

# Southbourne Site Allocation DPD

Habitats Regulations Assessment

Chichester District Council

April 2026

## Quality information

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# 1. Introduction

- 1.1 AECOM has been commissioned by Chichester District Council (CDC) to undertake a Habitats Regulations Assessment (HRA) of the Southbourne Site Allocation Development Plan Document (DPD). This is to assist CDC in its role as the competent authority to determine whether the DPD is associated with Likely Significant Effects (LSEs) and, where these cannot be excluded, adverse effects on the integrity of Habitats Sites. These comprise sites that are designated for their international conservation importance, including Special Areas of Conservation (SACs), candidate SACs (cSACs), Special Protection Areas (SPAs), proposed SPAs (pSPAs) and, as a matter of Government policy, Ramsar sites. The legal basis underpinning the need for HRA is encompassed by the Conservation of Habitats and Species Regulations 2017 (as amended).
- 1.2 The purpose of the DPD for the Southbourne Allocation is to define its site boundary, set out relevant planning context for the allocation (including associated environmental impacts) and provide a high-level masterplan for the successful delivery of the allocation. The Southbourne Allocation was originally allocated in the Chichester Local Plan (CLP) 2021-2039, which was formally adopted in August 2025. The allocation was referred to in Policy A13 (Southbourne Broad Location for Development), which identified that development requirements within the site would be met through the Southbourne Allocation DPD, including approximately 800 dwellings, local employment opportunities and supporting community uses/facilities.
- 1.3 As part of the regular planning process, the Southbourne Allocation was assessed in the HRA accompanying the CLP before its adoption. Given adoption, it can be concluded that the CLP contained an adequate policy framework to protect the integrity and Conservation Objectives of relevant Habitats Sites and that the Local Plan HRA provided a thorough assessment of the Southbourne Allocations. The primary purpose of the DPD HRA is, therefore, to assess its content and ensure that the conclusions of the CLP HRA can continue to be relied upon. The DPD represents a lower tier in the planning hierarchy and is bound by the legal framework provided in the overarching CLP.
- 1.4 Additionally, the HRA will also consider new allocation-relevant evidence that has emerged in relation to specific impact pathways since adoption of the CLP. This is particularly important regarding the impact pathways recreational pressure, water quality (nutrient neutrality) and loss of functionally linked habitat. Emerging evidence included in the DPD HRA encompasses the following:
- Recreational pressure – the DPD will be assessed for whether due recognition to recreational spaces (also referred to as Suitable Alternative Natural Greenspaces [SANGs]) has been given in the associated masterplan;
  - Nutrient neutrality – the CLP HRA identified that measures would be required to offset the nitrogen budget associated with the Southbourne Allocation (although any solutions would not be required in the first five years of the plan period). However, the initial nutrient budget was calculated for 1,050 dwellings, with the DPD only actually allocating 800 dwellings. Therefore, the nitrogen budget needs to be recalculated. Furthermore, given that the first five years of the CLP have passed and the site is nearing planning application, the HRA will provide an update on the feasibility and status of any strategic mitigation solutions; and
  - Loss of functionally linked habitat – while the site boundary does not include any areas identified in the Solent Wader and Brent Goose Strategy (SWBGS), Natural England have raised that the entire site boundary is considered suitable for qualifying birds from the Chichester and Langstone Harbours SPA/Ramsar. Therefore, passage and wintering bird surveys were undertaken between October 2022 and February 2023 to establish any usage of the site by qualifying birds.

## Legislative context

- 1.5 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (“the Withdrawal Act”). This established a transition period, which ended on 31

December 2020. However, the Withdrawal Act retains the body of existing EU-derived law within our domestic law and it is clear that the HRA process continues post-Brexit.

- 1.6 The need for Appropriate Assessment (Figure 1) is set out within the Conservation of Habitats and Species Regulations 2017 (as amended).
- 1.7 The HRA process applies the 'Precautionary Principle'<sup>1</sup> to Habitats Sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. Plans and projects with predicted adverse impacts on Habitats Sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.
- 1.8 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

**Figure 1: The legislative basis for Appropriate Assessment**

**Conservation of Habitats and Species Regulations 2017 (as amended)**

The Regulations state that:

*“A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site”.*

- 1.9 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Habitats Directive from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'.
- 1.10 In spring 2018 the 'Sweetman' European Court of Justice ruling<sup>2</sup> clarified that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce a harmful effect on a European site that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA has been cognisant of that ruling.

## Scope of the Project

- 1.11 There is no guidance that dictates the physical scope of an HRA of a DPD in all circumstances. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than by arbitrary 'zones'. In line with the HRA undertaken for the CLP HRA, the following Habitats Sites were considered in the assessment:
  - All sites within the boundary of Chichester District; and,
  - Other sites shown to be linked to development within the authority boundary through a known impact 'pathway' (discussed below).
- 1.12 Briefly defined, impact pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon a Habitats Site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect a Habitats Site through, for example, disturbance of wintering or breeding birds.

<sup>1</sup> The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *“When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis”.*

<sup>2</sup> People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

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

## The Layout of this Report

- 1.14 Chapter 2 of this report explains the methodology by which this HRA has been carried out, including the three essential tasks that form part of HRA. Chapter 3 provides detailed background on the Habitats Sites that were considered in the CLP HRA, and which are also considered in relation to the Southbourne DPD. Chapter 4 summarises the main impact pathways of relevance to the Habitats Sites. Chapter 5 undertakes the LSEs screening assessment of impact pathways and Habitats Sites, focusing specifically on those that have been screened out and where the DPD HRA deviates from the CLP HRA. Chapter 6 undertakes the AA of impact pathways and Habitats Sites for which LSEs could not be excluded. Chapter 7 provides the main conclusions reached in the DPD HRA.

## Quality Assurance

- 1.15 This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.
- 1.16 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017).

## 2. Methodology

### Introduction

- 2.1 The HRA has been carried out with reference to the UK government guidance on HRA<sup>3</sup>. Figure 2 below outlines the stages of HRA according to current EC guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the plan until no significant adverse effects remain.

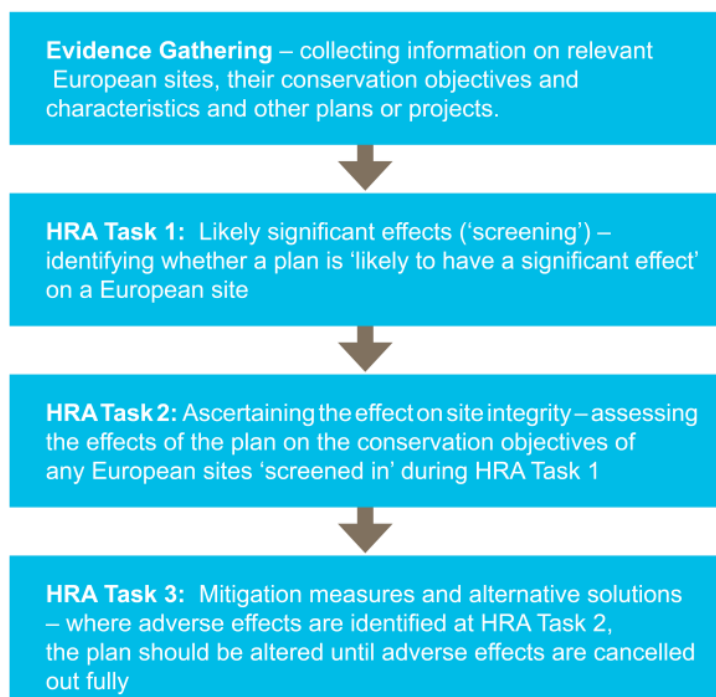


Figure 2. Four Stage Approach to Habitats Regulations Assessment.

### Description of HRA Tasks

#### HRA Task 1 – Screening for Likely Significant Effects (LSE)

- 2.2 Following evidence gathering, the first stage of any Habitats Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

*'Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon Habitats Sites?'*

- 2.3 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in significant adverse effects upon Habitats Sites, usually because there is no mechanism for an adverse interaction. This stage is undertaken in Chapter 4 of this report and in Appendix A.

#### HRA Task 2 – Appropriate Assessment (AA)

- 2.4 Where it is determined that a conclusion of 'no Likely Significant Effect' cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'Appropriate Assessment' is not a technical term. In other words, there are no particular technical

<sup>3</sup> <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>

analyses, or level of technical analysis, that are classified by law as belonging to appropriate assessment rather than determination of likely significant effects.

- 2.5 By virtue of the fact that it follows the screening process, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level screening analysis and assess the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the European site(s)).
- 2.6 Also, in 2018 the Holohan ruling<sup>4</sup> was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that '*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*' [emphasis added]. This has been considered in relation to the Arun Valley SPA / Ramsar, which supports mobile bird species and The Mens SAC, Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, which all support mobile bat species.

## HRA Task 3 – Avoidance and Mitigation

- 2.7 Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on Habitats Sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation for recreational impacts on Habitats Sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.
- 2.8 In evaluating significance, AECOM has relied on professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the Habitats Sites considered within this assessment.
- 2.9 When discussing 'mitigation' for a Local Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the detail of the mitigation measures themselves since the Local Plan document is a high-level policy document.

## Geographical Scope of the HRA

- 2.10 The geographic scope of the DPD HRA was primarily guided by the adoption of the source-pathway-receptor model, determining whether there is a potential impact pathway connecting development to any Habitats Sites. As highlighted earlier, in order to align with the overarching CLP HRA, the impact pathways and Habitats Sites considered were the same as in that assessment.
- 2.11 The following Habitats Sites lie (at least partly) within Chichester District:
- Chichester and Langstone Harbours SPA and Ramsar sites;
  - Pagham Harbour SPA and Ramsar sites;
  - Solent Maritime SAC; and
  - Solent and Dorset Coast SPA.
- 2.12 The following Habitats Sites lie within Chichester District, but outside the area covered by the CLP as they fall within the South Downs National Park Authority area. Although the South Downs National Park has its own planning policies, these Habitats Sites are considered as there are impact pathways potentially linking the Southbourne Allocation to these Habitats Sites:
- Ebernoe Common SAC;

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<sup>4</sup> Case C-461/17

- Singleton & Cocking Tunnels SAC;
  - The Mens SAC;
  - Duncton to Bignor Escarpment SAC; and,
  - Kingley Vale SAC.
- 2.13 The following Habitats Sites lie outside of the CLP area. However, since that time Natural England have raised a concern regarding inappropriate water levels and the extent to which these are affected by public water supply, so the Habitats Site was considered in the CLP HRA (and in this DPD HRA):
- Arun Valley SAC/SPA/Ramsar.
- 2.14 The locations of the above mentioned Habitats Sites are illustrated in Appendix A, Figure A1. It should be noted that the presence of a conceivable pathway linking the DPD to a Habitats Site does not mean that LSEs will occur.

## Confirming Other Plans and Projects That May Act ‘In Combination’

- 2.15 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the Habitats Site(s) in question.
- 2.16 In the case of the Southbourne DPD, the main plan with potential in-combination effects to consider is the overarching CLP. This specifies the quantum and geographic location of growth in Chichester District and, therefore, the development most likely to result in cumulative impacts with the DPD on the relevant Habitats Sites. Additionally, further growth will be delivered in other authorities adjoining Chichester District through the respective Local Plans, including the South Downs National Park Authority, Arun District, Horsham District, Waverley Borough, East Hampshire, Havant Borough and Portsmouth City.
- 2.17 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.
- 2.18 Regarding the DPD HRA it is to be noted that the various impact pathways in Chapter 4 have been screened out due to an absence of a conceivable link, not because the contribution of the DPD to an impact is inconsequential alone. The assessment of impact pathways taken forward to AA is inherently in-combination, such as is the case for atmospheric pollution (air quality modelling considers all traffic growth in the relevant modelling scenarios) and recreational pressure (visitor survey data and core recreational catchments are derived from all visitors to Habitats Sites, irrespective of which authority they come from).
- 2.19 There are other plans and projects that are relevant to the ‘in combination’ assessment, and the following were taken into account in the overarching CLP HRA (and are considered in this DPD HRA):
- Revised Portsmouth Water’s Water Resource Management Plan (June 2021);
  - Draft Portsmouth Water Resources Management Plan 2024 (October 2022)
  - South East Water’s Final Water Resources Management Plan (2019);
  - Shoreline Management Plan 13 – North Solent - Selsey Bill to Hurst Spit (December 2010);
  - Shoreline Management Plan 12 – South Downs - Beachy Head to Selsey Bill (2006);
  - Pagham to East Head Coastal Defence Strategy (2014);

- Portchester Castle to Emsworth draft Coastal Flood and Erosion Risk Management Strategy (2012);
- Chichester Harbour AONB Management Plan 2019-2024 (February 2019);
- Chichester Harbour AONB State of the AONB Report 2018;
- South Downs Partnership Management Plan 2020-2025;
- Pagham Harbour Local Nature Reserve Management Plan (2014);
- Pagham Harbour Local Nature Reserve Annual Report 2019-2020;
- The relevant Environment Agency Abstraction Management Strategies;
- The relevant Environment Agency River Basin Management Plans;
- The relevant Environment Agency Water Level Management Plans;
- Environment Agency, Southern Water and Chichester District Council position statements on waste-water treatment works;
- Stage 3 and (as appropriate) 4 of the Environment Agency's Review of Consents process for the Habitats Sites covered in this assessment (where available);
- European Site Management and Access Management Plans where available;
- Chichester District Council Air Quality Management Plan 2021 – 2026 (February 2021);
- West Sussex Local Transport Plan 2022-2026 (April 2022);
- West Sussex Joint Minerals Local Plan to 2033 (July 2018);
- West Sussex Waste Local Plan 2014-2031 (April 2014);
- Review of West Sussex Waste Local Plan 2014-2031 (May 2019); and
- Chichester District Council's Local Biodiversity Action Plan 2020-2024 (February 2020).

## 3. Relevant Habitats Sites

### Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Solent and Dorset Coast SPA<sup>5</sup>

#### Introduction

- 3.1 Chichester and Langstone Harbours SPA and Ramsar site encompasses two large sheltered estuarine basins: Langstone and Chichester Harbours on the Hampshire/Sussex border. The two harbours are separated by Hayling Island and meet at Langstone Bridge. The SPA is comprised of two Sites of Special Scientific Interest (SSSI): Chichester Harbour SSSI and Langstone Harbour SSSI.
- 3.2 Chichester Harbour and Langstone Harbour, along with the coastal waters between the two harbours, form part of the Solent Maritime SAC, along with Portsmouth Harbour SPA/Ramsar site and Solent & Southampton Water SPA/Ramsar site.
- 3.3 Chichester Harbour SSSI is a large estuarine basin within which extensive mud and sandflats are exposed at low tide. The site is of particular significance for wintering wildfowl and waders and also for breeding birds both within the Harbour and in the surrounding pastures and woodlands. There is also a wide range of habitats which have important plant communities.
- 3.4 Chichester Harbour and the adjoining Portsmouth and Langstone Harbours together form a single system which is among the ten most important intertidal areas for waders in Britain.

#### Chichester and Langstone Harbours SPA/Ramsar

- 3.5 Features of European Interest<sup>6</sup> Chichester and Langstone Harbours SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive
- 3.6 During the breeding season:
  - Common Tern *Sterna hirundo*: 0.3% of the breeding population in Great Britain (5-year mean, 1992-1996);
  - Sandwich Tern *Sterna sandvicensis*: 0.2% of the breeding population in Great Britain (5-year mean, 1993-1997); and
  - Little Tern *Sternula albifrons*: 4.2% of the breeding population in Great Britain (5-year mean, 1992-1996).
- 3.7 Over winter:
  - Bar-tailed Godwit *Limosa lapponica*: 3.2% of the wintering population in Great Britain (5-year peak mean 1991/92-1995/96).
- 3.8 This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:
- 3.9 Over winter:
  - Pintail *Anas acuta*: 1.2% of the population in Great Britain (5-year peak mean 1991/92-1995/96);

<sup>5</sup> Note that this includes the Medmerry realignment, which although close to Pagham Harbour SPA/Ramsar site was created to compensate for coastal squeeze losses on the Solent & Southampton Water and Chichester & Langstone Harbours. In practice there is considerable overlap between the 5.6km zone from Medmerry, the 5.6km zone from Chichester Harbour and the 3.5km zone from Pagham Harbour.

<sup>6</sup> <http://publications.naturalengland.org.uk/publication/5789102905491456> [Accessed: 15/04/2026]

- Shoveler *Anas clypeata*: 1% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Teal *Anas crecca*: 0.5% of the population (5-year peak mean 1991/92-1995/96);
- Wigeon *Anas penelope*: 0.7% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Turnstone *Arenaria interpres*: 0.7% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Dark-bellied Brent goose *Branta bernicla bernicla*: 5.7% of the population (5-year peak mean 1991/92-1995/96);
- Sanderling *Calidris alba*: 0.2% of the population (5-year peak mean 1991/92-1995/96);
- Dunlin *Calidris alpina alpina*: 3.2% of the population (5-year peak mean 1991/92-1995/96);
- Ringed Plover *Charadrius hiaticula*: 3% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Red-breasted Merganser *Mergus serrator*: 3% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Curlew *Numenius arquata*: 1.6% of the population in Great Britain (5-year peak mean 1991/92-1995/96);
- Grey Plover *Pluvialis squatarola*: 2.3% of the population (5-year peak mean 1991/92-1995/96);
- Shelduck *Tadorna tadorna*: 3.3% of the population in Great Britain (5-year peak mean 1991/92-1995/96); and
- Redshank *Tringa totanus*: 1% of the population (5-year peak mean 1991/92-1995/96).

3.10 The area also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting an internationally important assemblage of birds. Over winter, the area regularly supports 93,230 individual waterfowl (5-year peak mean 01/04/1998) including: Wigeon, Bar-tailed Godwit, Dark-bellied Brent Goose, Ringed Plover, Grey Plover, Dunlin, Redshank, Shelduck, Curlew, Teal, Pintail, Shoveler, Red-breasted Merganser, Sanderling and Turnstone.

## Conservation Objectives<sup>7</sup>

- 3.11 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;
- 3.12 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.
- 3.13 Chichester and Langstone Harbours **Ramsar** site qualifies under the following Ramsar criteria.<sup>8</sup>

<sup>7</sup> Natural England. European Site Conservation Objectives for Chichester and Langstone Harbours Special Protection Area (2014) Available: <http://publications.naturalengland.org.uk/publication/5789102905491456> [Accessed: 15/04/2026].

<sup>8</sup> <http://jncc.defra.gov.uk/pdf/RIS/UK11013.pdf> [Accessed: 15/04/2026]

**Table 1. Chichester and Langstone Harbours Ramsar site criteria.**

Ramsar criterion	Description of criterion	Chichester and Langstone Harbours
1	A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.	Two large estuarine basins linked by the channel which divides Hayling Islands from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.
5	A wetland should be considered internationally important if it regularly supports assemblages of waterbirds of international importance.	76,480 waterfowl (5-year peak mean 1998/99–2002/03).
6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	<p>Species with peak counts in spring/autumn:</p> <p>Ringed plover <i>Charadrius hiaticula</i>: 853 individuals, representing an average of 1.1% of the population (5-year peak mean 1998/99–2002/03).</p> <p>Black-tailed godwit <i>Limosa limosa islandica</i>: 906 individuals, representing an average of 2.5% of the population (5-year peak mean 1998/99–2002/03).</p> <p>Common redshank <i>Tringa totanus totanus</i>: 2577 individuals, representing an average of 1% of the population (5-year peak mean 1998/99–2002/03).</p> <p>Species with peak counts in winter:</p> <p>Dark-bellied brent goose <i>Branta bernicla bernicla</i>: 12,987 individuals, representing an average of 6% of the populations (5-year peak mean 1998/99–2002/03).</p> <p>Common shelduck <i>Tadorna tadorna</i>: 1,468 individuals, representing an average of 1.8% of the GB population (5-year peak mean 1998/99–2002/03).</p> <p>Grey plover <i>Pluvialis squatarola</i>: 3,043 individuals, representing an average of 1.2% of the population (5-year peak mean 1998/99–2002/03).</p> <p>Dunlin <i>Calidris alpina alpina</i>: 33,436 individuals, representing an average of 2.5% of the population (5-year peak mean 1998/99–2002/03).</p> <p>Species regularly supported during the breeding season:</p> <p>Little tern <i>Sternula albifrons albifrons</i>: 130 apparently occupied nests, representing an</p>

**Note:** Defra and Natural England have not produced a Conservation Advice package, instead focussing on the production of High Level Conservation Objectives. Natural England considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar interests.

	average of 1.1% of the breeding populations (Seabird 2000 census) <sup>9</sup>
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## Medmerry Nature Reserve

3.14 At present Medmerry has the status of 'Identified Compensatory Habitat' which gives it protection through the planning system (specifically, paragraph 118 of the National Planning Policy Framework identifies that such compensatory habitat must be treated it as if it is a European site). If/when it becomes identified by Natural England as a potential SPA (pSPA) this would give it legal protection under the Habitats Regulations 2017. Since it is not actually a pSPA it does not have specific official conservation objectives or designated interest features. However, for the purposes of future-proofing the HRA of the Local Plan it is reasonable to assume that during the plan period it will acquire a collection of interest features similar to that of Chichester & Langstone Harbour SPA and the Solent Maritime SAC. The site is already known to support Brent geese, golden plover, lapwing and avocet and also has extensive areas of intertidal mudflat and early successional saltmarsh.

## Solent Maritime SAC

### Features of European Interest<sup>10</sup>

3.15 Solent Maritime SAC qualifies as a SAC for both habitats and species. Firstly, the site contains the following Habitats Directive Annex I habitats:

- Estuaries;
- Cord-grass (*Spartina*) swards (*Spartinion maritimae*);
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*);
- Subtidal sandbanks (sandbanks which are slightly covered by seawater all the time);
- Intertidal mudflats and sandflats (mudflats and sandflats not covered by seawater at low tide);
- Lagoons (coastal lagoons);
- Annual vegetation of drift lines;
- Coastal shingle vegetation (perennial vegetation of stony banks);
- Glasswort (*Salicornia*) and other annuals colonising mud and sand; and
- Shifting dunes with marram (shifting dunes along the shoreline with *Ammophila arenaria* 'white dunes').

3.16 Secondly, the site also qualifies for the following Habitats Directive Annex II species:

- Desmoulin's whorl snail (*Vertigo moulinsiana*).

### Conservation Objectives<sup>11</sup>

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

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

<sup>9</sup> Species identified subsequent to designation for future possible consideration.

<sup>10</sup> Available online: <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030059> [Accessed: 15/04/2026].

<sup>11</sup> Natural England. European Site Conservation Objectives for Solent Maritime Special Area of Conservation (2014) Available online: <http://publications.naturalengland.org.uk/publication/5762436174970880> [Accessed: 15/04/2026].

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

## Historic Trends and Current Conditions

- 3.18 Langstone Harbour is fringed by urban and industrial development, whereas Chichester Harbour is surrounded mainly by high grade farmland. The site is subjected to significant recreational pressures, especially during summer months.
- 3.19 Both harbours are managed by statutory bodies whose remits include conservation of the natural environment. Conservation bodies have an advisory input to the management of the harbours and play an active role in the management of numerous Local Authority and RSPB nature reserves around the site. In 2000, a collaborative Solent European Marine Sites project was set up with the aim of developing a strategy for managing the marine and coastal resources of the Solent in a more integrated and sustainable way.
- 3.20 The Environment Agency Review of Consents and the HRA of the South East Regional Spatial Strategy both identified that development within the Chichester area may be constrained by restrictions that will be/have been placed on some Wastewater Treatment Works (WwTW) in order to ensure suitable water quality in the receiving marine/coastal waters of the two harbours. Memoranda of understanding currently exist between both the Environment Agency (EA) and Southern Water Services and Chichester Council which clearly set out which WwTWs are constrained, the quantum of new housing that can be accommodated and the available strategies for delivering housing while avoiding adverse effects on the Habitats Sites.
- 3.21 Natural England condition assessment of Chichester Harbour SSSI indicated that 22% of the site was in favourable condition, with the remaining 78% recovering from an unfavourable status. In the case of Langstone Harbour SSSI these figures were 9% and 91% respectively.

## Key Environmental Conditions

- 3.22 The key environmental conditions that support the features of European interest have been defined as:
- Sufficient space between the site and development to allow for managed retreat of intertidal habitats (to avoid coastal squeeze);
  - Avoidance of dredging or land-claim of coastal habitats;
  - Maintenance of freshwater inputs;
  - Balance of saline and non-saline conditions;
  - Unpolluted water;
  - Absence of nutrient enrichment;
  - Absence of non-native species;
  - Maintenance of adjacent grassland (key foraging resource); and
  - Absence of disturbance.

# Pagham Harbour SPA/Ramsar

## Introduction

3.23 Pagham Harbour comprises an extensive central area of saltmarsh and tidal mudflats, with surrounding habitats including lagoons, shingle, open water, reed swamp and wet permanent grassland. The intertidal mudflats are rich in invertebrates and algae and provide important feeding areas for birds. Most of the site is a Local Nature Reserve managed by West Sussex County Council.

## Features of European Interest

3.24 Pagham Harbour SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive<sup>12</sup>.

During the breeding season:

- Common Tern *Sterna hirundo*: 0.5% of the breeding population in Great Britain (1996); and
- Little Tern *Sternula albifrons*: 0.3% of the breeding population in Great Britain (5-year mean, 1992-1996).

Over winter:

- Ruff *Philomachus pugnax*: 1.4% of the population in Great Britain (5-year peak mean 1995–1999); and

3.25 This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species.

Over winter:

- Dark-bellied Brent Goose *Branta bernicla bernicla*: 0.6% of the population (5-year peak mean 1991/2–1995/6).

3.26 Pagham Harbour Ramsar site qualifies under one of the nine **Ramsar** criteria<sup>13</sup>.

**Table 2. Pagham Harbour Ramsar site criteria**

Ramsar criterion	Description of criterion	Pagham Harbour
6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	Dark-bellied brent goose <i>Branta bernicla bernicla</i> : 2512 individuals, representing an average of 1.1% of the populations (5-year peak mean 1998/99-2002-03)  Black-tailed godwit <i>Limosa limosa islandica</i> : 377 individuals, representing an average of 1% of the population (5-year peak mean 1998/99–2002/03). <sup>14</sup>

3.27 It is important to note that this area also includes the Medmerry Realignment Scheme which was created in order to provide compensatory habitat for future effects on the Solent Habitats Sites as a result of coastal defence work. However, Medmerry has already been discussed extensively in the preceding chapter covering Chichester Harbour SPA and Solent Maritime SAC (since the realignment was intended to compensate for coastal squeeze losses at the Solent Maritime SAC).

<sup>12</sup> <http://jncc.defra.gov.uk/pdf/SPA/UK9012041.pdf> [Accessed: 15/04/2026]

<sup>13</sup> <http://jncc.defra.gov.uk/pdf/SPA/UK9012041.pdf> [Accessed: 15/04/2026]

<sup>14</sup> This population was identified subsequent to designation, for possible future consideration.

## Conservation Objectives<sup>15</sup>

- 3.28 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.

## Historic Trends and Current Pressures

- 3.29 The majority of the site is managed as a nature reserve by West Sussex County Council. Historical land drainage for agricultural purposes is being addressed through the Local Nature Reserve Management Plan and Management Agreements, while pollution from inadequate treatment of sewage discharges is reviewed by the Environmental Agency.
- 3.30 Studies by the Environment Agency indicate that existing sewage discharges are not having a significant adverse effect on the integrity of the Pagham Harbour SPA/Ramsar site.
- 3.31 The latest Natural England condition assessment of Pagham Harbour SSSI indicated that 93% of the site was in favourable condition. An updated condition assessment is due to take place early 2023.

## Key Environmental Conditions

- 3.32 The following key environmental conditions have been identified for the site:
- Sufficient space between the European site and development to allow for managed retreat of intertidal habitats (to avoid coastal squeeze);
  - Maintenance of appropriate hydrological regime;
  - Unpolluted water;
  - Absence of nutrient enrichment of water;
  - Absence of non-native species; and
  - Absence of disturbance.

## Ebernoe Common SAC

### Introduction

- 3.33 Ebernoe Common is an internationally important example of ancient woodland. It contains a wide range of structural and vegetation community types which have been influenced in their development by differences in the underlying soils and past management. The native trees, particularly those with old growth characteristics, support rich lichen and fungal communities and a diverse woodland breeding bird assemblage. Nationally important maternity roosts for barbastelle and Bechstein's bat occur within the woodland.
- 3.34 At its closest point the SAC lies adjacent to the Local Plan area in the vicinity of Kirdford, Plaistow and Ifold.

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<sup>15</sup> [Accessed: 15/04/2026]

## Features of European Interest<sup>16</sup>

- 3.35 Ebernoe Common SAC qualifies as an SAC for both habitats and species. Firstly, the site contains the following Habitats Directive Annex I habitat:
- Beech forests on acid soils.
- 3.36 Secondly, the site contains the following Habitats Directive Annex II species:
- Barbastelle *Barbastella barbastellus*; and
  - Bechstein's bat *Myotis bechsteinii*.

## Historic Trends and Current Conditions

- 3.37 Ebernoe Common SAC is owned and managed by Sussex Wildlife Trust (SWT). There is evidence that the Common has contained a mixture of open pasture and high forest for centuries. Ebernoe Nature Reserve is an Open Access site and is fairly well used (SWT estimate up to 3,000 visitors per annum)<sup>17</sup>.
- 3.38 In the most recent Natural England condition assessment process, 93% of Ebernoe Common SSSI was considered to be in favourable condition, with the remainder recovering from unfavourable status.

## Conservation Objectives<sup>18</sup>

- 3.39 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;
- Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; The extent and distribution of qualifying natural habitats and habitats of qualifying species
  - The structure and function (including typical species) of qualifying natural habitats
  - The structure and function of the habitats of qualifying species
  - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
  - The populations of qualifying species, and,
  - The distribution of qualifying species within the site.

## Key Environmental Conditions

- 3.40 The key environmental conditions that support the features of European interest have been defined as:
- Appropriate management;
  - Minimal atmospheric pollution – may increase the susceptibility of beech trees to disease and alter epiphytic communities;
  - Absence of disturbance;
  - In a wider context, bats require good connectivity of landscape features to allow foraging and commuting;

<sup>16</sup> <http://publications.naturalengland.org.uk/file/6245694033625088> [Accessed 15/04/2026]

<sup>17</sup> Monk-Terry, M. & Lyons, G. Sussex Wildlife Trust Ebernoe Nature Reserve Management Plan 2010-2015.

<sup>18</sup> Natural England. European Site Conservation Objectives for Ebernoe Common Special Area of Conservation (2014). Available online: <http://publications.naturalengland.org.uk/publication/6255629165395968> [Accessed: 15/04/2026].

- Both bat species have close association with woodland. Areas of undesignated woodland adjacent to SAC may be of most importance to population; and
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

## The Mens SAC

### Introduction

- 3.41 The Mens remains one of the most extensive examples of Wealden Woodland in West Sussex. It is important for its size, structural diversity and the extremely rich fungal and lichen floras which occur here. The wood supports a diverse community of breeding birds and is the locality of a nationally endangered species of fly.
- 3.42 At its closest point the SAC lies adjacent to part of the Local Plan area to which the Chichester Local Plan applies.

### Features of European Interest<sup>19</sup>

- 3.43 The Mens SAC qualifies as a SAC for both habitats and species. Firstly, the site contains the following Habitats Directive Annex I habitat:
- Beech forests on acid soils.
- 3.44 Secondly, the site contains the following Habitats Directive Annex II species:
- Barbastelle *Barbastella barbastellus*.

### Conservation Objectives<sup>20</sup>

- 3.45 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;
- 3.46 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
- The extent and distribution of qualifying natural habitats and habitats of qualifying species
  - The structure and function (including typical species) of qualifying natural habitats
  - The structure and function of the habitats of qualifying species
  - The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
  - The populations of qualifying species, and,
  - The distribution of qualifying species within the site.

### Historic Trends and Current Pressures

- 3.47 The Mens SAC is owned and managed by Sussex Wildlife Trust. In the most recent Natural England condition assessment process, 97% of The Mens SSSI was considered to be in favourable condition.

### Key Environmental Conditions

- 3.48 The key environmental conditions that support the features of European interest have been defined

<sup>19</sup> <http://publications.naturalengland.org.uk/file/5157859599843328> [Accessed: 15/04/2026]

<sup>20</sup> Natural England. European Site Conservation Objectives for The Mens Special Area of Conservation (2014) Available online: <http://publications.naturalengland.org.uk/publication/5642356338458624> [Accessed: 15/04/2026].

as:

- Appropriate woodland management;
- Low recreational pressure (because management is minimum intervention and Bridleway degradation by horse riding is a recurring threat);
- Minimal air pollution – may increase the susceptibility of beech trees to disease and alter epiphytic communities; and
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

## Singleton and Cocking Tunnels SAC

### Introduction

3.49 Singleton and Cocking Tunnels are two disused brick built railway tunnels in West Sussex running between Midhurst and Chichester. The tunnels provide ideal microclimates and protection for hibernating bats. The site is one of the best hibernacula in the UK and features hundreds of bats and a diversity of species including Bechstein's and Barbastelles. Horseshoe bats, and the last resident Greater mouse-eared bat in the UK are also present.

### Features of European Interest

3.50 The Singleton and Cocking Tunnels SAC qualifies as a SAC for species. The site contains the following Habitats Directive Annex II species:

- Barbastelle *Barbastella barbastellus*.
- Bechstein's bat *Myotis bechsteinii*.

### Conservation Objectives<sup>21</sup>

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

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

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

### Historic Trends and Current Pressures

3.53 The Singleton and Cocking Tunnels are monitored by the local bat group as part of Bat Conservation Trusts hibernation site programme. In the last 6 years bat numbers have averaged about 70 in Cocking tunnel with 110 in January 2020 and feature five or six species<sup>22</sup>. In the most recent Natural England condition assessment process, all of the SSSI was considered to be in favourable condition.

<sup>21</sup> <http://publications.naturalengland.org.uk/file/4693622251585536> [Accessed: 15/04/2026]

<sup>22</sup> [Designated Sites View \(naturalengland.org.uk\)](#) [Accessed: 15/04/2026]

## Key Environmental Conditions

- 3.54 The key environmental conditions that support the features of European interest have been defined as<sup>23</sup>:
- Habitat connectivity - appropriate management of hedgerows and woodlands;
  - Low recreational pressure (the tunnels are not open to the public);
  - Low light pollution (Bechstein's and barbastelle bats are notably sensitive to light pollution)

## Arun Valley SAC/SPA/Ramsar

### Introduction

- 3.55 Consultation with Natural England on 25<sup>th</sup> November 2021 identified that Natural England are in the process of undertaking a condition assessment. The condition assessment at the time of writing this report has not been published on the Natural England Website. The consultation identified that due to an increased survey effort in 2021 a small population of little whorlpool ram's-horn snail *Anisus vorticulus* (the SAC feature) were identified within one location in Amberley. Despite the increased survey efforts, little whorlpool ram's-horn snail has declined from up to three quarters of its former range within the SAC designated sites. The former range was thought to be a quarter of the UK population of this rare species. Little whorlpool ram's-horn snail is not meeting its conservation objectives. Natural England have not yet analysed the plant and invertebrate data fully but they note that some of the Ramsar plants are also declining. In addition, Natural England identify that the wintering birds of the SPA are not meeting their conservation objectives though teal (part of the assemblage) is increasing.

### Reasons for Designation

- 3.56 Annex II species that are a primary reason for selection of this site as an SAC:
- Little whorlpool ram's-horn snail *Anisus vorticulus*
- 3.57 The SAC is designated for the following species:
- Bewick's swan *Cygnus columbianus bewickii* (non-breeding)
  - Wintering bird assemblage

### Conservation Objectives

- 3.58 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;
- 3.59 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
- 3.60 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

<sup>23</sup> <http://publications.naturalengland.org.uk/file/6277057719828480> [Accessed: 15/04/2026]

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

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

3.62 Arun Valley **Ramsar** site qualifies under the following Ramsar criteria.<sup>24</sup>

**Table 3. Arun Valley Ramsar site criteria.**

Ramsar criterion	Description of criterion	Arun Valley Ramsar
2	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.	The site holds seven wetland invertebrate species listed in the British Red Data Book as threatened. One of these, <i>Pseudamnicola confusa</i> , is considered to be endangered. The site also supports four nationally rare and four nationally scarce plant species.
3	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.	In addition to the Red Data Book invertebrate and plant species, the ditches intersecting the site have a particularly diverse and rich flora. All five British duckweed <i>Lemna</i> species, all five watercress <i>Rorippa</i> species, and all three British water milfoils ( <i>Myriophyllum</i> species), all but one of the seven British water dropworts ( <i>Oenanthe</i> species), and two-thirds of the British pondweeds ( <i>Potamogeton</i> species) can be found on site.
5	A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.	Species with peak counts in the winter: 13,774 waterfowl with a 5 year peak mean 1998/99 – 2002/03
<b>Species or populations identified subsequent to designation for possible future consideration</b>		
6	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.	Species with peak counts in the winter: Northern pintail <i>Anas acuta</i> – 641 individuals, representing an average of 1% of the population with a 5 year peak mean 1998/99 – 2002/03

## Key Environmental Conditions

3.63 The key environmental conditions for this SAC<sup>25</sup> are:

- Maintain appropriate water levels
- Investigate and monitor the impacts of point and diffuse water pollution
- Maintain appropriate ditch management

<sup>24</sup> <http://jncc.defra.gov.uk/pdf/RIS/UK11013.pdf> [Accessed: 15/04/2026]

**Note:** Defra and Natural England have not produced a Conservation Advice package, instead focussing on the production of High Level Conservation Objectives. Natural England considers the Conservation Advice packages for the overlapping European Marine Site designations to be, in most cases, sufficient to support the management of the Ramsar interests.

<sup>25</sup> <http://publications.naturalengland.org.uk/file/5185212862431232> [Accessed: 15/04/2026]

# Butser Hill SAC

## Introduction

- 3.64 Butser Hill is a chalk massif with a discontinuous cap of clay-with-flints. The massif has been eroded to leave a series of deep combes in which the modern spring-line is about 1 km from the combe-head. The combes on the south-east flank support dense yew *Taxus baccata* woods and the remaining slopes of the Hill are sheep-grazed chalk grassland. The calcareous yew woods are outstanding examples of a habitat with a very small representation in Britain. The series of vegetation types represented in the SSSI – chalk grassland, mixed scrub and yew wood – were the subject of a series of pioneer ecological studies.

## Reasons for Designation

- 3.65 Butser Hill qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:
- Dry grasslands and scrublands on chalk or limestone: the richest terricolous lichen flora of any chalk grassland site in England. Also supports the distinctive *Scapanietum asperae* or southern hepatic mat association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example.
  - Yew-dominated woodland

## Conservation Objectives<sup>26</sup>

- 3.66 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;
- 3.67 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
- The extent and distribution of qualifying natural habitats
  - The structure and function (including typical species) of qualifying natural habitats, and
  - The supporting processes on which qualifying natural habitats rely

## Historic Trends and Current Pressures

- 3.68 The site has traditionally been vulnerable to the effects of surrounding agriculture – i.e. spray –drift causing eutrophication. The SAC is now within the boundary of the South Downs National Park. Most of the SAC is in favourable condition, and landowners, in conjunction with English Woodland Grant Schemes have been removing inappropriate conifers and clearing excessive scrub.
- 3.69 The environmental requirements of Butser Hill SAC are mainly:
- Maintenance of grazing
  - Minimal air pollution – nitrogen deposition may cause reduction in diversity, sulphur deposition can cause acidification
  - Absence of direct fertilisation
  - Well-drained soils
  - Controlled recreational pressure
  - No spray-drift (i.e. eutrophication) from surrounding intensive arable land.

<sup>26</sup> <http://publications.naturalengland.org.uk/file/5684004183343104> [Accessed: 15/04/2026]

## Kingley Vale SAC

### Introduction

- 3.70 The Kingley Vale SAC comprises 208ha of chalk grassland, scrub, mixed oak *Quercus* sp. and ash woodland and ancient yew forest. The reserve is a steep sided dry valley, the bottom of which is covered in ancient yew forest. The slopes of the valley support up to 50 species of flowering plant and grasses per square metre.

### Reasons for Designation<sup>27</sup>

- 3.71 The Kingley Vale valley qualifies as a SAC due to the following Annex I habitats:
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia* for which the area is considered to support a significant presence;
  - Yew-dominated woodland for which this is considered to be one of the best areas in the UK.

### Conservation Objectives<sup>28</sup>

- 3.72 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;
- 3.73 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;
- The extent and distribution of qualifying natural habitats and habitats
  - The structure and function (including typical species) of qualifying natural habitats, and
  - The supporting processes on which qualifying natural habitats rely

### Historic Trends and Current Pressures

- 3.74 The long-term conservation of the yew forest requires the maintenance of nurse scrub habitat and the regulation of numbers of resident deer. Current management practices address these problems. The threat to characteristic chalk grassland of scrub invasion is considered to be adequately countered by the cutting and grazing regimes currently employed.
- 3.75 The key vulnerabilities to the SAC are:
- Over grazing by deer
  - Scrub invasion
  - Management of cutting and grazing regimes
  - Atmospheric pollution

## Duncton to Bignor Escarpment SAC

### Introduction

- 3.76 Duncton to Bignor Escarpment consists of 214 ha of scarp slope woodland notified for its beech forests located within the South Downs National Park. The beech forest occurs both on steep scarp slopes and on more gently sloping hillsides in a mosaic with ash woodland, scrub and grassland. The diverse nature of the site helps support rare plants and a rich snail fauna. It is considered to be one of the best

<sup>27</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0012767> [Accessed: 15/04/2026]

<sup>28</sup> <sup>28</sup> Natural England. European Site Conservation Objectives for Chichester and Langstone Harbours Special Protection Area (2014) Available: <http://publications.naturalengland.org.uk/publication/5789102905491456> [Accessed: 15/04/2026]  
<http://publications.naturalengland.org.uk/file/6012259255975936> [Accessed: 15/04/2026]

examples of beech forest in the country.

## Reasons for Designation

3.77 Duncton to Bignor Escarpment qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:

- *Asperulo-Fagetum* beech forests; Beech forest on neutral to rich soils

## Conservation Objectives<sup>29</sup>

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

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

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

## Historic Trends and Current Pressures

3.80 The Site Improvement Plan for the site states that there are no current pressures affecting the SAC. However, the Supplementary Advice for Conservation Objectives<sup>30</sup> (SACO) mentions that the habitat type is considered sensitive to changes in air quality.

3.81 The key vulnerabilities to the SAC are:

- Maintaining key habitat connectivity
- Maintaining and restoring supporting habitat
- Maintaining and restoring appropriate variations in the woodland structure
- Maintaining and restoring the abundance of standing and fallen dead and decaying wood
- Ensuring appropriate distribution of size and age classes of trees and shrubs in the habitat
- Maintaining appropriate levels of herbivore grazing to reduce scrub but permit regeneration of key habitat
- Maintaining soil structure and function
- Maintaining deposition of air pollutants at or below critical levels
- Maintain natural hydrological regime
- Maintain artificial lighting at lowest level

<sup>29</sup> <http://publications.naturalengland.org.uk/file/6066421708881920> [Accessed: 15/04/2026]

<sup>30</sup> <http://publications.naturalengland.org.uk/file/5226310331006976> [Accessed: 15/04/2026]

## 4. Relevant Impact Pathways

4.1 The following impact pathways were considered in the CLP HRA and are also relevant to the DPD:

- Recreational pressure;
- Water quality;
- Water quantity, level and flow;
- Loss or degradation of functionally linked habitat;
- Atmospheric pollution; and
- Coastal Squeeze.

### Background to Recreational Pressure

4.2 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfill conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels and impacts on European protected sites<sup>31 32</sup>. This applies to any habitat, but the additional recreational pressure from housing growth on destinations designated for bird interests can be especially strong and some waterfowl qualifying for SPA designation are known to be susceptible to disturbance. Different Habitats Sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of residential developments and overarching Local Plans tend to focus on recreational sources of disturbance as a result of new residents<sup>33</sup>.

4.3 Human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat or reducing their fitness in less obvious ways e.g. stress). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While these are less noticeable, they might result in major population-level changes by altering the balance between immigration/birth and emigration/death<sup>34</sup>.

4.4 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding<sup>35</sup>. Disturbance therefore risks increasing energetic expenditure of birds while reducing their energetic intake, which can adversely affect the 'condition' and ultimately survival of the birds. Additionally, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they then must sustain a greater number of birds<sup>36</sup>. Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower

<sup>31</sup> Liley D, Clarke R.T., Mallord J.W., Bullock J.M. 2006a. The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.

<sup>32</sup> Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. 2006b. Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.

<sup>33</sup> The RTPI report 'Planning for an Ageing Population'(2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.

<sup>34</sup> Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.

<sup>35</sup> Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

<sup>36</sup> Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

densities of key species, such as stone curlew and nightjar<sup>37 38</sup>. Recreation disturbance in winter can be more adverse because birds are more vulnerable at this time of year due to food shortages.

- 4.5 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking<sup>39</sup>. Furthermore, key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers<sup>40</sup>. Data on route length and the spatial mapping of routes indicate that key spatio-temporal features (e.g. the potentially impacted area of a site, how frequent or long activities are undertaken) are likely to differ between recreational activities. Overall, activity type is therefore a factor that should be taken into account in HRAs.
- 4.6 The potential for disturbance may be different in winter than in summer, in that there is often a smaller number of recreational users present on site. Furthermore, the impacts of disturbance at a population level may be reduced because birds are not breeding. However, recreational disturbance in winter may also be more impactful, because birds face seasonal food shortages and are likely to be sensitive to any nutritional loss. Therefore, the abandonment of suitable feeding areas due to disturbance can have serious consequences for their ability to find suitable alternative feeding sites.
- 4.7 Evans & Warrington<sup>41</sup> found that on Sundays total waterbird numbers (including shovelers and gadwalls) were 19% higher on Stocker's Lake LNR in Hertfordshire and attributed this to observed greater recreational activity on surrounding water bodies at weekends relative to weekdays displacing birds into the LNR. However, in this study, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.
- 4.8 Tuite et al<sup>42</sup> used a large (379 sites), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They determined that shovelers was one of the most sensitive species to recreational activities, such as sailing, windsurfing and rowing. Studies on recreation in the Solent have established that human leisure activities cause direct disturbance to wintering waterfowl populations<sup>43 44</sup>.
- 4.9 A study on recreational disturbance on the Humber<sup>45</sup> assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt 1999<sup>46</sup>), traffic (Reijnen, Foppen, & Veenbaas 1997)<sup>47</sup>, dogs (Lord, Waas, & Innes 1997<sup>48</sup>; Banks & Bryant 2007<sup>49</sup>) and machinery (Delaney et al. 1999; Tempel & Gutierrez 2003). These studies identified that there is still relatively little work on the effects of different types of water-based craft and the impacts from jet skis, kite surfers, windsurfers etc. (see Kirby et al. 2004<sup>50</sup> for a review). In very general terms, both distance from the source of disturbance and the scale of the disturbance (noise level, group size) will both influence the

<sup>37</sup> Clarke R.T., Liley D., Sharp J.M., Green R.E. 2013. Building development and roads: Implications for the distribution of stone curlews across the Brecks. PLOS ONE. doi:10.1371/journal.pone.0072984.

<sup>38</sup> Liley D., Clarke R.T. 2003. The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. *Biological Conservation* 114: 219-230.

<sup>39</sup> Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* 3: 14pp.

<sup>40</sup> Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.

<sup>41</sup> Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pitlake near London. *International Journal of Environmental Studies* 53: 167-182

<sup>42</sup> Tuite, C.H., Hanson, P.R. & Owen, M. 1984. Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales and the influence of water-based recreation. *Journal of Applied Ecology* 21: 41-62

<sup>43</sup> Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary

<sup>44</sup> Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent disturbance and mitigation project – various reports.

<sup>45</sup> Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

<sup>46</sup> Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature, Peterborough.

<sup>47</sup> Reijnen, R., Foppen, R. & Veenbaas, G. (1997) Disturbance by traffic of breeding birds: evaluation of the effect and considerations in planning and managing road corridors. *Biodiversity and Conservation*, 6, 567-581.

<sup>48</sup> Lord, A., Waas, J.R. & Innes, J. (1997) Effects of human activity on the behaviour of northern New Zealand dotterel *Charadrius obscurus aquilonius* chicks. *Biological Conservation*, 82,15-20.

<sup>49</sup> Banks, P.B. & Bryant, J.V. (2007) Four-legged friend of foe? Dog-walking displaces native birds from natural areas. *Biology Letters*, 3, 611-613.

<sup>50</sup> Kirby, J.S., Clee, C. & Seager, V. (1993) Impact and extent of recreational disturbance to wader roosts on the Dee estuary: some preliminary results. *Wader Study Group Bulletin*, 68, 53-58.

response (Delaney et al. 1999<sup>51</sup>; Beale & Monaghan 2005<sup>52</sup>). On UK estuaries and coastal sites, a review of WeBS data showed that, among the volunteer WeBS surveyors, driving of motor vehicles and shooting were the two activities most perceived to cause disturbance (Robinson & Pollitt 2002)<sup>53</sup>.

- 4.10 Disturbing activities present themselves on a continuum. Generally, activities that involve irregular, infrequent and loud noise events, movement or vibration are likely to be the most disturbing. For example, the presence of dogs around waterbodies generate substantial disturbance due the areas accessed and their impact on bird behaviour. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable and quiet patterns of sound, movement or vibration. The further any activity is from the birds, the less likely it is to result in disturbance. The factors that determine species responses to disturbance include species sensitivity, timing/duration of the recreational activity and the distance between source and receptor of disturbance.
- 4.11 The CLP HRA identified that the main impacts of recreational pressure would occur around the Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC, and Pagham Harbour SPA/Ramsar. Bird disturbance is a known current pressure on Habitats Sites around the Solent coast. Bird Aware<sup>54</sup> detail that over 52 million visits are made to the Solent coast each year by the 1 million people who live within 5.6km of the Solent and the population increases year on year, resulting in a busier coast, higher disturbance and more frequent and greater impacts on the birds. The Chichester and Langstone Harbours SPA/Ramsar and Solent Maritime SAC make up part of the mosaic of habitats of the Bird Aware Solent Region. The impacts of new residential and tourist development within the Chichester and Langstone Harbours SPA/Ramsar and Solent Maritime SAC are mitigated through the Solent Recreation Mitigation Strategy<sup>55</sup> created by Bird Aware and the Partnership for Urban South Hampshire (PUSH), with effects on the Pagham Harbour SPA/Ramsar mitigated through a joint scheme with the Arun District Council<sup>56</sup>. All three Habitats Sites will be discussed further regarding recreational pressure in the following chapters.

## Background to Water Quality

- 4.12 The quality of the water that feeds Habitats Sites is an important determinant of the condition of their habitats and the species they support. Poor water quality can have a range of environmental impacts:
- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
  - Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the growth limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.
  - Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.
- 4.13 The main risk associated with the Southbourne Allocation is the discharge of treated sewage effluent from Wastewater Treatment Works (WwTWs) serving the development. This could increase the nitrogen concentrations in freshwater bodies feeding Habitats Sites, such as the Chichester & Langstone Harbours SPA/Ramsar and Solent Maritime SAC.

<sup>51</sup> Delaney, D.K., Grubb, T.G., Beier, P., Pater, L.L.M. & Reiser, H. (1999) Effects of Helicopter Noise on Mexican Spotted Owls. *The Journal of Wildlife Management*, 63, 60-76.

<sup>52</sup> Beale, C.M. & Monaghan, P. (2005) Modeling the Effects of Limiting the Number of Visitors on Failure Rates of Seabird Nests. *Conservation Biology*, 19, 2015-2019.

<sup>53</sup> Robinson, J.A. & Pollitt, M.S. (2002) Sources and extent of human disturbance to waterbirds in the UK: an analysis of Wetland Bird Survey data, 1995/96 to 1998/99: Less than 32% of counters record disturbance at their site, with differences in causes between coastal and inland sites. *Bird Study*, 49, 205.

<sup>54</sup> [Bird disturbance - Bird Aware Solent](#) [Accessed 24/11/2022]

<sup>55</sup> [Solent-Recreation-Mitigation-Strategy-December-2017.pdf \(portsmouth.gov.uk\)](#) [Accessed 24/11/2022]

<sup>56</sup> [Appendix 1 Outline joint scheme of mitigation.pdf \(moderngov.co.uk\)](#) [Accessed 24/11/2022]

## Nutrient Neutrality

- 4.14 Nutrient neutrality has become an issue in many areas of the country, such as the Solent, Somerset Levels, the Wye catchment in Herefordshire, the Camel catchment in Cornwall, and the Stour catchment in Kent.
- 4.15 Within the Solent catchment, the rich intertidal mudflats, saltmarsh, shingle beaches and adjacent coastal habitats (e.g. grazing marsh, reedbeds and damp woodland) support nationally and internationally important numbers of migratory and wintering waders and waterfowl such as ringed plover and sandwich terns, as well as important breeding gull and tern populations. Increased levels of nitrogen and phosphorus entering aquatic environments via surface water or groundwater can severely threaten the condition of qualifying SAC habitats and those supporting SPA/Ramsar birds. Elevated levels of nutrients can cause eutrophication, leading to algal blooms that can disrupt normal ecosystem function and cause major changes in aquatic community composition. Furthermore, eutrophication causes reduced levels of dissolved oxygen within the water, which in turn can lead to the death of aquatic organisms including invertebrates and fish.
- 4.16 Ultimately the issue of nutrient neutrality stems from the ruling of the European Court of Justice (ECJ) in combined cases C-293/17 and C-294/17 (the Dutch Nitrogen case). Said judgment was about nitrogen from the atmosphere but in the process of making their ruling the judgment refined its definition of plans and projects to include operations such as agriculture. This confirmed that agricultural inputs of nutrients (either from atmosphere or runoff) need to be covered in the 'in combination' requirements of the HRA process. This is significant because the traditional assessment process as applied for example in the Environment Agency's Review of Consents programme distinctly separates treated wastewater from agricultural discharge, largely because the latter is effectively unconsented [diffuse] and outside the remit of the Environment Agency.
- 4.17 In addition, the ruling reaffirmed that if a Habitats Site is in deteriorating condition (such as due to excess nutrient levels, which may be forecast to increase further), there are limited circumstances under which further discharges of nutrients to such a site can legally be permitted. This is covered in paragraph 79 of Advocate-General Kokott's opinion, written to inform the court: *'Where total damage is reduced, but the integrity of the protected site concerned is nevertheless adversely affected [by which she means where the total nitrogen deposition still exceeds the critical load], Article 6(3) of the Habitats Directive does not in any case permit any additional damage of this kind'*.
- 4.18 As a result, in the absence of any empirically derived threshold by which additional aquatic inputs of nitrogen and phosphorus can be deemed nugatory or de minimis, it must be concluded that additional development within the Solent catchment will increase nutrient inputs with potential adverse effects on the integrity of Habitats Sites. This is relevant because under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) a local planning authority (competent authority) cannot legally consent a plan or project that will have an adverse effect on the integrity of a Habitats Site.
- 4.19 The potential impact of development regarding increased nutrient loading is determined using nutrient neutrality calculations. Nutrient budget calculators for relevant Habitats Sites covering both nitrogen and phosphorus have been developed by Natural England, using the most up-to-date scientific evidence base at the time of publication. This has been published as the 'Nutrient Budget Calculator Guidance Document' (latest version March 2022).

## Background to Water Quantity, Level and Flow

- 4.20 The unique nature of wetlands combines shallow water, high levels of nutrients and high primary productivity. These conditions are ideal for the growth of organisms at the basal level of food webs, which feed many species of birds, mammals, fish and amphibians. Overwintering and migrating wetland bird species are particularly reliant on these food sources, as they need to build up enough nutritional reserves to sustain their long migration routes.
- 4.21 Maintaining a steady water supply is of critical importance for many hydrologically dependent SPAs, SACs and Ramsars. For example, in many wetlands winter flooding is essential for sustaining a variety of foraging habitats for SPA/Ramsar wader and waterbird species. However, different species vary in their requirements for specific water levels. Splash and/or shallow flooding is required to provide

suitable feeding areas and roosting sites for ducks and waders. In contrast, deeper flooding is essential to provide foraging habitats for Bewick's swans and other ducks.

4.22 Wetland and coastal habitats (and the fauna they support) rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of water is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range of qualifying birds, invertebrate or plant species. This might lead to the loss of the structure and functioning of wetland or coastal habitats. There are two mechanisms through which urban development might negatively affect the water level in Habitats Sites:

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

4.23 Chichester District is supplied with water from the Environment Agency Arun and Western Streams catchment, which currently assesses groundwater availability as being 'restricted' in terms of supplies from the Chichester chalk. Freshwater flows into Chichester Harbour arise from the Chichester Rifes - the River Lavant, River Ems, Fishbourne Springs, Bosham Stream, Cutmill Creek, Ham Brook, and the springs at Warblington. The Habitats Directive (HD) review of consents investigated the impact of abstraction on freshwater flows to the SPA and the abstraction management strategy noted that any new licence would need to consider impacts on this conservation site. Within Chichester District two water companies supply potable water:

- Portsmouth Water supplies various settlements (including Chichester Town) via their Chichester and Bognor Regis resources zone. Portsmouth Water's licences in the Chichester area are now fully compliant with the Habitats Regulations. The only outcome from the WFD investigations in this area is to consider increased augmentation of the River Ems. This scheme is in the EA's National Environment Programme and has been included in the Company's Business Plan.
- Southern Water supplies part of Chichester District from their Sussex North Water Resource Zone. Within the Draft Water Resources Management Plan 2024<sup>57</sup> it states that as a result of an integrity assessment for the WRMP24 Southern Water can now supply 29.4 million litres per day (Ml/d) against a total potential dry year demand of 28.7 Ml/d, meaning they can guarantee customers remain in supply while work is being carried out at the Weir Wood reservoir.

4.24 Part of Chichester District is supplied by Southern Water who have an abstraction at Pulborough near Arun Valley SAC/SPA/Ramsar site. The Site Improvement Plans for Arun Valley SAC/SPA/Ramsar identifies inappropriate water levels as threats to the respective sites. If the potable water to the Southbourne Allocation were supplied by Southern Water, this could contribute to changes in the water quantity, level and flow in the catchment of the Arun Valley Habitats Sites. Therefore, the DPD HRA examines the water supply arrangements that apply to the Southbourne Allocation in the context of potential hydrological impacts in the Arun Valley SAC/SPA/Ramsar.

## Background to Loss of Functionally Linked Habitat

4.25 While most Habitats Sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not necessarily the case. A diverse array of qualifying species including birds, bats and amphibians are not always confined to the boundary of designated sites.

<sup>57</sup> 6177 dWRMP Sections 1 3 v1.7.indd (southernwater.co.uk) [Accessed 22/12/2022]

- 4.26 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of Habitats Sites. Despite not being designated, these habitats are integral to the maintenance of the structure and function of the designated site and, therefore, land use plans that may affect such functionally linked habitat require further assessment.
- 4.27 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land<sup>58</sup>. For example, bird surveys in relation to a previous HRA established that approximately 25% of the golden plover population in the Somerset Levels and Moors SPA were affected while on functionally linked land, and this required the inclusion of mitigation measures in the relevant plan policy wording. Another important case study originates from the Mersey Estuary SPA/Ramsar, where adjacently located functionally linked land had a peak survey count of 108% of the 5 year mean peak population of golden plover. Similar to the above example, this led to considerable amendments in the planning proposal to ensure that the site integrity was not adversely affected.
- 4.28 Generally, the identification of an area as functionally linked habitat is not always a straightforward process. The importance of non-designated land parcels may not be apparent and require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring further survey work.

## Coastal Bird Sites

4.29 The Chichester and Langstone Harbours SPA/Ramsar and Pagham Harbour SPA/Ramsar are notified partly for their over-wintering populations of brent goose (*Branta bernicla bernicla*). However, studies have identified that many feeding sites for this species around the Solent fall outside of the designated site boundaries. The majority of brent goose feeding sites are amenity/recreation grasslands with little intrinsic nature conservation interest, and therefore are vulnerable to loss or damage from development. This also applies to some high tide wader roosts in the Solent. This issue is addressed by the Solent Recreation Mitigation Strategy<sup>59</sup>, and specific mitigation guidance is provided in the Solent Waders and Brent Goose Strategy: Interim Guidance on Mitigation and Off-setting Requirements<sup>60</sup>. As part of this Strategy, a network of terrestrial non-designated sites used by brent goose and waders has been identified, in which sites are categorised according to their importance to brent goose and wader populations using the following system:

- Core Areas – sites identified as having a network value and/or have a maximum Brent goose and/or wader count of at least 1000 and/or have the maximum score of 7 in at least three metrics;
- Primary Areas – sites with a score of 3-6;
- Secondary Support Areas – sites with a score of 1-2 and/or have a maximum bird count of at least 100 for brent goose or any wader species;
- Low Use – sites in which low numbers of brent goose and/or waders have been recorded (score 0); and
- Candidate Sites – sites in which high numbers of brent goose and/or waders have been recorded (at least 100 birds) and/or a score of at least 3 but have fewer than three records in total.

## The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC

4.30 The Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC are designated for their populations of rare Bechstein's and barbastelle bats. Bats are not confined to the boundaries

<sup>58</sup> Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to Habitats Sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

<sup>59</sup> Bird Aware Solent. (2017) Solent Recreation Mitigation Strategy. December 2017.

<sup>60</sup> Solent Waders and Brent Goose Strategy Steering Group. (2018) Solent Waders and Brent Goose Strategy: Interim Guidance on Mitigation and Off-setting Requirements. March 2018.

of Habitats Sites and forage/commute in wider areas, also known as Core Sustenance Zones (CSZs). For example, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of up to 1km<sup>61</sup>. A second radio-tracking study in 2002 on bats at Ebernoe Common SAC, showed that the maximum distance travelled by tagged individuals was 1,407m, with an average of 735.7m<sup>62</sup>. For Bechstein's bats it is reasonable to assume that the core foraging areas around the Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC, are likely to constitute habitats within c. 1km of the respective site boundaries.

- 4.31 Barbastelle bats are known to travel substantial distances from their roosts to feeding sites. A study on barbastelle bats determined that home range distances show considerable inter-individual differences, with bats traveling between 1 and 20km to reach their foraging areas<sup>63</sup>. In 2016, the Bat Conservation Trust published guidelines on how to determine CSZs for bats and highlighted that barbastelle bats have a mean maximum CSZ of 6.47km<sup>64</sup>.
- 4.32 As a precaution, Natural England and the South Downs National Park Authority have since agreed a Sussex Bat Protocol<sup>65</sup>, which identifies a maximum 12km zone around the Sussex bat SACs (Ebernoe Common SAC, The Mens SAC) in which HRAs investigating habitat fragmentation are required. This is based on the furthest distance from the two SACs at which foraging bats were radio-tracked. The Singleton and Cocking Tunnels SAC is mainly used as a hibernation roost, and therefore maternity roosts, as well as the flightlines connecting these roosts outside of the SAC can also be functionally linked. Some maternity roosts have been identified up to 12km from the SAC including at Goodwood and Slindon. The 12km zone therefore also applies to Singleton and Cocking Tunnels SAC.
- 4.33 The Sussex Bat Protocol identifies two key impact zones surrounding the bat SACs as follows:
- 6.5km: Key Conservation Area – all impacts assessed; and
  - 12km: Wider Conservation Area – significant impacts or severance to flightlines to be considered.
- 4.34 While the CLP HRA undertook AA of all bat SACs, the Southbourne DPD encompasses a much smaller area within Chichester District that may be situated outside the relevant Key Conservation Areas and Wider Conservation Areas. Therefore, the LSEs Screening reassesses the Southbourne Allocation regarding its distance to each of these bat SACs.

## Background to Atmospheric Pollution

- 4.35 The main pollutants of concern for Habitats Sites are oxides of nitrogen (NO<sub>x</sub>), ammonia (NH<sub>3</sub>) and sulphur dioxide (SO<sub>2</sub>) and are summarised in Table 2. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges<sup>66</sup>. NO<sub>x</sub> can also be toxic at very high concentrations (far above the annual average critical level). However, in particular, high levels of NO<sub>x</sub> and NH<sub>3</sub> are likely to increase the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere is widely known to enhance soil fertility and to lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats<sup>67 68</sup>.

<sup>61</sup> Kerth G., Wagner M. & Koenig B. 2001. Roosting together, foraging apart: Information transfer about food is unlikely to explain sociality in female Bechstein's bats (*Myotis bechsteini*). Behavioural Ecology and Sociobiology 50: 283-291.

<sup>62</sup> Fitzsimmons P., Hill D., Greenaway F. (2002). Patterns of habitat use by female Bechstein's bats (*Myotis bechsteini*) from a maternity colony in a British woodland.

<sup>63</sup> Zeale M.R.K., Davidson-Watts I. & Jones G. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): Implications for conservation. Journal of Mammalogy 93: 1110-1118.

<sup>64</sup> Bat Conservation Trust. (2016). Core Sustenance Zones: Determining zone size. Available at [https://cdn.bats.org.uk/pdf/Resources/Core\\_Sustenance\\_Zones\\_Explained\\_04.02.16.pdf?mtime=20190219173135](https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135) [Accessed on the 14/10/2019].

<sup>65</sup> South Downs National Park Authority/ Natural England (2017). Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Final Draft

<sup>66</sup> [http://www.apis.ac.uk/overview/pollutants/overview\\_NOx.htm](http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm).

<sup>67</sup> Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. 2006. Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. Lichenologist 38: 161-176

<sup>68</sup> Dijk, N. 2011. Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation Global Change Biology 17: 3589-3607

**Table 4: Main sources and effects of air pollutants on habitats and species<sup>69</sup>**

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO <sub>2</sub> )	<p>The main sources of SO<sub>2</sub> are electricity generation, and industrial and domestic fuel combustion. However, total SO<sub>2</sub> emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO<sub>2</sub> have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO<sub>2</sub> emissions in the UK.</p>	<p>Wet and dry deposition of SO<sub>2</sub> acidifies soils and freshwater and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO<sub>2</sub> background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO<sub>2</sub>, NO<sub>x</sub>, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.</p> <p>Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.</p>	<p>Gaseous precursors (e.g. SO<sub>2</sub>) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants.</p> <p>Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.</p>
Ammonia (NH <sub>3</sub> )	<p>Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock.</p> <p>Ammonia reacts with acid pollutants such as the products of SO<sub>2</sub> and NO<sub>x</sub> emissions to produce fine ammonium (NH<sub>4</sub><sup>+</sup>) - containing aerosol. Due to its significantly longer lifetime, NH<sub>4</sub><sup>+</sup> may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>The negative effect of NH<sub>4</sub><sup>+</sup> may occur via direct toxicity when uptake exceeds detoxification capacity and via N accumulation.</p> <p>Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen.</p> <p>As emissions mostly occur at ground level in the rural environment and NH<sub>3</sub> is rapidly deposited, some of the most acute problems of NH<sub>3</sub> deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>

<sup>69</sup> Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
Nitrogen oxides (NO <sub>x</sub> )	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO<sub>x</sub> emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.</p> <p>Nitrogen oxides have been consistently falling for decades due to a combination of coal fired power station closures, abatement of other combustion point sources and improved vehicle emissions technology. They are expected to continue to fall over the plan period.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO<sub>x</sub> for all vegetation types has been set to 30 ug/m<sup>3</sup>.</p> <p>Deposition of nitrogen compounds (nitrates (NO<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>) and nitric acid (HNO<sub>3</sub>)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>In addition, NO<sub>x</sub> contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.</p>
Nitrogen deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO<sub>x</sub>) or reduced (e.g. NH<sub>3</sub>) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The N pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.</p> <p>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>
Ozone (O <sub>3</sub> )	<p>A secondary pollutant generated by photochemical reactions involving NO<sub>x</sub>, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.</p>	<p>Concentrations of O<sub>3</sub> above 40 ppb can be toxic to both humans and wildlife and can affect buildings.</p> <p>High O<sub>3</sub> concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.</p>

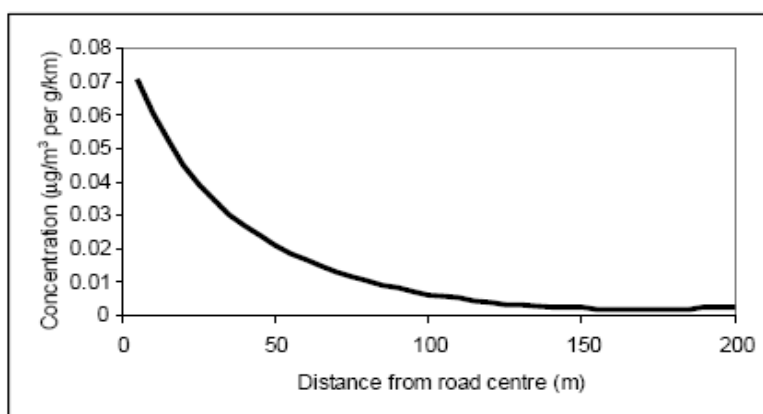
- 4.36 Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping<sup>70</sup>. Ammonia emissions originate from agricultural practices<sup>71</sup>, with some chemical processes and some road traffic

<sup>70</sup> [http://www.apis.ac.uk/overview/pollutants/overview\\_SO2.htm](http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm).

<sup>71</sup> Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. 1998. A new inventory for ammonia emissions from U.K. agriculture. Atmospheric Environment 32: 309-313

(notably petrol cars) also making notable contributions. As such, it is unlikely that material increases in SO<sub>2</sub> emissions will be associated with the emerging Local Plan.

- 4.37 In contrast, NOx emissions are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NOx footprint (92%) through its associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison<sup>72</sup>. The emerging Local Plan, which will result in an increase in Chichester District's population, can therefore be reasonably expected to increase emissions of NOx and ammonia through an increase in vehicular traffic.
- 4.38 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 µgm<sup>-3</sup>; the threshold for sulphur dioxide is 20 µgm<sup>-3</sup>. In addition, ecological studies have determined 'critical loads'<sup>73</sup> of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH<sub>3</sub>).
- 4.39 According to the Department of Transport's Transport Analysis Guidance, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is insignificant<sup>74</sup> (Figure 3). This is therefore the distance that has been used throughout this HRA to identify major commuter routes along European Sites, which are likely to be significantly affected by development in the Southbourne Allocation. Overall, the increase in the local population due to the Southbourne DPD will result in more commuter traffic within this part of Chichester District.



**Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT<sup>75</sup>)**

- 4.40 The following Habitats Sites considered in the CLP HRA are located within 200m of a potentially affected road and were subject to air quality modelling. The relevance of these Habitats Sites and associated modelling data to the Southbourne DPD HRA will be discussed.

<sup>72</sup> Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

<sup>73</sup> The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

<sup>74</sup> <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013>; accessed 12/05/2016

<sup>75</sup> <http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf>; accessed 13/07/2018

**Table 5: European Sites Located within 200m of a Potentially Affected Road**

European Site	Potentially Affected Road	Air Quality Affected Road Reference Code
Duncton to Bignore Escarpment SAC	A285	DNBG
Kingley Vale SAC	B2142	KGVE
Solent European Sites near Nutbourne	A259, A27	CLSM1, CLSM2, CLSM3, SOME, SLDR
Pagham Harbour SPA/Ramsar site	B2145	PGHR1
Ebernoe Common SAC	A283	EBCM
The Mens SAC	A272	MENS1 & MENS2
Butser Hill SAC	A3	BSHL

- 4.41 Consideration was also given to the Singleton & Cocking Tunnels SAC. However, the SAC consists of two railway tunnels which are not vegetated features and the SAC entrances lie nearly 200m from a road at their closest point. Therefore, the Singleton & Cocking Tunnels SAC was scoped out of air quality assessment.

## Background to Coastal Squeeze

- 4.42 Rising sea levels can be expected to cause intertidal habitats (principally saltmarsh and mudflat) to migrate landwards. However, in built-up areas, such landward retreat is often rendered impossible due the presence of sea walls and other flood defences.
- 4.43 In addition, as development frequently takes place immediately behind the sea wall, flood defences often cannot be moved landwards to accommodate managed retreat of threatened habitats. The net result of this is that the quantity of saltmarsh and mudflat adjacent to built-up areas will progressively decrease as sea levels rise. This process is known as 'coastal squeeze'. In areas where sediment availability is reduced, the 'squeeze' also includes an increasingly steep beach profile and foreshortening of the seaward zones.
- 4.44 The North Solent (Selsey Bill to Hurst Spit) Shoreline Management Plan units for Chichester and Langstone Harbours indicate that there will be a combination of 'Hold the Line', 'Managed Realignment' and 'Adaptive Management' strategies<sup>76</sup>. An HRA of the SMP<sup>77</sup> indicated that Hold the Line will have no effect on habitats behind the defences, whilst Managed Realignment is likely to "*have a significant detrimental effect resulting in loss of designated terrestrial habitats including coastal grazing marsh, saline lagoons and grasslands.*" Managed Realignment is proposed in the short term for part of Chichester Harbour. Although Hold the Line is the preferred approach for the majority of the shoreline, the SMP notes that further studies on Chichester and Langstone Harbours may lead to revision of this for significant lengths of shoreline in the inner harbours.
- 4.45 In order to conclude that the development allocated in the Southbourne DPD would not lead to a significant adverse effect as a result of coastal squeeze, it should not require the SMP policies for the frontage to be altered or be situated such that new defences in currently undefended parts of the coastline are required. It should also not fall into areas set aside for Managed Realignment in the SMP or the Environment Agency Regional Habitat Creation Programme.

<sup>76</sup> <http://www.northsolentsmp.co.uk/> [Accessed: 12/10/2018]

<sup>77</sup> [North Solent SMP Appendix J Appropriate Assessment \(northsolentsmp.co.uk\)](#)

## 5. Screening for Likely Significant Effects (LSEs)

- 5.1 The Southbourne Site Allocation DPD only contains the following policy:
- Policy SA1 – allocates Southbourne for at least 800 dwellings, local employment opportunities and supporting community uses/facilities.
- 5.2 Since the Southbourne Allocation stems from the CLP, the Habitats Sites and impact pathways considered in this DPD HRA have been guided by those appraised in the CLP HRA. However, because the allocation only covers a small area within the wider Chichester District (and the growth assessed in the CLP HRA), not all Habitats Site-impact pathway combinations are relevant for the DPD. The following paragraphs summarise where the DPD HRA deviates from the CLP HRA and provides justifications for each instance.
- 5.3 Notably, in-combination air quality impacts of the CLP were modelled and analysed extensively in its accompanying HRA. Data are summarised for the Habitats Sites that are relevant to the Southbourne Allocation (Solent Maritime SAC, Chichester & Langstone Harbours SPA/Ramsar, Pagham Harbour SPA/Ramsar, Butser Hill SAC and Kingley Vale SAC). Habitats Sites that fall beyond the zone of influence for traffic originating from Southbourne (Ebernoe Common SAC, The Mens SAC and Duncton to Bignor Escarpment SAC) are also briefly discussed.

### Urbanisation

#### Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar

- 5.4 Urbanisation impacts on the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar were considered in the CLP HRA. This is because Chichester District directly adjoins these Habitats Sites and urbanisation impacts (e.g. urban edge effects, predation by domestic pets and introduction/spread of invasive non-native species) are considered a potential pathway where development occurs within 400m of a Habitats Site. However, at approximately 0.5km distance to the closest of these Habitats Sites, the Southbourne Allocation lies beyond the distance for urbanisation impacts. Therefore, it is concluded that there will be no LSEs of the Southbourne DPD on the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar regarding urbanisation. This impact pathway is screened out from AA.

### Water Quantity, Level and Flow

#### Arun Valley SAC/SPA/Ramsar

- 5.5 The Arun Valley SAC/SPA/Ramsar is designated for a wide range of qualifying species that are dependent on adequate hydrological regimes and sufficient water quantity, including little whirlpool ram's-horn snail, Bewick's swan and a wintering waterbird assemblage. This Habitats Site complex was considered in the CLP HRA due to Southern Water's groundwater abstraction at Pulborough in the Sussex North Water Resource Zone (WRZ). Natural England are concerned that the abstraction is having a negative impact on the Amberley Brooks SSSI and Pulborough Brooks SSSI, two SSSIs underpinning the Arun Valley SAC/SPA/Ramsar. This resulted in a requirement for nutrient neutrality for all developments that fall or are served by water sources within this WRZ, meaning that the total water use post-development must be equal to or less than prior to it.
- 5.6 However, the water neutrality requirement for this SAC/SPA/Ramsar site has since been removed due to alternative solutions being identified, and potable water in Southbourne Parish (including the Southbourne Allocation) is supplied by Portsmouth Water, which does not use any water sources that are hydrologically connected to the Arun Valley SAC/SPA/Ramsar. Furthermore, it is also noted that Portsmouth Water's most recent Water Resources Management Plan (WRMP) specifically excludes the option for a bi-directional water transfer with Southern Water's Pulborough abstraction via the Havant Thicket Reservoir. Therefore, it is concluded that there will be no LSEs of the Southbourne

DPD on the Arun Valley SAC/SPA/Ramsar regarding water quantity, level and flow. This impact pathway is screened out from AA.

## Atmospheric Pollution

### Solent Maritime SAC and Chichester & Langstone Harbours SPA/Ramsar

- 5.7 The Solent Maritime SAC is designated for various habitats that are sensitive to atmospheric pollution, including Atlantic saltmarsh, *Salicornia* and other annuals colonizing mud and sand, and *Spartina* swards. In practice, both *Salicornia* and *Spartina* swards will be occurring within the wider saltmarsh habitat, which is considered to be the main relevant habitat in relation to atmospheric nitrogen deposition. Importantly, Natural England's SIP identifies that atmospheric nitrogen deposition also impacts some SPA/Ramsar bird species, including dark-bellied Brent goose, wigeon, pintail, black-tailed godwit, curlew, greenshank and various breeding tern species that depend on patches of bare ground. According to the SIP, current nitrogen deposition impacts exceed site-relevant critical loads.
- 5.8 Air quality modelling at five transects along two key commuter routes (the A27 and A259) was undertaken for the CLP HRA. This concluded that while the contribution of the CLP growth to atmospheric nitrogen deposition was above 1% of the minimum Critical Load (and could not immediately be dismissed), this would at most lead to a retardation in saltmarsh vegetation recovery due to the improving background atmospheric nitrogen concentrations. It is also important to consider that the nitrogen Critical Load range is derived from experimental studies that do not reflect the depositional nature of traffic-derived nitrogen (they have been designed on single, large applications of nitrogen that are more characteristic of agricultural practices) and that other sources of nitrogen (e.g. marine, fluvial and agricultural) are comparatively more important in coastal environments.
- 5.9 Its accompanying HRA concluded that the CLP growth would not result in adverse effects on the integrity of the Solent Maritime SAC and Chichester & Langstone Harbours SPA/Ramsar regarding atmospheric pollution, both alone and in-combination. It is considered that this broad conclusion remains valid, particularly because the residential growth allocated in the Southbourne Allocation has not increased compared to that accounted for in the CLP air quality modelling (the number of dwellings have reduced from 1,050 to 800 dwellings, but this is because some residential units have already come forward). While the DPD potentially allows for more than 800 dwellings to come forward, any growth in excess to that considered in the CLP HRA (and associated air quality modelling) will need to be considered in the planning application process (i.e. through an updated air quality modelling exercise).
- 5.10 Overall, at the DPD level, LSEs on the Solent Maritime SAC and Chichester & Langstone Harbours SPA/Ramsar regarding atmospheric pollution can be excluded and are screened out from AA.

### Pagham Harbour SPA/Ramsar

- 5.11 The Pagham Harbour SPA/Ramsar is situated in the south-east part of Chichester District and is designated for several bird species that are sensitive to atmospheric nitrogen deposition. Dark-bellied Brent goose partially forage in saltmarsh and are dependent on its characteristic vegetation (nitrogen Critical Load range of 10-20 kg N/ha/yr). Breeding common tern and little tern rely on bare ground in dune systems and supralittoral habitats (nitrogen Critical Load range of 5-15 kg N/ha/yr).
- 5.12 Air quality modelling at two transects along the B2145, the only relevant commuter route for the SPA/Ramsar, the B2145, was undertaken for the overarching CLP. This road runs within 200m of saltmarsh in the site boundary of the Pagham Harbour SPA/Ramsar to the south of Sidlesham. No commuter routes within 200m of habitats used by breeding tern were identified, such that these species were not considered further in the assessment.
- 5.13 The air quality modelling data indicated that under the 2040 Do Something scenario (i.e. all future growth including that allocated in the CLP), nitrogen deposition within the saltmarsh would increase compared to both the Base Year and the 2040 Do Nothing scenario. The absolute change also exceeded 1% of the minimum Critical Load, the threshold typically used to exclude potential ecological impacts. However, the CLP HRA also noted that even with the future in-combination nitrogen deposition occurring, the minimum Critical Load that applies to the SPA/Ramsar bird species would not be exceeded. As highlighted in the previous section, the nitrogen Critical Load ranges for the relevant bird species (which are based on saltmarsh habitat they rely upon) is derived from experimental studies that do not reflect the depositional nature of traffic-derived atmospheric nitrogen

(they have been designed using single, large applications of nitrogen that are more characteristic of agricultural practices). Furthermore, other sources of nitrogen (e.g. marine, fluvial and agricultural) are comparatively more important in coastal environments than nitrogen from the atmosphere.

- 5.14 It should be noted that the relevant parts of the B2145 lie over 12km from the Southbourne Allocation, which is beyond the average commuting distance of UK residents. Therefore, it is likely that few future residents from Southbourne will routinely travel along this stretch of the road and contribute to in-combination nitrogen deposition.
- 5.15 Its accompanying HRA concluded that the CLP growth would not result in adverse effects on the integrity of the Pagham Harbour SPA/Ramsar regarding atmospheric pollution, both alone and in-combination. It is considered that this broad conclusion remains valid, particularly because the residential growth allocated in the Southbourne Allocation has not increased compared to that accounted for in the CLP air quality modelling (the growth has decreased from 1,050 to 800 dwellings, but this is because some residential units have already come forward). Any additional growth beyond 800 dwellings coming forward (and in excess of growth considered in the CLP HRA), would need to be reflected in an updated air quality modelling exercise at the planning application stage.
- 5.16 Overall, at the DPD level, LSEs on the Pagham Harbour SPA/Ramsar regarding atmospheric pollution can be excluded and are screened out from AA.

## Butser Hill SAC

- 5.17 The Butser Hill SAC is situated in the adjoining authority of East Hampshire, approximately 12.6km to the north-west of the Southbourne Allocation. The SAC is designated for two habitats that are sensitive to atmospheric nitrogen deposition, including semi-natural dry grasslands and scrubland facies on calcareous substrates (Critical Load of 10-20 kg N/ha/yr) and *Taxus baccata* woods of the British Isles (Critical Load of 10-15 kg N/ha/yr).
- 5.18 The CLP HRA identified the A3, at its closest 5m from the SAC, as a potential commuter route to/from Chichester District. Air quality modelling at one transect along the A3 was undertaken, particularly considering that data on APIS indicates that the current nitrogen deposition rate within that part of the SAC is 77 kg N/ha/yr and far in exceedance of the Critical Load range for calcareous grassland. Modelled concentrations of NH<sub>3</sub> and NO<sub>x</sub> all fell below the respective Critical Levels, and these atmospheric pollutants were not considered further.
- 5.19 The modelling data indicated that the contribution of the CLP to nitrogen deposition at 10m from the roadside was 0.18 kg N/ha/yr, exceeding the 1% threshold of the minimum Critical Load for dismissing air quality impacts. Given the forecast improvement in nitrogen deposition to 71.01 kg N/ha/yr in this part of the SAC despite the forecast in-combination growth, the CLP's contribution to nitrogen deposition was deemed not represent an actual deterioration but rather a slowing in the rate of air quality improvement.
- 5.20 The analysis of the nitrogen deposition data obtained for the Butser Hill SAC established the following facts:
- The most recent condition assessment of the SSSI underpinning the SAC identifies it to be in favourable condition, with typical, rich and varied chalk grassland flora being present. This is despite the highly elevated background nitrogen deposition rates;
  - Only 0.1% of the SAC will be affected to a greater than imperceptible degree by the CLP (i.e. by nitrogen deposition amounting to more than 1% of the minimum Critical Load);
  - Agriculture is the dominant source of atmospheric nitrogen, with existing traffic only being responsible for 8% of nitrogen deposited within the SAC. Due to various government initiatives, improvements in vehicle emissions technology and increased uptake of electric vehicles, traffic also represents an improving source of nitrogen such that its relative importance by 2040 will reduce significantly by 2040;
  - Set into the context of in-combination growth (responsible for 8.36 kg N/ha/yr), the CLP is only responsible for 0.18 kg N/ha/yr (2%) of the additional nitrogen deposited in the SAC. As highlighted in the preceding bullet point, this relative contribution is anticipated to reduce by 2040; and

- Since the overall net nitrogen deposition is forecast to reduce from 78.85 kg N/ha/yr to 71.01 kg N/ha/yr by 2040 (irrespective of the anticipated additional growth and traffic), the CLP's contribution to nitrogen deposition also does not represent an actual deterioration. Instead, it represents a slowing in the rate of air quality improvement by approximately 6 months.

5.21 The CLP HRA concluded that its growth would not result in adverse effects on the integrity of the Butser Hill SAC regarding atmospheric pollution, both alone and in-combination. It is considered that this broad conclusion remains valid, particularly because the residential growth allocated in the Southbourne Allocation has not increased compared to that accounted for in the CLP air quality modelling (the growth has decreased from 1,050 to 800 dwellings, but this is due to some residential units already having come forward). While the DPD potentially allows for more than 800 dwellings to come forward, any growth beyond that considered in the CLP air quality modelling would require updated air quality modelling at the planning application stage.

5.22 Overall, at the DPD level, LSEs on the Butser Hill SAC regarding atmospheric pollution can be excluded and are screened out from AA.

## Kingley Vale SAC

5.23 The Kingley Vale SAC is situated within Chichester District, over 4km to the north-east of the Southbourne Allocation. It is designated for two habitats that are sensitive to atmospheric pollution, including *Taxus baccata* woods of the British Isles (Critical Load of 10-15 kg N/ha/yr) and semi-natural dry grasslands and scrubland facies on calcareous substrates (10-20 kg N/ha/yr). At its closest, the SAC lies 130m from the B2141, a potential commuter route to/from Chichester District identified in the HRA of the overarching CLP. Therefore, the CLP HRA undertook air quality modelling at one transect into the SAC. According to data on APIS, the background nitrogen deposition in the relevant grid square covering this part of the SAC is 27.4 kg N/ha/yr, far exceeding the established nitrogen Critical Load range.

5.24 Modelled concentrations of NH<sub>3</sub> and NO<sub>x</sub> all fell below the respective Critical Levels, and these atmospheric pollutants were not considered further. Both the alone (0.02 kg N/ha/yr) and in-combination (0.19 kg N/ha/yr) contributions to nitrogen deposition were also well below the 1% threshold of the minimum Critical Load, implying they would not result in meaningful ecological impacts. The following further conclusions regarding atmospheric nitrogen deposition were made in the CLP HRA:

- Traffic is only responsible for 9% of nitrogen deposition within the SAC, compared to much more pronounced inputs from agriculture. As shown by past deposition trends and due to future developments (e.g. improvements in emissions technology and electric vehicle uptake), traffic will be an improving source of nitrogen by 2040;
- Despite the anticipated growth and associated traffic increase, the 2040 Do Something scenario will see an improvement in nitrogen deposition rates compared to the current baseline (26.14 kg N/ha/yr compared to 30.53 kg N/ha/yr). The in-combination nitrogen deposition, therefore, does not represent a net deterioration in air quality but rather a slowing in the rate of improvement; and
- An improvement of 4.41 kg N/ha/yr is forecast without the CLP by 2040, equating to 0.21 kg N/ha/yr per annum and 0.01 kg N/ha/yr per month over 21 years. Therefore, the CLP (responsible for 0.02 kg N/ha/yr) will only marginally slow down the air quality improvement within the SAC.

5.25 The CLP HRA concluded that its growth would not result in adverse effects on the integrity of the Kingley Vale SAC regarding atmospheric pollution, both alone and in-combination. It is considered that this broad conclusion remains valid, particularly because the residential growth allocated in the Southbourne Allocation has not increased compared to that accounted for in the CLP air quality modelling (the growth allocated has decreased from 1,050 to 800 dwellings, but this is due to some residential units already having been delivered). If more than 800 dwellings were to be delivered through the DPD and this represented growth in excess of that considered in the CLP HRA, this would need to be reflected in an updated air quality modelling exercise.

5.26 Overall, at the DPD level, LSEs on the Kingley Vale SAC regarding atmospheric pollution can be excluded and are screened out from AA.

## Ebernoe Common SAC

5.27 The Ebernoe Common SAC is partly designated for Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer. According to APIS, this habitat is sensitive to atmospheric NO<sub>x</sub>, NH<sub>3</sub> and nitrogen deposition (with a minimum nitrogen Critical Load of 10 kg N/ha/yr). Air quality modelling for this Habitats Site was undertaken for the CLP HRA due to the proximity of the SAC beech forest to the A283. However, the closest part of the Ebernoe Common SAC lies over 25km from the Southbourne Allocation, such that future traffic arising from the DPD will not contribute to regular commuter flows past sensitive beech woodland. Therefore, LSEs of the Southbourne DPD on the Ebernoe Common SAC regarding atmospheric pollution can be excluded and the Habitats Site is screened out from AA.

## The Mens SAC

5.28 The Mens SAC is also partly designated for Atlantic acidophilous beech forests with sensitivity to all three traffic-related atmospheric pollutants (NO<sub>x</sub>, NH<sub>3</sub> and nitrogen). Due to the SAC's proximity to the A272, an identified transport route for commuter traffic into and out of Chichester District, air quality modelling was undertaken at two transects along the A272 for the CLP HRA. However, the closest part of The Mens SAC lies over 25km from the Southbourne Allocation, which makes it very unlikely that commuter traffic arising from the DPD will regularly contribute to the atmospheric pollution burden in the beech forests. Therefore, LSEs of the Southbourne DPD on the Ebernoe Common SAC regarding atmospheric pollution can be excluded and the Habitats Site is screened out from AA.

## Duncton to Bignor Escarpment SAC

5.29 The Duncton to Bignor Escarpment SAC is designated for *Asperulo-Fagetum* beech forests, which are sensitive to increases in atmospheric nitrogen (minimum Critical Load of 10 kg N/ha/yr), NH<sub>3</sub> and NO<sub>x</sub>. Due to its proximity to the A285, a strategic commuter route identified in relation to the CLP, air quality modelling was undertaken at one transect along the road for the CLP HRA. However, at a distance of over 25km from the Southbourne Allocation, it is very unlikely that future residents from the development will be contributing to the volume of commuter journeys along this part of the A285. Therefore, LSEs of the Southbourne DPD on the Duncton to Bignor Escarpment SAC regarding atmospheric pollution can be excluded and the Habitats Site is screened out from AA.

## Coastal Squeeze

### Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar

5.30 Coastal squeeze impacts of the CLP on the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar were considered in the overarching HRA. This is because the development of greenfield sites directly adjoining the coastline could contribute to the disappearance of qualifying intertidal habitats (Solent Maritime SAC) or habitats supporting SPA/Ramsar bird species. However, the Southbourne Allocation itself does not adjoin the coastal frontage and will not add brownfield development alongside it. Furthermore, the adoption of Hold the Line (HTL) coastal management approaches (which are the principal driver behind coastal squeeze) does not fall within the remit of local planning policy. Addressing coastal erosion and flood risk is the responsibility of Shoreline Management Plans (SMPs) and in the case of Chichester District dictated by the North Solent SMP, which would have been subject to its own HRA. Overall, therefore, LSEs of the Southbourne DPD on the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Pagham Harbour SPA/Ramsar regarding coastal squeeze can be excluded. This impact pathway is screened out from AA.

## Loss of Functionally Linked Habitat

### Pagham Harbour SPA/Ramsar

5.31 The Pagham Harbour SPA/Ramsar is designated for a range of bird species that partially depend on functionally linked habitat beyond the designated site boundary. However, while the Southbourne Allocation falls within the Impact Risk Zone (IRZ) of 2km for dark-bellied Brent goose from the wider network of the Solent Habitats Sites (specifically the Chichester & Langstone Harbours SPA/Ramsar), it lies over 10km from the Pagham Harbour SPA/Ramsar. Therefore, it is considered that geese from the Pagham Harbour SPA/Ramsar are not reliant on supporting habitats within the proposed Southbourne Allocation. LSEs of the Southbourne DPD on the SPA/Ramsar regarding the loss of functionally linked habitat are excluded and this impact pathway is screened out from AA. Potential

impacts of the DPD on the Solent Habitats Sites regarding potential functionally linked habitat loss are duly considered in relation to the Chichester & Langstone Harbours SPA/Ramsar.

### **Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC**

5.32 The Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC are all designated for mobile bat species, which rely on foraging and commuting habitats beyond the designated site boundaries. All three SACs fall within Chichester District and the CLP HRA assessed potential impacts of development on suitable supporting habitats of barbastelle (Ebernoe Common SAC, The Mens SAC, Singleton & Cocking Tunnels SAC) and Bechstein's bat (Ebernoe Common SAC, Singleton & Cocking Tunnels SAC). The degree of reliance of these two bat species on functionally linked habitats is well established. Two key bat protection zones around the SACs have been identified:

- Key Conservation Area – Extending to 6.5km from the SACs; this represents the core supporting area for bats and the zone within which all impacts to potential supporting habitats will be considered; and
- Wider Conservation Area – Extending between 6.5km and 12km from the SACs; this represents the maximum extent from the SACs within which bats may forage and in which significant impacts to foraging habitats or severance of flightlines will be considered.

5.33 However, the closest of these Habitats Sites to the Southbourne Allocation, the Singleton and Cocking Tunnels SAC, lies at approximately 12km distance. This represents the limit of the Wider Conservation Area and it is noted that the allocation is separated from the SAC by the A27, a major obstacle to bat commuting. Therefore, it is considered that the Southbourne DPD will have no material impacts on bats associated with the Singleton & Cocking Tunnels SAC. The Ebernoe Common SAC and The Mens SAC both lie further away, meaning that the Southbourne Allocation falls significantly beyond the respective Wider Conservation Areas.

5.34 Overall, LSEs of the Southbourne DPD on the Singleton & Cocking Tunnels SAC, Ebernoe Common SAC and The Mens SAC regarding the loss of functionally linked habitat for bats can be excluded. These Habitats Sites are screened out from AA.

## **Summary**

5.35 In contrast to the CLP HRA, the Habitats Sites and impact pathways discussed above have been excluded from AA. However, in line with the CLP HRA, it is considered that LSEs of the DPD cannot be excluded in relation to the following impact pathways and these are screened in for AA:

- Recreational pressure – Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA;
- Water quality – Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA;
- Loss of functionally linked habitat – Chichester & Langstone Harbours SPA/Ramsar.

## 6. Appropriate Assessment (AA)

- 6.1 The DPD only encompasses a single allocation, its impact potential is considered to be insufficient to lead to adverse effects on site integrity alone. However, the DPD has the potential to lead to such impacts in-combination with the growth allocated in the CLP, as well as Local Plans of authorities adjoining Chichester District.

### Recreational Pressure

#### Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA

- 6.2 The Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA (collectively also referred to as the Solent Habitats Sites) all adjoin Chichester District. As such, they fall within close proximity to densely populated areas and are subject to repeat recreational visits from adjoining authorities. The SPAs, Ramsars and SAC in the wider Solent area are all designated for species/habitats that are sensitive to recreational pressure.
- 6.3 A collaborative working group known as the Solent Forum have undertaken a large-scale project examining bird disturbance and mitigation solutions, known as the Solent Disturbance and Mitigation Project (SDMP). The SDMP comprised the following distinct phases to build up an adequate evidence base and derive mitigation solutions:
- Phase 1 – analysis of existing visitor survey data to describe recreational patterns across the Solent Habitats Sites;
  - Phase 2 – relating observed visitor activity to bird responses and discussing implications on fitness and survival of individual bird species (e.g. a decrease in the survival rates for curlew and other bird species was predicted under increased visitor rates); and
  - Phase 3 – using visitor survey data (particularly home postcodes) to identify a core recreational catchment for the Solent Habitats Sites (i.e. denoting the geographic area from which the most significant, regular recreational burden stems).
- 6.4 This DPD HRA summarises some of the key data obtained in the visitor and bird surveys listed above. A full appraisal of recreation and bird disturbance patterns is provided in the CLP HRA. Data obtained in the 2010 survey indicate that the majority of interviewees visited directly from home (94%), with 6% of interviewees being on holiday. Various recreational activities were undertaken, the most frequently recorded ones being walking (44%) and dog walking (42%), and visit duration was typically less than two hours (89%). Visitor modelling considering the anticipated in-combination housing growth was undertaken. The results indicate that the visitor density (measured as the number of visitors per hectare of intertidal habitat) is predicted to be lower along Chichester Harbour compared to most other parts of the Solent frontage. At the time these studies were undertaken, in-combination housing growth was predicted to lead to an increase of 15-20% in visitor numbers across the harbour. Importantly, intertidal visitor density was modelled to remain below a threshold of 30 people/ha, the exceedance of which is considered to result in reduced bird survival.
- 6.5 From examination of Map 4 of the 2010 visitor survey, it is evident that the vast majority of south Hampshire based recreational visitors to this part of the SPA/Ramsar derive from a narrow band of settlements south of the A27 between Emsworth (in Havant Borough) to south-west of Chichester City. The Southbourne Allocation is situated within the aforementioned housing band, approximately 0.5km north from the Chichester and Langstone Harbours SPA/Ramsar (specifically its Chichester Harbour SSSI component part). Given that proximity to home is one of the strongest predictors for visiting, this part of the SPA/Ramsar is most likely to be accessed by future residents from dwellings in this allocation. Phase 3 of the SDMP identified that a 5.6km core recreational catchment should be applied around the Solent Habitats Sites, which was based on the area within which 75% of interviewees reside. Furthermore, it also stipulated that mitigation measures would be required from all residential developments within this zone. At a 0.5km distance, the Southbourne Allocation falls well within the core recreational catchment and is expected to materially contribute to the recreational burden within the Solent Habitats Sites. Therefore, mitigation measures will need to be delivered to allow the Southbourne Allocation to come forward.

- 6.6 Adequate mitigation measures are formalised in the Solent Recreation Mitigation Strategy (SRMS; adopted 2017), which aims to address recreational impacts along the Solent Coast through various measures such as a coastal ranger team, educational initiatives, responsible dog walking engagement, codes of conduct for coastal activities, site-specific visitor management, habitat protection and provision of alternative greenspaces. These are funded through financial contributions from developers proposing housing within the 5.6km core catchment, currently a flat rate of £652 per net additional dwelling. However, aside from contributions via the SRMS, developers also have the opportunity to provide a bespoke, development-specific package of mitigation measures to avoid impacts on the Solent Habitats Sites. These can be delivered as a stand-alone or in tandem with financial contributions via the SRMS. The overarching CLP summarises the mitigation requirements in **Policy NE8 (Development and Disturbance of Birds in Chichester and Langstone Harbours, Pagham Harbour, Solent and Dorset Coast Special Protection Areas and Medmerry Compensatory Habitat)**. The policy specifically identifies the 5.6km zone of influence and states that *'...In the absence of appropriate avoidance and/or mitigation measures that will enable the planning authority to ascertain that the development would not adversely affect the integrity of the SPA, planning permission will not be granted... Appropriate avoidance/mitigation measures that are likely to allow the planning authority to ascertain that there will be no adverse effect on the integrity of the SPA will comprise: a) A contribution in accordance with the joint mitigation strategy outlined in the Bird Aware Solent Strategy; or b) A developer provided package of measures associated with the proposed development designed to avoid any significant effect on the SPA, provided and funded in-perpetuity; or c) A combination of measures in (a) and (b) above.'*
- 6.7 The requirement for recreational pressure mitigation is reflected in the DPD. The allocation masterplan incorporates a significant area of recreational open space to mitigate recreational pressure impacts on the Chichester and Langstone Harbours SPA/Ramsar (and the other Solent Habitats Sites). The DPD identifies that this greenspace will be located in the northern and eastern parts of the site, and will be delivered to SANG standard. The DPD has identified the needed quantum of SANG delivery based on the population projections used for the open space calculations, resulting in a proposed quantum of 13ha of SANG. However, this is a preliminary determination, with a potential for an increased level of provision if deemed necessary. The SANG will be sensitively designed, with walking routes balancing the needs of residents and wildlife. A walking loop of a minimum of 2.5km in length will connect to the Green Ring and existing Public Rights of Way (PRoW) network. It is also noted that adequate play and sports facilities will be provided in line with Policy P15 (Open Space, Sport and Recreation) of the CLP. Allotments and community orchards with easy access from the Green Ring will also be provided within the site.
- 6.8 Review of the DPD indicates that the provision of SANG within the site is currently the primary mechanism to deflect recreational pressure away from the Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and other Solent Habitats Sites. While SANGs are an evidence-based measure for reducing recreational visits, their effectiveness in coastal contexts is not fully established. Given the unique attractiveness and draw of coastal/estuarine destinations, and the proximity of the Southbourne Allocation to the coastal frontage, it is relatively unlikely that the proposed SANG would fully address associated recreational pressure impacts. Therefore, it is recommended that Natural England is consulted on the adequacy of the SANG proposal at the earliest opportunity. However, it is considered likely that additional development-specific mitigation measures will be needed to conclude no adverse effects on site integrity. Various further measures could be explored, such as information leaflets to new dwellings, educational workshops and bespoke dog exercising areas. Additionally, the DPD has budgeted for the typical per-dwelling tariffs set in the Bird Aware mitigation strategy, requiring all developers to make these financial contributions. These monies would be collected by the central governance body and directed towards the most adequate on-the-ground mitigation measures. It is considered that contributions to this established strategy are a more effective mitigation approach than if dwellings within the Southbourne Allocation were to each deliver individualised packages of interventions. Generally, the DPD ensures double the amount of mitigation compared to many other developments (SANG delivery and Bird Aware financial contributions), which is positive. Early consultation with Natural England would ensure that any SANG design is appropriate and the total mitigation package to be delivered is adequate.
- 6.9 Policy SADPD1 of the DPD already stipulates that development within the site will need to accord with the requirements set out in Policy A13 (Southbourne Broad Location for Development) of the CLP. Policy A13 stipulates that development within the site will need to avoid or, where necessary, mitigate adverse effects on the Chichester and Langstone Harbours SPA/Ramsar and Solent Maritime SAC,

including those potentially resulting from strategic access management issues. However, given the prominence of the recreational pressure issue in the Solent, it is suggested that Policy SA1 also refers to Policy NE8 (discussed above). This will make a more direct and robust link to the legal driver underpinning specific mitigation requirements. A potential amendment reflecting this could read: '**The development of the site will need to accord with the requirements set out in policy A13 and NE8 within the Chichester Local Plan 2021-39.**' However, even if Policy NE8 was not explicitly included, this would apply in any case because it forms part of the overarching CLP.

## Loss of Functionally Linked Habitat

### Chichester and Langstone Harbours SPA/Ramsar

- 6.10 The Chichester & Langstone Harbours SPA/Ramsar is designated for various qualifying species and a non-breeding waterbird assemblage. All species encompassed in the designations are mobile and will routinely travel beyond the designated site boundary for foraging, roosting, loafing and other essential maintenance behaviours. While the SPA/Ramsar is not designated for bird species associated with large core foraging areas (e.g. swans, geese, golden plover or lapwing), the Southbourne Allocation only lies approximately 0.5km from the designated site boundary. Therefore, according to Natural England's Impact Risk Zones (IRZs) guidance note, even birds with the lowest foraging ranges could occur on site. For example, this would include species from Bird Group 2 (SSSIs notified for wintering birds, such as teal, mallard and gadwall) with an IRZ of 500m. In relation to the SPA/Ramsar, species from Bird Group 3 (SSSIs notified for wintering waders, brent goose and wigeon) with an IRZ of 2km are most likely to be relying on potential functionally linked habitat within the Southbourne Allocation. SPA/Ramsar species with some reliance on high-tide roost areas and farmland/grassland foraging habitat outside the designated site boundary include bar-tailed godwit, curlew and redshank.
- 6.11 Dark-bellied Brent goose are a particularly important species in the context of functionally linked habitat usage. These geese arrive in the UK from mid-September and initially feed in intertidal saltmarsh on eelgrass (*Zostera* species), various marine algae and sea lettuce *Ulva lactuca*. However, in response to diseases of their natural foraging resources and occasional harsher winters since the 1950s, the geese have expanded their foraging resources to include farmland and amenity grassland. While waders are primarily adapted to foraging in intertidal habitats, some species (e.g. redshank, curlew and bar-tailed godwit) also forage in coastal grasslands, wet pasture and, occasionally, arable farmland. The roosting behaviour of both dark-bellied brent goose and waders is heavily influenced by tidal states, with roosting beyond the designated site boundary frequently occurring at high tide.
- 6.12 To address the continued development pressures on SPA/Ramsar birds in the Solent and aid in the identification of functionally linked habitats, the Solent Waders & Brent Goose Strategy (SWBGS) was initially published in 2002. The data for the strategy have been obtained by a concerted effort of stakeholders, including extensive field surveys. The SWBGS has most recently been updated in 2024. According to the most recent mapping in support of the SWBGS, the Southbourne Allocation area is not identified as a Core Area, Primary Support Area or Secondary Support Area (SSA). In other words, it has not been identified as a key functionally linked habitat parcel for birds from the Solent SPAs/Ramsars. However, it lies to the east of a 63.66ha large SSA (C45). Due to its proximity to an established support area, use of the Masterplan area by SPA/Ramsar birds cannot entirely be excluded.
- 6.13 To provide bespoke evidence on the potential importance of the Southbourne Allocation as functionally linked habitat, passage and wintering bird surveys were undertaken within the proposed development boundary between October 2022 and February 2023 inclusive. Monthly surveys were undertaken across the site on five occasions in suitable weather conditions. For each survey, the surveyor walked a defined transect permeating the site at a slow, ambling pace.
- 6.14 The data in the bird survey report show that none of the individual qualifying species for which the Chichester and Langstone Harbours SPA is designated (i.e. those occurring at levels of international importance) were recorded. Equally, no species referred to in Criterion 5 of the Chichester & Langstone Harbours Ramsar were recorded. Two species of waterbird that contribute towards the SPA's wintering waterbird assemblage were noted, including lapwing (counts of 11 and 18 birds in January and February respectively) and snipe (peak count of two individuals in February). Five-year average counts for these two species for the Chichester and Langstone Harbours are not available on the WeBS website. However, it is considered that these numbers are sufficiently low for concluding that the

wintering waterbird assemblage of the SPA will not be materially impacted. Furthermore, the relevant supporting habitats within the site (i.e. arable farmland, wet ditches) are considered to be widespread in the surrounding area, such that their loss would not result in ecologically meaningful impacts on these two species.

- 6.15 Considering the above, it is concluded that the Southbourne DPD will not result in adverse effects on the integrity of the Chichester and Langstone Harbours SPA/Ramsar regarding the loss of functionally linked habitat, both alone and in-combination.

## Water Quality

### Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA

- 6.16 The Solent Habitats Sites are sensitive to water quality impacts arising from residential developments. A typical housing development may contribute water quality pollutants to aquatic receptors via two main pathways, specifically treated sewage effluent (discharged from relevant WwTWs) and surface runoff. Natural England's Site Improvement Plan (SIP) for the Solent mentions that water pollution affects various SAC habitats and SPA/Ramsar birds through eutrophication (in the case of birds this is mediated indirectly via cascading effects on food chains) and direct toxicity. The underlying factors attributed to the existing water quality issues include point sources (e.g. discharges from WwTWs, flood alleviation schemes and others) and diffuse sources (e.g. nitrogen leaching from agricultural sources and road runoff). Nitrogen and phosphorus loadings entering the Solent are now continuously monitored to establish the scale of and temporal changes to the issue.
- 6.17 The Southbourne Allocation is located in the southern part of Chichester District and lies in close proximity to the Chichester and Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA. Data from the Environment Agency indicate that the SPA's/Ramsar's current water quality status is impacted by macroalgal and phytoplankton markers, which are both classified as 'Poor'. Prior to 2018, the condition of the Chichester Harbour SSSI was downgraded from 'Unfavourable – recovering' to 'Unfavourable – no change'. Further condition assessments in 2019/20 classified more than 3,000ha of intertidal habitats in the harbour as 'Unfavourable – declining'.
- 6.18 In response to the ongoing eutrophication issues, Natural England have introduced a nutrient neutrality requirement for new developments associated with wastewater discharges to the Solent, including housing, hotels, holiday accommodation and tourism attractions. This requirement applies to developments of all sizes (including single dwellings), which have the potential to increase the nutrient burden in the Solent. Natural England have published a detailed advice note on the nutrient neutrality issue, which is accompanied by nutrient calculators for various Habitats Sites (including those in the Solent). Where developments are associated with a nitrogen surplus, mitigation measures are required to secure planning consent. Within the CLP area, mitigation (where required) is typically delivered through market nutrient credit schemes, such as the Nitrate Mitigation Land Scheme at Chilgrove Farm. This scheme encompasses over 19ha of arable land at Chilgrove Farm in the River Lavant catchment. Developers that fail to meet their nutrient neutrality obligations can purchase agricultural land to be taken out of production. This is then converted to woodland, which is associated with much lower nitrogen exports, and can be considered in the relevant nitrogen budgets.
- 6.19 In line with the published guidance, detailed nitrogen budgets were calculated for all allocations included in the adopted CLP. This included the Southbourne Allocation (originally allocated for 1,050 dwellings), for which a nitrogen budget was calculated based on an initial estimation of the types of spaces provided on site (e.g. developed land, open space, etc.). As the Southbourne Allocation is progressing towards its planning application stage, various parameters that are relevant to the calculation of the nitrogen budget have changed. For example, only 800 residential dwellings are now proposed, and the amount of open space has increased (a total of 22.62ha of SANG and 24.41ha of natural greenspace is now to be provided). Therefore, an updated nitrogen budget has been calculated for the DPD HRA. The calculations were based on the most recent nutrient neutrality calculator tool for the Solent and are shown in Table 6. Based on the applicable permit limit at Thornham WwTW, the additional population in the Southbourne Allocation will generate an annual total nitrogen (TN) load of 605.21 kg/yr. Some nitrogen release (630.62 kg/yr) will also be released from future land uses within the allocation. However, the additional TN loading associated with the Southbourne Allocation will be more than offset by the conversion of existing land uses within the Masterplan area (1,634.2 kg TN/yr).

- 6.20 This is predominantly due to the 'loss' of arable farmland that will occur due to the allocation within the Solent catchment. Arable systems typically rely on large applications of synthetic fertilisers and manure, which crops do not take up entirely. Any surplus nitrogen is stored in soils, highly mobile and frequently converted to nitrate. This is water-soluble and easily washed into watercourses and, ultimately, the coastal environment following events, such as soil disturbance, periods of bare ground and rainfall. Conversion of arable farmland to urban development is one of the main recognised pathways for reducing nitrogen input into the aquatic environment.
- 6.21 Overall, the nitrogen budget calculated for the Southbourne DPD shows that the development will actually lead to a net reduction in nitrogen loading within the Solent, and specifically in the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA. Therefore, there will be no nutrient enrichment due to the DPD in the Solent coastal waters and no mitigation measures will be required to allow the Southbourne Allocation to come forward. It is noted that if more than 800 dwellings were to come forward within the Southbourne Allocation, an updated nitrogen budget would need to be submitted as part of the planning application, which would very likely still show a net loss in nitrogen input to the catchment of the Solent Habitats Sites. Adverse effects on the integrity of the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA regarding water quality can be excluded.

**Table 6: Updated nitrogen budget for the Southbourne Allocation.**

Stage 1 – Nutrient loading from Thornham WwTW (kg TN/yr)		Stage 2 – Nutrient export associated with current land use (kg TN/yr)		Stage 3 – Nutrient export associated with future land use (kg TN/yr)		Stage 4 – Final nutrient balance (kg TN/yr)	
Permit limit (mg/l)	10	Cereals (66.82ha)	1,411.6	Residential urban land (25.99ha)	399.66		
Deduct acceptable loading (mg/l)	2	Woodland (4ha)	12	Open urban land (8.89ha)	80.59		
Adjusted permit limit (mg/l)	8	General (2.26ha)	41.52	Greenspace (47.03ha)	141.09		
Additional population <sup>78</sup>	1,920	Mixed (9.43ha)	169.08	Community food growing (0.6ha)	9.28		
Volume of wastewater generated (l/d) <sup>79</sup>	230,400						
<b>Annual wastewater TN load</b>	<b>605.21</b>	<b>Total current nutrient export</b>	<b>1,634.20</b>	<b>Total future nutrient export</b>	<b>630.62</b>	<b>Overall nutrient budget associated with the Southbourne Allocation (including a 20% precautionary buffer)</b>	
							<b>-318.7</b>

<sup>78</sup> Based on an average occupancy rate of 2.4

<sup>79</sup> Based on water usage of 120 litres / person / day

## 7. Conclusions and Recommendations

- 7.1 This HRA assessed the potential impacts of the Southbourne DPD on Habitats Sites, including SPAs, SACs and Ramsars. Since the Southbourne Allocation falls within Chichester District and was a site allocated in the overarching CLP, the scope of the DPD HRA was guided by the HRA undertaken for the adopted CLP. The actual growth allocated at Southbourne has decreased from 1,050 dwellings to 800 dwellings since its allocation in the CLP and, therefore, conclusions reached in the CLP HRA can generally continue to be relied upon. For example, the magnitude of contribution of the Southbourne Allocation to any impact pathway (e.g. atmospheric pollution) would have reduced compared to the assessment undertaken for the CLP HRA.
- 7.2 Nonetheless, several impact pathways (i.e. recreational pressure, loss of functionally linked habitat and water quality) were taken forward to AA. This is primarily because new evidence of relevance to these impact pathways is coming forward as the Masterplan for the site is being developed and the site is progressing towards its planning application stage.
- 7.3 Regarding recreational pressure, the AA identifies that the overarching CLP HRA contains an adequate policy framework to ensure that mitigation measures are delivered by developers in line with the SRMS. The Southbourne DPD acknowledges the requirement for mitigation by allocating a 13ha greenspace that will be delivered to SANG standards. For example, a minimum circular walk of 2.5km will be provided (connected to the wider PRoW network), with additional space for play and sports facilities, allotments and orchards also being provided. The DPD also requires dwellings within the Southbourne Allocation to make financial contributions towards the Bird Aware Solent Strategy, which will further mitigate recreational impacts within the Solent Habitats Sites. To further align with the overarching CLP, it is recommended that the DPD makes explicit reference to Policy NE8 of the CLP that lists the mitigation requirements in relation to the Solent Habitats Sites. The following amendment to the DPD is suggested: ***'The development of the site will need to accord with the requirements set out in policy A13 and NE8 within the Chichester Local Plan 2021-39.'*** Overall, it is concluded that there will be no adverse effects of the Southbourne DPD on the Chichester & Langstone Harbours SPA/Ramsar, Solent Maritime SAC and Dorset Coast SPA regarding recreational pressure.
- 7.4 Regarding the potential loss of functionally linked habitat, the AA highlights that the Southbourne Allocation is not identified as functionally linked habitat in the SWBGS, although it does lie in close proximity to a SSA to its west. Therefore, 2022/2023 wintering bird surveys within the site were undertaken to establish whether it is important to bird populations of the Chichester & Langstone Harbours SPA/Ramsar, either in terms of the bird abundances supported or regularity of use. However, no qualifying bird species individually listed on the SPA or Ramsar citations were recorded. While two species (lapwing and snipe) contributing to the non-breeding waterbird assemblage were recorded, numbers were generally low and only present on a few occasions. Overall, it is concluded that there will be no adverse effects of the Southbourne DPD on the Chichester & Langstone Harbours SPA/Ramsar regarding loss of functionally linked habitat.
- 7.5 Since the number of dwellings has reduced and the quantum/type of future land uses within the site has changed since the CLP HRA was undertaken, an updated nitrogen budget for the Southbourne DPD was undertaken using the most recent calculator tool for the Solent. This highlights that the DPD is associated with a negative nitrogen loading of -318.7 kg/yr, meaning that it will actually help reduce nitrogen concentrations in the coastal environment compared to the pre-development scenario (primarily due to the net loss of arable farmland from the Solent catchment). Therefore, no mitigation will be required to allow the Southbourne Allocation to come forward. Overall, it is concluded that there will be no adverse effects of the Southbourne DPD on the Solent Maritime SAC, Chichester & Langstone Harbours SPA/Ramsar and Dorset Coast SPA regarding water quality.

