of New Forest rivers such as Lymington and Beaulieu. Ranges widely along the Solent coast in winter.	No	No
Southern Damselfly	*Coenagrion mercuriale*	Confined to a few well known sites with specific hydrological characteristics	Yes	No
Stag Beetle	*Lucanus cervus*	Mostly recorded from sub-urban locations outside of the SAC but presumably widespread in the SAC	Yes	No

Implications for Appropriate Assessment

Both the Bechstein's bat and Barbastelle bat are woodland species that have maternity roosts within tree holes and crevices. Both species forage within woodlands and a range of wetland and grassland habitats beyond the woodland edge. Radio tracking studies of Barbastelle bats in the Test Valley have shown bats forage for up to 7.5 km from their maternity roosts. Although parts of Eastleigh Borough are within 7.5 km of the New Forest, it is not considered likely that policies within the Local Plan will have adverse effects on foraging habitats used by Annex I bats within the New Forest SAC.

5. Solent & Southampton Water Special Protection Area

Annex I Birds

Following the outcome of the recent Holohan case, it has been necessary to review the list of Annex I birds that occur in the Solent and Southampton Water SPA and consider whether additional species need to be included as part of this assessment. Table 3 lists the Annex I birds that regularly occur within this SPA and identifies 21 species that are not currently listed under article 4.1 of the Birds Directive as qualifying features

of the SPA. The analysis in Table 3 identifies a total of eight Annex I species that regularly occur within the SPA that do not form part of the existing features of the site, either under article 4.1 or article 4.2. These eight species need to be considered within the HRA. There is some uncertainty over the whether Kingfisher are included within the SPA assemblage of waterbirds. They are recorded within the Wetland Bird Survey (WeBS) counts upon which the assemblage population is based. However, the definition of waterbirds in the SPA follows that provided by the Ramsar Convention . This does not include kingfisher, but does state that waterbirds are birds that are "ecologically dependent upon wetlands". Using this broader definition, kingfisher will be assessed within the article 4.2 assemblage of waterbirds within the Solent and Southampton Water SPA.

Table 3: Annex I bird species regularly occurring within the Solent and Southampton Water SPA. Species not currently included as qualifying features of the SPA are highlighted in green

Common name	**Taxon name**	**Status within the SPA**	**SPA qualifying feature**	**Requires further assessment?**
Kingfisher	*Alcedo atthis*	Winter visitor	Art 4.2	No
Short-Eared Owl	*Asio flammeus*	Winter visitor	No	Yes
Great Bittern	*Botaurus stellaris*	Winter visitor	Art 4.2	No
Nightjar	*Caprimulgus europaeus*	Rare breeding bird	No	Yes
Marsh Harrier	*Circus aeruginosus*	Winter visitor and rare breeding bird	No	Yes
Hen Harrier	*Circus cyaneus*	Winter visitor	No	Yes
Little Egret	*Egretta garzetta*	Winter visitor and rare breeding bird	Art 4.2	No
Merlin	*Falco columbarius*	Winter visitor	No	Yes
Peregrine Falcon	*Falco peregrinus*	Wintering and breeding	No	Yes
Black-throated Diver	*Gavia arctica*	Winter visitor	Art 4.2	No
Great northern diver	*Gavia immer*	Winter visitor	Art 4.2	No
Red-Throated Diver	*Gavia stellata*	Winter visitor	Art 4.2	No
Mediterranean Gull	*Larus melanocephalus*	Wintering and breeding	Art 4.1	No
Bar-Tailed Godwit	*Limosa lapponica*	Winter visitor	Art 4.2	No
Osprey	*Pandion haliaetus*	Passage migrant	No	Yes
Spoonbill	*Platalea leucorodia*	Winter visitor	Art 4.2	No
Golden Plover	*Pluvialis apricaria*	Winter visitor	Art 4.2	No
Slavonian Grebe	*Podiceps auritus*	Winter visitor	Art 4.2	No
Pied Avocet	*Recurvirostra avosetta*	Wintering and breeding	Art 4.2	No
Roseate Tern	*Sterna dougallii*	Rare breeding migrant	Art 4.1	No

Common name	Taxon name	Status within the SPA	SPA qualifying feature	Requires further assessment?
Common Tern	*Sterna hirundo*	Breeding migrant	Art 4.1	No
Sandwich Tern	*Sterna sandvicensis*	Breeding migrant	Art 4.1	No
Little Tern	*Sternula albifrons*	Breeding migrant	Art 4.1	No
Dartford warbler	*Sylvia undata*	Wintering and breeding	No	Yes
Wood Sandpiper	*Tringa glareola*	Passage migrant	Art 4.2	No

Implications for Appropriate Assessment

Annex I birds that occur within the Solent and Southampton Water SPA are mostly assessed within the qualifying assemblage of waterbirds under article 4.2 of the EU Birds Directive. However, there are eight Annex I species that are not currently included within this SPA qualifying features. These are mostly birds of prey that visit the Solent during the winter, several of which are regularly recorded within Eastleigh Borough. However, it is concluded the EBLP HRA assessment of impacts on SPA habitats and associated supporting habitats will equally apply to these additional bird species. Measures taken to avoid or mitigate adverse impacts on SPA habitats and associated supporting habitats will also avoid adverse effects on the additional bird species. No additional assessment is therefore required.

6. Solent Maritime Special Area of Conservation

Annex I Habitats

Sanderson (1995) reviewed the presence of Annex I habitat types within the Solent and identified a number that were not subsequently included as features within the SAC designation. These are mostly sand dune habitat types that are not found in the vicinity of Eastleigh Borough. Consequently there is no requirement to assess any additional Annex I habitat types within the Solent Maritime SAC as a consequence of the Holohan case.

Annex II Species

Only one Annex II species, the Desmoulin's whorl snail, is listed as meeting the qualifying criteria for designation on the Standard Data Form for the Solent Maritime SAC.

Subsequent to the Holohan judgement of the ECJ it is necessary to consider impacts of the Eastleigh Borough Local Plan on two additional Annex II species listed on the Standard Data Form that do not meet qualifying criteria. These have not previously been identified as features of the SAC but now require consideration following the Holohan case, these are listed in Table 4.

Table 4: Annex II species present within the Solent Maritime SAC that do not meet qualifying criteria

Common name	Taxon name	Status within the SPA
European otter	*Lutra lutra*	The European otter is a feature of the River Itchen SAC. Impacts of the Local Plan on European otter will therefore be assessed as both a feature of the River Itchen SAC and as a species occurring within the Solent Maritime SAC and New Forest SAC.
Common seal	*Phoca vitulina*	A colony of about 50 common seals breed in Chichester Harbour. These move widely throughout the Solent in winter but are concentrated in the eastern Solent. Common seals are rarely seen on the coast of Eastleigh Borough although tracking studies have shown they regularly visit Southampton Water and the Hamble Estuary. They do not breed in the vicinity of the Borough.

Implications for Appropriate Assessment

Impacts of Local Plan policies on otters within the Solent Maritime SAC will be assessed alongside impacts on otters within the River Itchen SAC and require no additional assessment.

Common seals are almost entirely marine mammals that do not occur on land within Eastleigh Borough. It can be concluded that EBLP HRA measures taken to avoid or mitigate adverse effects on Estuaries and other coastal SAC habitat types will also ensure no adverse effect on Common seals within the Solent Maritime SAC. No additional assessment is therefore required.

Appendix VII: Eastleigh Nitrogen Budget

Please see insert.

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Technical Note

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	February 2021
Note	Nitrogen Budget	**Ref**	UE0247
Author	Giulia Civello / Nick Pincombe	**Page**	1 of 12
Status	For issue		

1. Introduction

There are high levels of nitrogen (N) and phosphorous (P) entering the water environment in the Solent with evidence of eutrophication at internationally designated sites. As part of the Habitats Regulations Assessment (HRA) accompanying the Eastleigh Borough Local Plan (EBLP), a nutrient budget has been calculated for the Borough over the emerging plan period 2016 to 2036. These calculations inform the assessment of adverse effects on the integrity of internationally designated sites and requirements for mitigation.

Nitrogen is the principal nutrient driving eutrophication in the marine environment and therefore the budget is focused on the nitrogen budget. Phosphate is the principal driver in freshwater habitats; during a meeting with Natural England in February 2019 the HRA authors queried whether a nutrient budgeting exercise should also be undertaken in relation to phosphates, principally in relation to potential impacts on freshwater habitats and qualifying features in the River Itchen.

Natural England[1] advised that Farmscoper modelling commissioned from ADAS for the Poole Harbour catchment found that agricultural source control measures focused on reducing N had a much bigger percentage reduction effect on agricultural diffuse P (-13% and -27% respectively). This aligns with other academic modelling work and also scientific observation that country actions to reduce agricultural diffuse eutrophication are having much more success at reducing P than in reducing N. This suggests a focus of action on reducing N source losses from farming to address nitrogen enrichment in the Solent sites will coincidentally deliver a high degree of agricultural diffuse P reduction on the River Itchen SAC. In the upper Itchen other sources of P including cress farming, fish farming, and non-mains drainage were the dominant sources of P however at the bottom of the River Itchen agricultural diffuse and the Waste water treatment works are the dominant sources. Therefore development offsetting of N from agriculture will also deliver offsetting of the relatively (compared to other catchments) limited amounts of agricultural P – although this

[1] Pers. Comm. (2019): Email correspondence within the Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England; 25/2/19.

will vary depending on geology type and distance and there are some additional agricultural measures that can be deployed to reduce P that have little effect on reducing N. In addition, actions to address flooding and action on misconnections and other urban sources are successful at reducing urban diffuse P contributions.

2. Methodology

A nitrogen budget was calculated to accompany the submitted HRA report in 2019 using the Natural England working draft methodology published in August 2018[2]. The budget has now been updated to take account of the Main Modifications to the Local Plan proposed by Eastleigh Borough Council (EBC) and as agreed with the Inspector; these updates have also taken account of further updates to the Natural England methodology, including the latest update in June 2020[3]. Development can impact the nitrogen budget in two key ways:

- Change in population impacting the amount of nitrogen discharged from waste water treatment works (WWTW) into the environment; and
- Change in land use affecting the amount of nitrogen leaching from individual sites into the environment and not received by a WWTW.

The nitrogen budget calculation presented in Annex 1 to this note includes all types of development site which would result in a net increase in population served by a wastewater system, including new homes and tourist accommodation. The calculation also includes large employment sites and open space and recreation sites where a potential change in land use could have a bearing on the nitrogen budget.

The list of new housing sites coming forward in the emerging plan period for inclusion in the 2019 nitrogen budget was taken from the 'Housing Trajectory 2018 by WWTW Catchment January 2019' spreadsheet issued by EBC – specifically Tab6: Allocations; and Tab7: New allocations. Sites which already had full planning permission in place were excluded from the assessment; this included windfall sites for the 2011 – 2018 period. Sites with outline consent were however included in the budget as explained further under the Stage 1 heading below. A number of additional sites allocated in the Local Plan and with the potential to affect the nutrient budget were also included following discussion with EBC.

The list of new housing sites has subsequently been updated to reflect the Main Modifications. Sites which have been fully built, are nearing completion or have received full planning permission since the publication of the 2019 HRA report have been removed from the nitrogen budget. The Strategic Growth Option (SGO) has also been removed following the Inspector's recommendation that the SGO be deleted from the Plan. Table 1 summarises those site changes which will have an impact on the Plan's nitrogen loading and hence have carried through to the updated nitrogen budget in Annex 1.

[2] Natural England (2018): *Methodology to calculate the nitrogen budget for development in the Solent and achieve nitrogen neutrality*. Working Draft August 2018.

[3] Natural England (2020): *Advice on achieving nutrient neutrality for new development in the Solent region*. Version 5 – June 2020.

Table 1: Main Modification Site Changes

2019 Allocation	MM Ref.	Main Modification Description	Action taken in N budget
S5 (SGO)	MM13	Inspector's letter has recommended that the proposed Strategic Growth Option be deleted	Deleted from budget
FO3	MM66	Policy updated to reflect land with planning permission and in the planning process and site re-numbered to FO2	Dwelling numbers increased from 38 to 119 Site re-numbered
FO4	MM67	Site re-numbered to FO3	Site re-numbered
FO6	MM69	Policy no longer required as site is part of the new site allocation HH1	Deleted from budget
BU7	MM80	Site re-numbered to BU6	Site re-numbered
BU8	MM82	Policy deleted due to concerns raised about the deliverability of open space	Deleted from budget
HA2	MM84	Policy revised to account for removal of hotel which was not justified by evidence base	Accommodation figures revised to take account of hotel removal
HO1	MM86	Policy no longer required as proposed country park is complete	Deleted from budget
CF1	MM89	Site re-numbered to CF3	Site re-numbered
E9(1) and E9(2)	MM100	Policy amended for clarification about the site area, for consistency and to clarify the quantum of employment floorspace	E9(1) omitted from 2019 so now added in; E9(i) re-named as E9(2) and site area reduced; E9(ii) re-named as E7; E9(iii) re-named as E9(2b)
E10	MM101	Policy no longer required as the proposed open space is complete	Deleted from budget
E11	MM102	Policy no longer required as the proposed open space is complete	Deleted from budget
HE1	MM106	Policy updated to reflect permitted scheme	No action required. Dwelling numbers inc. in 2019 budget already reflect permitted scheme (605)
WE4	MM115	Policy updated to provide a clear and positively worded policy for	Site area updated

2019 Allocation	MM Ref.	Main Modification Description	Action taken in N budget
		the whole site, recognising the importance of leisure and recreation and the different requirements for areas within and outside the urban edge	
WE4 (2011-2029)	N/A	N/A	Deleted from budget; no applications and not allocated
WE12 (2011-29)	N/A	N/A	Deleted from budget; no applications and not allocated
BO3	MM118	Policy updated to reflect increased development capacity	Site area updated; dwelling numbers updated from 70 to 120
DM25b	MM53	Policy no longer required to bring forward development as sites are largely under construction or built out (three sites not started are proposed as individual site allocations).	Site re-named as CF2
DM25c			Site re-named as CF1
DM25d			Site re-named as E2
DM25e, f and g			Deleted from budget
HH1	MM73	New policy HH1 to bring forward site as a single strategic site (previously listed as DM24 sites 28 and 39)	Land west of Horton Heath already included in 2019 budget but areas adjusted to reflect latest site boundary
HE3 (2011 -29)	N/A	N/A	Deleted from budget; no applications and not allocated
Windfall sites	MM10	Windfall allowance amended to 1,475 dwellings	Dwelling numbers adjusted
Satchell Lane (O/17/80319)	N/A	N/A	Deleted from budget; application has lapsed
The Hermitage Grange Road (O/16/78014)	N/A	N/A	Deleted from budget; reserved matters already approved
Abbey Fruit Farm (O/16/79466)	N/A	N/A	Deleted from budget; reserved matters already approved
Crows Nest Lane (O/16/78389)	N/A	N/A	Deleted from budget; reserved matters already approved
North & East of Boorley Green (O/12/71514)	N/A	N/A	Deleted from budget; reserved matters already granted for 1,400 dwellings

Stage 1

Stage 1 of the methodology calculates the net additional population for each development site in the Local Plan, the waste water volume associated with this additional population and the subsequent amount of nitrogen discharged from the WWTWs per year.

Population numbers

Proposed net dwelling numbers for each residential development site were provided by EBC. The net additional population has been calculated by multiplying the dwelling numbers by 2.4[4]. For tourist accommodation sites, EBC advised on the likely quantum of accommodation to be provided: for site BU6, a 200 bed hotel has been assumed; for site HA2, 24 lodges and 30 caravans have been assumed, each accommodating an average of 4 people. Average bed occupancy has been assumed at 55%, based on data from figures from Visit Britain for 2016 – 2018 for England and the South-East[5]. In order to calculate the annual nitrogen discharge, for tourist accommodation sites the daily Total Nitrogen (TN) discharged after WWTW treatment is multiplied by 200.75 days to calculate Annual WW TN load (kg/TN/yr) (as opposed to 365 days for residential sites).

Sites which have been granted outline planning consent have also been included in the nitrogen budget as any reserved matters applications coming forward during the plan period will need to be taken into account. Only those dwellings which have not already been the subject of a decided reserved matters application have been included in the budget.

Windfall development has also been accounted for in the nitrogen budget. Windfall sites are defined in the NPPF as "Sites which have not been specifically identified as available in the Local Plan process. They normally comprise previously-developed sites that have unexpectedly become available." Table 2 sets out the windfall dwelling numbers split by WWTW catchment in line with the adjusted allowance in the Main Modifications.

Table 2: Windfall Site Numbers Split by WWTW Catchment

Facility	**Dwellings**
Chickenhall WWTW	738
Peel Common WWTW	516
Portswood WWTW	221
Total	***1,475***

[4] NB: A figure of 2.3 was applied in the 2019 nitrogen budget but this has been updated in line with the 2020 Natural England methodology updates

[5] Visit Britain (2019): *Accommodation Occupancy: Latest results*. Accessed online [16/4/19]: https://www.visitbritain.org/accommodation-occupancy-latest-results

Wastewater production

Natural England has advised that wastewater production should be assumed at 110 litres per person per day for the purpose of the nitrogen budget on a precautionary basis to allow for alteration of internal fittings by future occupants which may alter future water consumption levels of the development[6]. The waste water volume generated by any population displaced by proposed development has not been included as a standalone column in the calculation spreadsheet as the dwelling numbers provided by EBC are net gain figures and therefore already take account of any dwelling losses.

Nitrogen discharge

In order to calculate the WWTW nitrogen discharge, it is necessary to understand which WWTW each site will connect into and the nitrogen permit levels for each facility. WWTW catchment areas were provided by EBC. The three WWTW serving Eastleigh borough are listed in Table 3. The Environment Agency and Southern Water were contacted to obtain nitrogen permit levels for each facility. Only Peel Common has a nitrogen permit in place. Southern Water[7] advised that, because no permit is in place, the effluent discharge at Chickenhall and Portswood is not sampled for nitrogen concentrations. However Southern Water has provided sampled ammonia levels in the influent at both Chickenhall and Portswood[8]. Given that ammonia is a nitrogen containing compound, it was agreed with Natural England[9] that the influent ammonia levels could be used as an estimate of the amount of nitrogen leaving these facilities. An annual average for the influent amount of ammonia has been calculated and used in the nitrogen budget as set out in Table 3.

Table 3: Nitrogen Permit Levels

Facility	N permit level (mg/l)	Proxy N load in the absence of permit
Peel Common WWTW	9	N/A
Chickenhall WWTW	No N permit limit	27
Portswood WWTW	No N permit limit	27

Stage 2

Stage 2 of the calculations focuses on the existing nitrogen load from the current land use of each development site. There are three main land use categories in the Natural England methodology: agricultural, urban and SANG / open space. The Natural England methodology provides different nitrogen loads for different farm types, where arable agriculture has a much higher nitrogen load than animal grazing for example.

[6] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 03/06/19

[7] Email correspondence with Sophie Hall, Area Permitting Co-ordinator for Southern Water, Hampshire and Isle of Wight, 29/04/19

[8] Email correspondence with Sophie Hall, Area Permitting Co-ordinator, Hampshire and Isle of Wight, Southern Water, 24/05/19

[9] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 31/05/19

The total area of each development site was taken from a GIS shapefile of all sites provided by EBC and cross-checked against the site areas noted in the Local Plan. In the few instances where the site areas provided in the Local Plan differed from the areas calculated from the shapefile, the larger area has been used to inform nitrogen calculations, thereby adopting a worst case scenario.

The total site area was then divided between the land use categories based on measurements in ArcGIS and aerial photography. Where it was not possible to identify the specific farm type from aerial photography, the average agricultural nitrogen load for the catchment area was applied, as per the Natural England methodology. The SANG / open space category included all green areas private and public, including woodland, unmanaged woodland, SINC and LNR. The SANG / open space category does not include playing pitches and gardens. Due to the fertiliser use on these surfaces, these areas were included within the urban land use category (as advised by Natural England[10]).

Each area was multiplied by the average nitrate load for that particular land use and then summed to provide the total annual nitrogen load from current land uses (kg/ha/yr).

Windfall sites

In order to factor the windfall dwelling numbers into the calculations it was necessary to establish:

A. Whether these dwellings will come forward on greenfield or brownfield land; and
B. The area of land these developments will cover.

With regard to point A, the percentage split between greenfield (agricultural land), greenfield (rural, non-agricultural land) and brownfield land in the 2011 to 2016 windfall developments on large sites set out in the EBC Draft Housing Trajectory Report[11] (specifically Table 13) was calculated. This percentage split has then been applied to the adjusted windfall figures in Table 2.

With regard to point B, we have obtained the average population density of Eastleigh (16.13 people per hectare) from the EBC demography background paper[12] and divided the windfall dwelling numbers by this figure to obtain an overall area of land these windfall developments will cover. Given that the majority of windfall sites will come forward on brownfield land, there is minimal change in land use and therefore altering the density figure has little impact on the nitrogen budget overall.

Stage 3

Having calculated the nitrogen load from current land use, Stage 3 goes on to calculate the nitrogen load from proposed land use that will not be received by a WWTW. A number of assumptions have been made to inform this stage of the calculations as set out in the paragraphs below.

[10] Email correspondence with Rebecca Aziz, Sustainable Development Lead Advisor, Dorset, Hampshire and Isle of Wight Area Team, Natural England, 25/03/19

[11] Eastleigh Borough Council (no date). Eastleigh Borough Local Plan 2011-36 – Draft Housing Trajectory. Accessed online [08/05/19]

[12] Eastleigh Borough Council (2018). Eastleigh Borough Local Plan 2016-2036, Demography Background Paper June 2018. Accessed online [08/05/19]

Open space provision

Open space provision has been calculated using the emerging Local Plan standard of 1.4ha per 1,000 people which equates to 0.0014 ha of open space per person. Because not all open provision is necessarily green space, 90% of 0.0014 ha per person has been applied. The remaining 10% is assumed to be hardstanding and therefore falls into the urban land category. Given the nitrogen load for urban land is higher than open space this approach ensures a precautionary scenario in terms of the nitrogen budget.

Given that there is no policy requirement for open space for tourist accommodation sites, the proposed land use for site BU6 has been assumed as 100% urban to ensure the worst case scenario is calculated.

As for Stage 2, proposed playing pitches have been categorised as 'urban' land due the associated fertiliser use. This is in line with Natural England's advice[10].

New urban area

New urban area is then calculated by subtracting the open space provision from the total site area. It is assumed that new urban area and new open space are mutually exclusive. There is a possibility that some developments may embed open space areas within the urban elements of the site for example a green amenity roof space on top of a residential tower. However for the purpose of these calculations, we assumed that in most cases open spaces and urban areas do not overlap in plan terms.

As for Stage 2, the area within each land use category is then multiplied by the average nitrate load for that particular land use and then summed to provide the total annual nitrogen load from proposed land uses (kg/ha/yr).

Stage 4

The final stage in the process is to calculate the net change in total nitrogen load to the Solent catchment resulting from the proposed development allocated in the emerging Local Plan. This has been derived by calculating the difference between total nitrogen load generated by the proposed development (Stages 1 and 3), and that for the existing land uses (Stage 2).

3. Results

The total nitrogen budget for Eastleigh Borough has been calculated as 7,432.76 kg/TN/yr; see Table 4. A positive figure indicates a surplus of nitrogen in the Borough and therefore mitigation will be required to achieve nutrient neutrality and avoid any impact to internationally designated sites in the Solent.

A breakdown between the different categories of proposed development sites is set out in Table 4.

Varying the amount of nitrogen in the effluent of the Chickenhall and Portswood WWTWs has a significant impact on the overall nitrogen budget. The ammonia average which has been applied is considered to be a very high nitrogen concentration for a WWTW and therefore the calculations represent a highly precautionary scenario in terms of the nitrogen surplus calculation.

Table 4: Eastleigh Nitrogen Budget

Site Category	Nitrogen Budget (kg/TN/yr)	Area of ag land required to mitigate (ha)*
Residential (excl. windfall)	1,763.07	65.54
West of Horton Heath	2,053.27	76.33
Overnight tourism	93.99	3.49
Open space, recreation	137.49	5.11
Large employment sites	397.86	14.79
Windfall sites	2,987.09	111.04
Overall N budget	***7,432.76***	***276.31***
Positive figure indicates surplus N and hence mitigation is required. Negative figure indicates a deficit and so no mitigation required		

** Assumes an average nitrogen load for the catchment area of 26.9 kg/ha. This figure is purely indicative and is provided to give EBC a tangible measure of the nitrogen surplus calculated.*

4. Mitigation

Mitigation will be required for the additional 7,432.76 kg/TN/yr entering the environment as a result of development proposed in the emerging Eastleigh Borough Local Plan. There are a number of options which could be used to mitigate a nitrogen surplus, including:

- Measures to remove nitrogen leaching from the development site, for example by provision of engineered wetlands or reedbeds;
- Developer offsetting through the acquisition, or contributions to the acquisition, of land elsewhere within the river catchment area containing the development site and changing to land use with a lower nitrogen load in perpetuity (for example acquisition of agricultural land and the creation of woodland or conservation grassland). This could have the additional benefit of contributing to other biodiversity objectives in the Borough;
- Upgrading WWTWs to increase nitrogen removal capacity at the facility;
- Measures to further decrease water consumption in the Borough as this has the additional benefit of decreasing nitrates entering WWTWs proportionally;
- Additional measures to remove nitrogen in effluent discharged by the WWTW (such as wetlands or reedbeds);
- Reducing the amount of nitrogen leaching from agricultural land in the wider Borough landholding through change in agricultural practices supported by catchment management officers working with local farmers; and
- Taking agricultural land out of nitrogen intensive uses, e.g. where fertiliser is applied to crops, and converting to alternatives agricultural uses or other land uses.

For all options, the mitigation outcome needs to be 'in perpetuity': secured for the duration over which the development causing the impact will be operational, generally 80-120 years for housing. This could include monitoring by condition. However, the mitigation strategy itself may change over time and EBC may decide to implement a staged mitigation strategy, for example starting with the purchase of nitrogen intensive agricultural land, before subsequently developing wetlands or alternative habitats on that land.

Table 4 provides an indication of the quantum of agricultural land (assuming an average nitrogen load for the catchment area of 26.9 kg/ha) which would need to be removed from use to achieve nutrient neutrality. This figure is purely indicative and is provided to give EBC a tangible measure of the nitrogen surplus calculated and the scale of mitigation required.

Developing mitigation schemes

A number of Solent mitigation schemes have been identified to date which could contribute to the mitigation of the nitrogen surplus in the Borough. These are described in the paragraphs below.

Solent LEP funded PfSH mitigation strategy – The Partnership for South Hampshire (PfSH), of which Eastleigh Borough Council is a member, has been provisionally awarded £2m loan by the Solent Local Enterprise Partnership (LEP). This loan will be used to secure off site mitigation land in order to assist in unlocking the delivery of housing which has been on hold in South Hampshire due to the nutrient neutrality issue. Whilst this will not in itself provide sufficient provision for the full current amount of mitigation needed and further measures are still required to resolve the issue, it will make a significant contribution towards addressing the current backlog and provide increased momentum in bringing forward future land based mitigation solutions. It is anticipated that mitigation land purchased with the proceeds of the award will facilitate the building of approximately 1,523 new housing units. The loan that will be paid back via developer contributions purchasing nutrient credits.

PfSH has also obtained agreement 'in principle' from a majority of members to contribute to a Solent Nutrient Fund to invest in the implementation of a land use change nutrient mitigation credit scheme. Such funding would be used to purchase credits for the individual authority concerned and would be paid back by developer contributions, as future development takes place. The Solent LEP has since advised that Hampshire and Isle of Wight Wildlife Trust (HIWWT) is its preferred strategic partner to oversee a land use change mitigation scheme. HIWWT officials have been working with the LEP to determine the governance of the resulting scheme of nutrient credits, and ensure that quality assurance and due diligence processes have taken place to secure the funding. A business case has been submitted and agreed by the Solent LEP Board on 11 December 2020.

Defra / Natural England nitrate trading platform – In September 2020 the Government announced the roll out of an online 'nitrate trading' auction platform for the Solent through which developers will be able to buy credits to mitigate nitrogen surplus associated with their development; the funds will be used to convert land with nitrogen intensive uses to habitats with low nitrogen loading.

The nitrate pilot will be rolled out over the next two years and delivered jointly with the Ministry for Housing, Communities and Local Government, Natural England and the Environment Agency. The rewilding of Warblington Farm in Havant will be the first project to come forward under the scheme. It is expected that

developers within Eastleigh Borough will be able purchase credits to mitigation any nitrogen surplus associated with their developments.

PfSH has stated its intention to work with Defra to understand how the pilot can be implemented alongside the emerging LEP funded wider PfSH mitigation strategy.

Hampshire and Isle of Wight Wildlife Trust – HIWWT will secure low quality arable land on the Isle of Wight. The scheme will change the land from an intensive use which requires large inputs of nitrogen rich fertiliser to an extensive use with no nitrogen inputs, such as traditionally grazed meadows, wetlands or woodland. Developers, working with local planning authorities and Natural England to agree a nitrogen budget for their development, will be able to purchase the required number of credits from HIWWT to offset the nitrogen surplus associated with their development. Credits of 1kg of nitrogen per year will be available to purchase for an agreed standard cost per credit, plus an additional fee to cover administration costs.

HIWWT will use the funds to purchase poor quality intensive agricultural land in locations agreed with Natural England and convert it to less intensive uses such as wildflower meadows, scrubland, woodland and wetlands. The income secured will cover land purchase and maintenance costs *in perpetuity*, thereby ensuring that the mitigation is in place for the lifetime of the development. Contributions from several developers will be pooled to acquire a few strategic offset sites which will be more cost effective but will also have greater environmental benefits than lots of smaller sites.

HIWWT has recently acquired Little Duxmore Farm on the Isle of Wight, a former arable farm which discharges into the Wooton Creek which in turn runs into the Solent. Little Duxmore Farm has been approved by Natural England for offsetting inputs entering the Solent via Peel Common (serving Fareham, Eastleigh and Gosport Boroughs) and Budds Farm Waste Water Treatment Works (serving Winchester City, Portsmouth City, Havant Borough and East Hampshire District)[13].

Natural England has determined that the rewilding of Little Duxmore Farm will remove 848 kgs of nitrogen per year from the Solent ecosystem. HIWWT has agreed to take off a further amount to provide headroom and thus deliver not only the offset amount but a net reduction in pollution. Little Duxmore Farm will therefore provide 800 nitrate credits – providing mitigation for approximately 400 houses. The 800 credits from Little Duxmore Farm will be sold for £2,500 each, providing a fund of £2,000,000 which will cover legal fees, repay the loan for the purchase of the land itself, and provide a long-term management fund 'in perpetuity'[14].

HIWWT are actively discussing other land purchase options with a number of private estates and land agents. Should all of these sites be acquired, the HIWWT scheme would be able to offset over 12,000kg of nitrogen.

[13] HIWWT (2020): *Solent nutrients issue – a nature-based solution.* August 2020. Accessed online at: https://www.hiwwt.org.uk/sites/default/files/2020-08/SOLENT%20NITRATES%20-%20A%20NATURE%20BASED%20SOLUTION%20-%20AUGUST%202020.pdf

[14] *Ibid*

Annex 1: Eastleigh Nitrogen Budget

Please see insert.

Site description								Stage 1 calculation: Total N Load from Development Wastewater							Stage 2 calculation: Total N Load from Current Land Use								Stage 3 calculation: Total N load from future land use (not received by WWTW)					Stage 4: Total Net Change in N Load from the development			
Policy / Site Ref	SLAA Site Ref	Parish	Site Address	Existing use	Source of info re: existing land use	Site area (ha)	Greenfield / brownfield	Development proposal (No. residential dwellings)	Equivalent population (Dwellings*2.4) (No. persons)	Wastewater volume generated by development (No. persons * 110litres) (litres/day)	Receiving WWTW	Receiving WWTW environmental permit limit or proxy for TN (mg/litre)	TN discharged after WWTW treatment (((90% of permit limit (where there is a permit otherwise 100%)-2 (acceptable TN loading)* WW volume generated by development)/1,000,000) (kg/TN/day)	Annual WW TN load (kg/TN/yr)	Total area of existing agricultural land (ha)	Farm type / nitrate loss (kg/ha/yr)	N load - current agricultural land use (Area * nitrate loss) (kg/ha/yr)	Total area of existing urban development (gardens, caravan park, brownfield and non-residential urban) (ha)	N load - existing urban development (kg/ha/yr)	Total area of existing SANG / open space (ha)	N load - existing SANG / open space (kg/ha/yr)	Total N load from current land uses (kg/ha/yr)	New urban land (ha)	Total N load from future urban land (kg/TN/yr)	New SANG / open space (ha)	Total N load from SANG / open space (kg/TN/yr)	Combine Total N load from future land uses (kg/TN/yr)	Stage 1: Total N Load from WW (kg/TN/yr)	Total N Load from land use (stage 2 current - stage 3 future) (kg/TN/yr)	N budget (Total N load from WW - Total N load from land use) (kg/TN/yr)	20% precautionary buffer applied where TN is positive
Greenfield allocations (Taken from Tab 8 of Housing Trajectory Spreadsheet)																														
AL1	1-4	Allbrook	Land east of Allbrook Way	Currently used for grazing - lowland grazing. There is a belt of mature trees along the eastern boundary which are protected by a TPO, and watercourse runs N/S along eastern boundary.	Local Plan	7.76	Greenfield	95	228.00	25080.00	Chickenhall	27.00	0.63	228.86	6.63	13.00	86.19	0.10	1.36	1.04	5.18	92.72	7.47	106.86	0.29	1.44	108.30	228.86	-15.57	244.43	293.31
FO1	7-21	Fair Oak & Horton Heath	West of Durley Road, Horton Heath	Currently in agricultural use - indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type.	Local Plan and aerial photography	4.15	Greenfield	73	175.20	19272.00	Chickenhall	27.00	0.48	175.86	3.82	26.90	102.76	0.00	0.00	0.33	1.65	104.41	3.93	56.19	0.22	1.10	57.29	175.86	47.12	128.74	154.49
FO2	7-27	Fair Oak & Horton Heath	East of Allington Lane	The King's School, Rockford House (up to 10 flats), Fair Oak Lodge, Quobleigh Woods Site of Importance for Nature Conservation (SINC) and other undeveloped land	Local Plan and aerial photography	14.5	Greenfield	119	285.60	31416.00	Chickenhall	27.00	0.79	286.67	0.00	0.00	0.00	1.04	14.87	13.46	67.30	82.17	14.14	202.20	0.36	1.80	204.00	286.67	-121.83	408.50	490.20
FO3	7-51	Fair Oak & Horton Heath	Land at Lechlade, Burnetts Lane	Single residential dwelling with associated curtilage	Local Plan and aerial photography	0.73	Greenfield	13	31.20	3432.00	Chickenhall	27.00	0.09	31.32	0.00	0.00	0.00	0.07	0.95	0.66	3.32	4.27	0.69	9.88	0.04	0.20	10.07	31.32	-5.81	37.12	44.55
HE2	9-26 & 9-27	Hedge End	Land at Sundays Hill & north of Peewitt Hill	Currently covered in grassland with extensive wooded areas (predominantly within the west of the site). Trees to the north of the site are protected by a TPO. The headwaters of the Badnum Creek are present within the north of the site whilst Badnum Creek dissects the centre of the site, flowing north to south	Local Plan and aerial photography	4.21	Greenfield	106	254.40	27984.00	Peel Common	9.00	0.17	62.31	0.00	0.00	0.00	0.00	0.00	4.21	21.05	21.05	3.89	55.62	0.32	1.60	57.22	62.31	-36.17	98.48	118.17
BO1	3-36	Botley	Land south of Maddoxford Lane & east of Crows Nest Lane	Currently in agricultural use - indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type. The site is split into three field parcels defined by mature tree and hedge planting.	Local Plan and aerial photography	2.56	Greenfield	30	72.00	7920.00	Peel Common	9.00	0.05	17.63	2.56	26.90	68.86	0.00	0.00	0.00	0.00	68.86	2.47	35.31	0.09	0.45	35.76	17.63	33.10	-15.47	-15.47
BO3	3-12	Botley	Land east of Kings Copse Avenue & Tanhouse Lane	The site is split into two parcels: the larger open parcel to the south, is currently used for agriculture (indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type). The smaller northern parcel consisting of mature woodland which is part of the Tanhouse Meadow Site of Importance for Nature Conservation (SINC) and Manor Farm Local Nature Reserve (LNR)	Local Plan and aerial photography	6.96	Greenfield	120	288.00	31680.00	Peel Common	9.00	0.19	70.54	5.16	26.90	138.80	0.00	0.00	1.80	9.00	147.80	6.60	94.34	0.36	1.81	96.15	70.54	51.65	18.88	22.66
BU2	4-27	Bursledon	Heath House Farm	Children's residential care home (Heath House Farm) and lowland grazing farm land.	Local Plan and aerial photography	3.47	Greenfield	38	91.20	10032.00	Peel Common	9.00	0.06	22.34	3.12	13.00	40.56	0.35	5.01	0.00	0.00	45.57	3.36	47.98	0.11	0.57	48.55	22.34	-2.99	25.32	30.39
Stage 2																														
AL2	1-5	Allbrook	West of Allbrook Way	Currently used for grazing - lowland grazing. The area includes a large residential property south of its centre but this property and its curtilage are excluded from the site though the access to the property is included. A woodland protected by a Tree Preservation Order abuts the northwestern boundary and mature vegetation extends down the western boundary. PRoW running across site.	Local Plan and aerial photography	4.08	Greenfield	45	108.00	11880.00	Chickenhall	27.00	0.30	108.41	2.77	13.00	36.04	0.46	6.58	0.85	4.25	46.87	3.95	56.43	0.14	0.68	57.11	108.41	-10.24	118.65	142.38
BO4	3-33	Botley	Land at Myrtle Cottage	Currently in mixed use comprising two residential properties and agricultural storage uses	Local Plan and aerial photography	1.05	Brownfield	22	52.80	5808.00	Peel Common	9.00	0.04	12.93	0.00	0.00	0.00	0.33	4.72	0.61	3.05	7.77	0.98	14.06	0.07	0.33	14.40	12.93	-6.63	19.56	23.47
HE3	9-12	Hedge End	Home Farm	Currently in agricultural use, Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type. Bounded on its northern, western and south-western boundaries by a block of woodland and tree planting which creates a strong boundary.	Local Plan and aerial photography	0.94	Greenfield	16	38.40	4224.00	Peel Common	9.00	0.03	9.40	0.94	26.90	0.00	0.00	0.00	0.00	0.00	0.00	0.89	12.75	0.05	0.24	12.99	9.40	-12.99	22.40	26.88
New Urban allocations identified in the emerging draft local plan not counted elsewhere in the Trajectory (Taken from Tab 8 of Housing Trajectory Spreadsheet)																														
CF2	5-1	Chandlers Ford	Rear of Shopping Parade & 75-79 Hiltingbury Road	Appears to be scrub land behind shopping parade and residential properties. May be former gardens.	Aerial photography	0.44	Brownfield	16	38.40	4224.00	Chickenhall	27.00	0.11	38.54	0.00	0.00	0.00	0.44	6.29	0.00	0.00	6.29	0.39	5.60	0.05	0.24	5.84	38.54	0.45	38.09	45.71
Allocations (Taken from Tab 7 of Housing Trajectory Spreadsheet)																														
BO2		BOTLEY	Land north east of Winchester Street	Site is primarily in agricultural use - indeterminate land, some appears to be in use as grazing and some as arable - categorised as 'mixed' agricultural land use. The site includes the listed farmhouse and buildings of Uplands Farm, and the existing dwelling at Uplands Nurseries.	Local Plan and aerial photography	25.65	Greenfield	375	900.00	99000.00	Peel Common	9.00	0.60	220.42	24.44	28.30	691.65	1.21	17.30	0.00	0.00	708.96	24.52	350.58	1.13	5.67	356.25	220.42	352.71	-132.28	-132.28
CF3		Chandler's Ford	THE PRECINCT	Mixture of retail, residential and community uses. The buildings are of poor quality and some age and considered to be suitable for replacement.	Local Plan and aerial photography	1.21	Brownfield	85	204.00	22440.00	Chickenhall	27.00	0.56	204.77	0.00	0.00	0.00	1.21	17.30	0.00	0.00	17.30	0.95	13.63	0.26	1.29	14.91	204.77	2.39	202.37	242.85
CF1		Chandler's Ford	COMMON ROAD INDUSTRIAL ESTATE	Existing industrial estate	Aerial photography	0.85	Brownfield	30	72.00	7920.00	Chickenhall	27.00	0.20	72.27	0.00	0.00	0.00	0.85	12.16	0.00	0.00	12.16	0.76	10.86	0.09	0.45	11.31	72.27	0.84	71.43	85.71
E2		EASTLEIGH	LAND AT TOYNBEE ROAD	Existing industrial estate	Aerial photography	1.90	Brownfield	64	153.60	16896.00	Chickenhall	27.00	0.42	154.18	0.00	0.00	0.00	1.90	27.17	0.00	0.00	27.17	1.71	24.40	0.19	0.97	25.37	154.18	1.80	152.38	182.85

Site description								Stage 1 calculation: Total N Load from Development Wastewater							Stage 2 calculation: Total N Load from Current Land Use								Stage 3 calculation: Total N load from future land use (not received by WWTW)					Stage 4: Total Net Change in N Load from the development			
Policy / Site Ref	SLAA Site Ref	Parish	Site Address	Existing use	Source of info re: existing land use	Site area (ha)	Greenfield / brownfield	Development proposal (No. residential dwellings)	Equivalent population (Dwellings*2.4) (No. persons)	Wastewater volume generated by development (No. persons * 110litres) (litres/day)	Receiving WWTW	Receiving WWTW environmental permit limit or proxy for TN (mg/litre)	TN discharged after WWTW treatment (((90% of permit limit (where there is a permit otherwise 100%)-2 (acceptable TN loading)* WW volume generated by development)/1,000,000) (kg/TN/day)	Annual WW TN load (kg/TN/yr)	Total area of existing agricultural land (ha)	Farm type / nitrate loss (kg/ha/yr)	N load - current agricultural land use (Area * nitrate loss) (kg/ha/yr)	Total area of existing urban development (gardens, caravan park, brownfield and non-residential urban) (ha)	N load - existing urban development (kg/ha/yr)	Total area of existing SANG / open space (ha)	N load - existing SANG / open space (kg/ha/yr)	Total N load from current land uses (kg/ha/yr)	New urban land (ha)	Total N load from future urban land (kg/TN/yr)	New SANG / open space (ha)	Total N load from SANG / open space (kg/TN/yr)	Combine Total N load from future land uses (kg/TN/yr)	Stage 1: Total N Load from WW (kg/TN/yr)	Total N Load from land use (stage 2 current - stage 3 future) (kg/TN/yr)	N budget (Total N load from WW - Total N load from land use) (kg/TN/yr)	20% precautionary buffer applied where TN is positive
HE1		HEDGE END	WEST OF WOODHOUSE LANE	Currently in agricultural use with exception of band of woodland running across site. Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type	Local Plan and aerial photography	51.1	Greenfield	605	1452.00	159720.00	Peel Common	9.00	0.97	355.62	48.12	26.90	1294.43	0.00	0.00	2.98	14.90	1309.33	49.27	704.57	1.83	9.15	713.72	355.62	595.61	-240.00	-240.00
Additional policies with potential to affect nutrient budget (Taken from Local Plan Chapter 6)- Overnight tourism																														
HA2		Hamble-le-Rice	Mercury Marina and Riverside Camping and Caravan Park	Part of site already in use as caravan park and marina parking. Yachting school also on site. Northern end of site in use as boat yard with associated structures and hardstanding.	Aerial photography	6.95	Brownfield	24 lodges and 30 caravans	216.00	23760.00	Peel Common	9.00	0.14	29.10	0.00	0.00	0.00	6.95	99.39	0.00	0.00	99.39	6.95	99.39	0.00	0.00	99.39	29.10	0.00	29.10	34.92
BU6		Bursledon	Riverside Boatyard, Blundell Lane, Bursledon	Part agricultural use - Indeterminate farm type. Aerial photography suggests arable but not possible to determine crop type	Aerial photography	0.7	Greenfield	200 bed hotel	400	44000.00	Peel Common	9.00	0.27	53.88	0.45	26.90	12.11	0.11	1.57	0.14	0.70	14.38	0.68	9.72	0.00	0.00	9.72	53.88	4.65	49.23	59.07
Windfall sites																														
Served by Chickenhall WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	7.74	Greenfield	52	124.80	13728.00	Chickenhall	27.00	0.34	125.27	7.74	26.90	208.13	0.00	0.00	0.00	0.00	208.13	7.58	108.39	0.16	0.79	109.18	125.27	98.95	26.32	31.58
Served by Chickenhall WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	5.51	Greenfield	37	88.80	9768.00	Chickenhall	27.00	0.24	89.13	0.00	0.00	0.00	0.00	0.00	5.51	27.53	27.53	5.39	77.13	0.11	0.56	77.68	89.13	-50.16	139.29	167.15
Served by Chickenhall WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	96.57	Brownfield	649	1557.60	171336.00	Chickenhall	27.00	4.28	1563.44	0.00	0.00	0.00	96.57	1380.89	0.00	0.00	1380.89	94.60	1352.82	1.96	9.81	1362.63	1563.44	18.25	1545.19	1854.23
Served by Peel Common WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	5.36	Greenfield	36	86.40	9504.00	Peel Common	9.00	0.06	21.16	5.36	26.90	144.09	0.00	0.00	0.00	0.00	144.09	5.25	75.04	0.11	0.54	75.59	21.16	68.50	-47.34	-47.34
Served by Peel Common WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	3.87	Greenfield	26	62.40	6864.00	Peel Common	9.00	0.04	15.28	0.00	0.00	0.00	0.00	0.00	3.87	19.34	19.34	3.79	54.20	0.08	0.39	54.59	15.28	-35.25	50.53	60.64
Served by Peel Common WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	67.55	Brownfield	454	1089.60	119856.00	Peel Common	9.00	0.73	266.86	0.00	0.00	0.00	67.55	965.98	0.00	0.00	965.98	66.18	946.35	1.37	6.86	953.21	266.86	12.77	254.09	304.91
Served by Portswood WWTW	N/A	N/A	N/A	Greenfield (ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	2.23	Greenfield	15	36.00	3960.00	Portswood	27.00	0.10	36.14	2.23	26.90	60.04	0.00	0.00	0.00	0.00	60.04	2.19	31.27	0.05	0.23	31.49	36.14	28.54	7.59	9.11
Served by Portswood WWTW	N/A	N/A	N/A	Greenfield (non ag land)	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	1.64	Greenfield	11	26.40	2904.00	Portswood	27.00	0.07	26.50	0.00	0.00	0.00	0.00	0.00	1.64	8.18	8.18	1.60	22.93	0.03	0.17	23.10	26.50	-14.91	41.41	49.69
Served by Portswood WWTW	N/A	N/A	N/A	Brownfield	Assumptions based on EBC Draft Housing Trajectory Report, Table 13 (April 2017)	29.01	Brownfield	195	468.00	51480.00	Portswood	27.00	1.29	469.76	0.00	0.00	0.00	29.01	414.90	0.00	0.00	414.90	28.42	406.47	0.59	2.95	409.42	469.76	5.48	464.27	557.13
Open space and recreation sites																														
WE4		West End	Land at Ageas Bowl and Tennis Centre, Botley Road	Currently in use as The Aegeas bowl, tennis centre and golf course. Including ancillary parking facilities	N/A	80.10	Brownfield	N/A Sport and recreation (further facilities)	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	67.78	969.25	12.32	61.60	1030.85	80.10	1145.43	0.00	0.00	1145.43	0.00	114.58	114.58	137.49
Employment sites																														
E9(1)		Southampton airport	North east of airport		Aerial photography	145.54	Greenfield	site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	145.54	2081.22	0.00	0.00	2081.22	145.54	2081.22	0.00	0.00	2081.22	0.00	0.00	0.00	0.00
E9(2)		Southampton airport	North east of airport	This is within the airport perimeter fence so is not farmed and is simply grassland	EBC email	19.54	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	19.54	97.70	97.70	19.54	279.42	0.00	0.00	279.42	0.00	181.72	181.72	218.07
E7		East of airport	Opportunities adjoining Eastleigh River Side	Grassland	EBC email	8.50	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	8.50	42.50	42.50	8.50	121.55	0.00	0.00	121.55	0.00	79.05	79.05	94.86
E6(2b)		East of airport	Land south of the sewage works	Grassland	EBC email	7.58	Greenfield	N/A Employment site	N/A	N/A	N/A	N/A	N/A	0.00	0.00	0.00	0.00	0.00	0.00	7.58	37.90	37.90	7.60	108.68	0.00	0.00	108.68	0.00	70.78	70.78	84.94
Additional site advised by EBC																														
HH1 Land west of Horton Heath		Fair Oak & Horton Heath	Firtree Farm & West of Horton Heath		GIS shapefile provided by EBC 201022, then aerial photography	129.07	Greenfield	1500	3600	396000	Chickenhall	27.00	9.90	3613.50	119.53	26.90	3215.36	4.65	66.50	4.89	24.45	3306.30	81.56	1166.31	47.51	237.55	1403.86	3613.50	-1902.44	1711.06	2053.27
Land at Hedge End Railway		Botley	North of Hedge End Railway Station	Currently in agricultural use - indeterminate farm type	GIS shapefile provided by EBC 190514, then aerial photography	45.81	Greenfield	379	909.6	100056	Peel Common	9.00	0.61	222.77	Intentionally blank, as land use change is covered by RMA already approved (680 dwellings permitted by outline application)													222.77	0.00	222.77	267.33
Maddoxford Lane O/16/79600 outline permission granted		Botley	LAND SOUTH OF MADDOXFORD LANE, BOTLEY, SOUTHAMPTON, SO32 2DB	Currently in agricultural use - indeterminate farm type	Pdf red line boundary provided by EBC 10/6/19, then aerial photography	3.82	Greenfield	50	120	13200	Peel Common	9.00	0.08	29.39	3.82	26.90	102.76	0.00	0.00	0.00	0.00	102.76	3.67	52.46	0.15	0.76	53.22	29.39	-49.54	-20.15	-20.15

Residential (excluding SGO & windfall)	**1763.07**
West of Horton Heath	**2053.27**
Overnight tourism	**93.99**
Open space, recreation	**137.49**
Large employment sites	**397.86**
Windfall sites	**2987.09**
Overall N budget	**7432.76**

Appendix VIII: Action Point 2.6 Statement of Common Ground on Biodiversity, Appendix 3 (October 2019)

The following technical note was produced in October 2019 as part of the Statement of Common Ground on biodiversity agreed between the Council, Natural England and the Environment Agency in advance of the hearing sessions, and addresses a range of issues which have now either been incorporated into the HRA mitigation strategy (Chapter 8) or are no longer relevant since the SGO has been deleted. It is included as an appendix to the HRA to respond to Action Point 2.6 agreed by the Council and the Inspector.

Addendum

URBAN EDGE ENVIRONMENTAL CONSULTING

Project	Habitats Regulations Assessment for the Eastleigh Borough Local Plan 2016-2036	**Date**	October 2019
Note	Addendum	**Ref**	UE0247
Author	Nick Pincombe	**Page**	1 of 7
Status	For issue		

1 Introduction

1.1 This Addendum to the Habitats Regulations Assessment (HRA) of the Eastleigh Local Plan has been prepared to address a limited number of specific issues raised by the Inspector or during discussions with Natural England and the Environment Agency in advance of the examination hearings, namely:

- Whether or not the Southern Damselfly Strategic Conservation Plan (SDSCP) is required as part of the HRA mitigation strategy;
- Whether or not the proposed new horizontal and vertical alignment of Highbridge Road requires further consideration in the Local Plan HRA;
- Proposed additions to Policy S5 requested by Natural England;
- Proposed additions to Policy DM6 requested by the Environment Agency; and
- Natural England's comments on the New Forest Interim Mitigation Strategy.

2 Southern Damselfly Strategic Conservation Plan

2.1 The Environment Agency (EA) has raised concerns over how and when the SDSCP would be implemented alongside development proposed in the Local Plan, especially considering that many of the SDSCP measures would take place outside of development sites.

2.2 The HRA has concluded no adverse effects on integrity as a result of atmospheric nitrogen pollution, in part because phosphate (P) is the limiting nutrient in southern damselfly (SD) breeding habitat rather than nitrate (N). There are however elevated P levels in the Itchen resulting from agriculture, cress & fish farms, and waste water treatment works (WWTW) discharges.

2.3 Section 6.11 of the HRA examines the water pollution impacts of the plan and at 6.11.20-21 states (based on research elsewhere) that measures taken to reduce N inputs are often also successful at reducing P. The HRA then goes on to calculate a nitrogen budget for the local plan and quantify the approximate amount of N that would need to be removed from the system to offset development

impacts. It does not specify exactly which measures will be implemented to achieve N removal (e.g. taking agricultural land out of production, planting reedbeds, etc). However, on the basis that extensive measures will need to be taken to deal with N, and that these are likely to simultaneously reduce P, it is likely that nutrient budgeting will be sufficient to protect ecological integrity in the Itchen (including SD) without needing to rely on implementation of the SDSCP.

2.4 In order to strengthen the protections for SD from adverse effects, the following additions (in *italic underline*) will be made to the mitigation strategy presented at chapter 8 of the HRA (June 2019):

- Para 8.4.1, bullet 3, first sentence: "In order to maintain the current conditions of water flow and quality supporting the River Itchen SAC, *including its Annex 1 habitat and Annex 2 species*…"
- Para 8.4.1, bullet 6, final sentence: "…geomorphology of the River Itchen *and hydrology of its floodplain (including through impacts on Annex 2 species*) can be minimised"
- Para 8.4.1, bullet 13: "Management of surface water runoff from the road network to ensure appropriate water quality and quantity *are maintained to achieve favourable conditions for Annex 1 habitat and Annex 2 species in the River Itchen SAC*"
- Para 8.6.1, at end of bullet 7: "… dissolved oxygen content) *affecting the River Itchen SAC, including its Annex 1 habitat and Annex 2 species*
- Para 8.6.1, at end of bullet 8: "… dissolved oxygen content) *affecting the River Itchen SAC, including its Annex 1 habitat and Annex 2 species*
- Para 8.8.2, bullet 6: "Development of a nutrient neutral policy (e.g. in a detailed Supplementary Planning Document), including offsetting measures and development contributions, as advised by Natural England. *This will include specific measures to address phosphate loads affecting the River Itchen SAC, its Annex 1 habitat and Annex 2 species including southern damselfly, upstream of the Chickenhall WWTW discharge*
- Para 8.8.2: delete existing bullet 7 which refers to the Southern Damselfly Strategic Conservation Plan
- Para 8.8.2, bullet 8, sub-bullet 3, end of second sentence: "other biodiversity objectives in the Borough *for example the Southern Damselfly Strategic Conservation Plan (Rushbrook, 2018a*)

2.5 This combination of measures is considered to provide the requisite certainty that the River Itchen SAC (including SD) will be protected against adverse effects on integrity. Notwithstanding this, policy DM11 (as proposed to be modified) secures delivery of the SDSCP under its requirement to achieve net gains for biodiversity.

2.6 It should be noted that there are other mechanisms which should or are being addressed to achieve P reduction targets, including catchment management, reductions at fish/cress farms, implementing Technically Achievable Limits (TAL) for P in WWTW discharge consents, and ensuring that Southern Water monitors the quality of discharges at Chickenhall. All of these should be pursued independently of (but in tandem with) Local Plan HRA mitigation. There will also need to be some form of published strategy (e.g. Supplementary Planning Document) which sets out the Local Plan nutrient budget, the measures envisaged to offset it, how these will be funded and implemented, and periodic updates on progress (i.e. number of dwellings vs amount of mitigation delivered); it would be

useful to tie N and P monitoring in with this so that the strategy can be adjusted if sufficient progress for either pollutant does not materialise.

3 Alignment of Highbridge Road

3.1 Policy S6 of the Local Plan supports construction of new link road from Allbrook to east of Fair Oak to serve the new communities north of Bishopstoke and Fair Oak. Phase 2 of the road will include a realignment of the existing B3335 Highbridge Road to improve the traverse of the Allbrook rail bridge for larger vehicles. The policy also requires that the road will, inter alia, not adversely affect (either alone or in combination with other plans or projects; and subject only to imperative reasons of overriding public interest in the absence of alternative solutions) the integrity of the River Itchen Special Area of Conservation or any other European site. This will include the provision of appropriately designed bridges across the river and its tributaries, measures to manage hydrology, and any other measures required.

3.2 The supporting text to Policy S6 explains that the realignment will include a new bridge which crosses the River Itchen Special Area of Conservation (SAC), and the remainder of the road also passes within 200 metres of the SAC. The road, including the realignment also lies within the flood zone and needs to be designed to mitigate flooding issues.

3.3 The new alignment of Highbridge Road was taken into account in air pollution modelling for the Local Plan to enable the HRA to fully assess the potential for traffic flows to impact on features of the River Itchen SAC. This concluded that there would be no adverse effects on the integrity of the SAC; see paragraph 7.2.32 of the HRA (June 2019, examination reference SUB017a).

3.4 The HRA (section 6.12) also considered the potential for adverse effects on the River Itchen SAC resulting from a new bridge over the Itchen Navigation to facilitate the Highbrdige Road realignment. It considered the potential for water pollution, noise and vibration in relation to migratory fish, and otter passage, and concluded that standard mitigation measures are likely to be available and should be applied during detailed design of the bridge and through project-level HRA. It also considered but discounted potential impacts on southern damselfly dispersal because the Itchen Navigation does not provide suitable habitat for the species.

3.5 It has recently come to light that, in order to maximise the benefits of the improved alignment of Highbridge Road, it will be necessary to raise the road surface above the existing level. Preliminary design drawings suggest this can be achieved by raising the road onto a new embankment which would supported by a retaining wall on the south side to ensure it does not encroach into the SAC; see Figure 1 at the end of this document.

3.6 Ditch 2c (as referred to within the Southern Damselfly Survey and Habitat Assessment produced by Dr Ben Rushbrook in 2017) is located very close to the northern boundary of the SAC in this location. Ditch 2c is mostly dry in the summer and only takes water in the winter, and its historic link to the Navigation now appears to be lost. A single southern damselfly was recorded at the eastern end of ditch 2c during the survey but this is thought to have been a vagrant from the adjacent high quality habitat in transect 3 and 2b. In general ditch 2c is very poor southern damselfly habitat.

3.7 The design and construction method for the retaining wall, embankment and road will need to ensure that disturbance to adjacent habitats within the SAC is minimised. Mitigation will need to be developed during the detailed design stage to ensure that any short- or long-term loss of habitat function, or changes to hydrology or habitat buffering through loss of scrub, can be avoided.

3.8 JBA Consulting, which produced the hydrological study for the Strategic Growth Option (SGO) at Bishopstoke and Fair Oak, has provided an initial analysis on the new alignment and retaining wall[1]. A comparison of the flood modelling we carried out in 2018 and the location plan shows that the wall is mainly located outside of the 1 in 100-year floodplain. So long as the embankment and retaining wall are designed to avoid any changes to the Itchen bank levels downstream of the site, water will still be able to top the bank and the hydrology would be unaffected.

3.9 In conclusion, based on the information currently available the proposed horizontal and vertical alignment of Highbridge Road is unlikely to significantly affect the River Itchen SAC and does not require further consideration in the Local Plan HRA. However, project-level HRA will need to be undertaken during the detailed design stages for the road.

4 Policy S5

4.1 During discussions on a Statement of Common Ground, Natural England requested that policy S5 should be amended to read (latest amendments in underline):

> *Development will appropriately manage the risk of flooding to the new communities and not increase the risk of flooding to existing communities. Where possible and practicable, opportunities to reduce the causes and impacts of flooding should be implemented (through the use of natural flood management techniques were appropriate). Development will include sustainable drainage systems which are appropriate to the overall design of the new communities, and preserve the water quality and flows in the Itchen and its tributaries and other flood risk management measures as required. A nutrient budget to address both nitrates and phosphates should be calculated to inform the design and capacity of the surface water drainage system taking into account planned improvements at Chickenhall wastewater treatment works. Subject to the results of the nutrient budget, a strategic wetland should be identified as a key asset of the sustainable urban drainage system in reducing diffuse nitrogen and phosphates as well as fine sediment. Applications for development will need to:*
>
> *i. Incorporate regular monitoring of surface water discharge into the Itchen during pre-construction, construction and operational phases;*
>
> *ii. Include a requirement to stop works where monitoring shows measurable levels of pollutants and measures taken to resolve any problems or unforeseen issues;*

[1] Pers. comm. (2019): Email correspondence between Emma Barnett (Adams Hendry on behalf of Eastleigh Borough Council) and Natasha Todd-Burley (JBA Consulting) dated 30 September 2019.

iii. Include full details of who will adopt the drainage system and manage it over the lifetime of the development;

iv. Include step-in rights for the local authority to take over where a different management authority are no longer able to carry out management of the system;

v. Ensure adequate financial provision can be secured for the long term maintenance of the operational SuDS system including the strategic wetland; and

vi. Provide details of the three forms of naturalised filtration systems to be used.

4.2 These proposed additions to policy S5 are considered to be consistent with the findings of the HRA in relation to the hydrological impacts of the SGO. They will be incorporated into the mitigation strategy set out at section 8.4 of the HRA at Proposed Modifications stage.

5 Policy DM6

5.1 During discussions on a Statement of Common Ground, the Environment Agency requested that policy DM6 should be amended to expand the scope of projects required to provide three forms of naturalised filtration for surface water drainage to protect the quality of water flows into the River Itchen SAC and Solent Maritime SAC. Currently DM6 requires that sites of more than 1ha or within 100m of either SAC should provide three forms of naturalised filtration. It is currently proposed to amend DM6 as follows (latest amendments in underline):

New development (excluding extensions to dwellings and changes of use), will only be permitted if it incorporates Sustainable Drainage Systems (SuDS). Wherever feasible, naturalised filtration should be included within the treatment train as follows:

- *On sites of 1 hectare or more, or within 100m of the River Itchen SAC or Solent Maritime SAC, SuDS schemes should include at least three forms of naturalised filtration. On sites within 100m of headwaters and tributaries draining into a SAC, SuDS schemes should include at least three forms of naturalised filtration unless hydrological studies and project-level Habitats Regulations Assessment demonstrate this to be unnecessary to protect the integrity of the SAC and its qualifying features.*
- *On sites of between 0.5 hectares and 1 hectare, SuDS schemes should include at least two forms of naturalised filtration; and*
- *On sites of less than 0.5 hectares non-naturalised SuDS e.g. permeable paving will be considered where justified.*

5.2 These proposed amendments to policy DM6 are considered to consistent with the findings of the HRA in relation to site-specific hydrological impacts, and are also in line with the mitigation strategy set out at section 8.6 of the HRA.

6 New Forest Interim Mitigation Strategy

6.1 During discussions on a Statement of Common Ground, Natural England requested that it be made clear that the Interim Mitigation Strategy for the recreational impacts on the New Forest will be finalised and agreed with Natural England. The Statement of Common Ground now includes the following wording in the section which discusses policy DM11:

> *17.7 The New Forest Interim Mitigation strategy (ED12C) will be finalised, following consultation with Natural England, prior to the adoption of the Local Plan as the basis for securing project level mitigation where required and will be superseded in due course by the final strategy.*

Figure 1: Realignment of Highbridge Road showing retaining wall outside of the River Itchen SAC

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- Any works undertaken as a consequence of the recommendations provided within this report should be subjected to the necessary health & safety checks and full risk assessments.

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