Loxwood Neighbourhood Plan

Habitats Regulations Assessment

Loxwood Parish Council

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Quality information

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Table of Contents

1. Introduction 6
Background to the Project 6
Legislation 6
Report Layout 8
2. Methodology 9
Introduction 9
HRA Task 1: Test of Likely Significant Effects (LSE) 9
HRA Task 2: Appropriate Assessment (AA) 9
HRA Task 3: Avoidance and Mitigation 10
Confirming Other Plans and Projects That May Act 'In Combination' 11
Scope of the HRA 11
3. European Sites Relevant to the Neighbourhood Plan 13
The Mens SAC 13
Introduction 13
Qualifying Features 13
Conservation Objectives 14
Threats / Pressures to Site Integrity 14
Historic Trends and Current Pressures 14
Arun Valley SPA / Ramsar 16
Introduction 16
SPA Qualifying Features 16
Ramsar Qualifying Features 16
Conservation Objectives 17
Threats / Pressures to Site Integrity 17
Arun Valley SAC 18
Introduction 18
Qualifying Features 18
Conservation Objectives 18
Threats / Pressures to Site Integrity 18
Ebernoe Common SAC 19
Introduction 19
Reasons for Designation 19
Conservation Objectives 19
Historic Trends and Current Pressures 19
4. Relevant Impact Pathways 22
Effects on Functionally Linked Habitat 22
Recreational pressure 22
Non-breeding Birds (September to March) 24
Bat Disturbance 27
Trampling / Mechanical Damage 27
Water Quality 28
Background information on Phosphate Impacts on the Arun Valley SPA/SAC/Ramsar 29
Water Quantity, Level and Flow 30

Atmospheric Pollution 31
5. Test of Likely Significant Effects (LSEs) 36
Background to Loxwood Parish 36
Physical scope of the HRA 36
Results of the Test of Likely Significant Effects 48
Effects on functionally linked habitat 48
The Mens SAC 48
Ebernoe Common SAC 48
Arun Valley SPA/Ramsar 49
Arun Valley SAC 50
Recreational Pressure 50
The Mens SAC 50
Arun Valley SPA/ SAC/ Ramsar 51
Atmospheric Pollution 51
The Mens SAC 51
Ebernoe Common SAC 52
Water quality 52
Arun Valley SPA/SAC/Ramsar 52
Water Quantity, Level and Flow 53
Arun Valley SPA/SAC/Ramsar 53
6. The in-combination scope 55
7. Appropriate Assessment 56
Introduction 56
Effects on functionally linked habitat 57
The Mens SAC & Ebernoe Common SAC 57
Existing Policy Protection 61
Water Quality (discharge of treated sewage effluent) 63
Arun Valley SPA/Ramsar/SAC 63
Existing Policy Protection 64
Water Quantity Level and Flow 66
Arun Valley SPA/SAC/Ramsar 66
Abstraction 66
8. Conclusions 67

Tables

Table 1. Tolerance distances in metres of 21 species of waterfowl to various forms of recreational disturbance, as described in the literature. Where the mean is not available, distances are provided as a range. 26
Table 2. Main sources and effects of air pollutants on habitats and species 32
Table 3. Description of potential impact pathways from increased development to European Sites 38
Table 4. Screening assessment (Likely Significant Effects) of the Loxwood Neighbourhood Plan 40

1. Introduction

Background to the Project

1.1 AECOM was appointed by Loxwood Parish Council to assist in undertaking a Habitats Regulations Assessment (HRA) for the emerging Loxwood Neighbourhood Plan (LNP). This is to inform Loxwood Parish Council of the potential effects of new development within the parish on internationally designated wildlife sites, and how they are being addressed in the Neighbourhood Plan, for Chichester District Council (the Local Planning Authority) to take into account in its formal HRA.

The objectives of the assessment are to:

- Identify any aspects of the Loxwood Neighbourhood Plan that would cause an adverse effect on the integrity of international sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs)) including, as a matter of Government policy, Ramsar sites, either in isolation or in combination with other plans and projects, and
- To advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

1.2 The HRA of the Loxwood Neighbourhood Plan is required to determine if there are any realistic linking pathways present between an international site and the Neighbourhood Plan and where Likely Significant Effects cannot be screened out, an analysis to inform Appropriate Assessment to be undertaken to determine if adverse effects on the integrity of the international sites will occur as a result of the Neighbourhood Plan alone or in combination.

Legislation

1.3 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"). The most recent amendments to the Habitats Regulations – the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 – make it clear that the need for HRA has continued after the end of the Transition Period.

1.4 Under the Regulations, an Appropriate Assessment is required, where a plan or project is likely to have a significant effect upon an international site, either individually or in combination with other projects. The Directive is implemented in the UK by the Conservation of Habitats and Species Regulations 2017 (as amended) (the "Habitats Regulations").

The legislative basis for Appropriate Assessment

Conservation of Habitats and Species Regulations 2017 (as amended)

"A qualifying body which submits a proposal for a neighbourhood development plan must provide such information as the competent authority [the Local Planning Authority] may reasonably require for the purposes of the assessment under regulation 105 [which sets out the formal process for determination of 'likely significant effects' and the 'Appropriate Assessment']…"

1.5 It is therefore important to note that this report has two purposes:

a. To assist the Qualifying Body (Loxwood Parish Council) in preparing their plan by recommending (where necessary) any adjustments required to protect international sites, thus making it more likely their plan will be deemed compliant with the Conservation of Habitats and Species Regulations 2017 (as amended); and

b. On behalf of the Qualifying Body, to assist the Local Planning Authority (Chichester District Council) to discharge its duty under Regulation 105 (in their role as 'plan-making authority' within the meaning of that regulation) and Regulation 106 (in their role as 'competent authority').

1.6 As 'competent authority', the legal responsibility for ensuring that a decision of 'likely significant effects' is made, for ensuring an 'Appropriate Assessment' (where required) is undertaken, and for ensuring Natural England are consulted, falls on the local planning authority and the Neighbourhood Plan examiner. However, they are entitled to request from the Qualifying Body the necessary information on which to base their judgment and that is a key purpose of this report.

1.7 The Habitats Regulations applies the precautionary principle[1] to international sites SAC, SPA, and Ramsar. For the purposes of this assessment candidate SACs (cSACs), proposed SPAs (pSPAs) and proposed Ramsar (pRamsar) sites are all treated as fully designated sites.

1.8 Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. This contrasts with the SEA Directive which does not prescribe how plan or programme proponents should respond to the findings of an environmental assessment; merely that the assessment findings (as documented in the 'environmental report') should be 'taken into account' during preparation of the plan or programme.

1.9 In 2018, the 'People Over Wind' European Court of Justice (ECJ) ruling[2] determined that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce the harmful effects of a plan or project on international sites) 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. Appropriate assessment is not a technical term: it simply means 'an assessment that is appropriate' for the plan or project in question. As such, the law purposely does not prescribe what it should consist of or how it should be presented; these are decisions to be made on a case by case basis by the competent authority. An amendment was made to the Neighbourhood Planning Regulations in late 2018 which permitted Neighbourhood Plans to be made if they required Appropriate Assessment.

[1] 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*".
People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

[2] Case C-323/17

1.10 Over the years the phrase ‘Habitats Regulations Assessment’ has come into wide currency to describe the overall process set out in the Conservation of Habitats and Species Regulations from screening through to Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the process from the individual stage described in the law as an ‘Appropriate Assessment’. Throughout this report we use the term Habitats Regulations Assessment for the overall process.

Report Layout

- **Chapter 2** of this report explains the process by which the HRA has been carried out. **Chapter 3** details the European Sites relevant to the parish. **Chapter 4** explores the relevant pathways of impact. **Chapter 5** summarises the Test of Likely Significant Effects of the policies and site allocations of the Plan considered ‘alone’ and ‘in-combination’. **Chapter 6** explores the other plans that could act in combination with the Loxwood Neighbourhood Plan. **Chapter 7** contains the Appropriate Assessment for any linking impact pathways that could not be screened out from potentially resulting in a Likely Significant Effect. **Chapter 8** contains the conclusion and a summary of recommendations.

2. Methodology

Introduction

2.1 Figure 1 below outlines the stages of HRA according to current Ministry of Housing, Communities and Local Government 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 1 Four Stage Approach to Habitats Regulations Assessment (GOV.UK, 2019)

HRA Task 1: Test of Likely Significant Effects (LSE)

2.2 Following evidence gathering, the first stage of any HRA 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:

2.3 "Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"

2.4 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites. This stage is undertaken in Chapter 5 of this report.

HRA Task 2: Appropriate Assessment (AA)

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

2.6 During July 2019 the Ministry of Housing, Communities and Local Government published guidance for Appropriate Assessment[3]. Paragraph: 001 Reference ID: 65-001-20190722 explains: '*Where the potential for likely significant effects cannot be excluded, a competent authority must make an Appropriate Assessment of the implications of the plan or project for that site, in view of the site's conservation objectives. The competent authority may agree to the plan or project only after having ruled out adverse effects on the integrity of the habitats site. Where an adverse effect on the site's integrity cannot be ruled out, and where there are no alternative solutions, the plan or project can only proceed if there are imperative reasons of over-riding public interest and if the necessary compensatory measures can be secured*'.

2.7 As this analysis follows on from the screening process, there is a clear implication that the analysis will be more detailed than undertaken at the Screening stage and 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 takes any policies or allocations that could not be dismissed following the high-level screening analysis and analyses the potential for an effect in more detail, with a view to concluding whether there would be an adverse effect on integrity (in other words, disruption of the coherent structure and function of the European site(s)).

2.8 A decision by the European Court of Justice[4] concluded that measures intended to avoid or reduce the harmful effects of a proposed project on a European site may no longer be taken into account by competent authorities at the Likely Significant Effects or 'screening' stage of HRA. The UK is no longer part of the European Union. However, as a precaution, it is assumed for the purposes of this HRA that EU case law regarding Habitat Regulations Assessment will still be considered informative jurisprudence by the UK courts. That ruling has therefore been considered in producing this HRA.

2.9 Also, in 2018 the Holohan ruling[5] 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 taken into account in the HRA process.

HRA Task 3: Avoidance and Mitigation

2.10 Where necessary, measures are recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on European sites. There is

[3] https://www.gov.uk/guidance/appropriate-assessment#what-are-the-implications-of-the-people-over-wind-judgment-for-habitats-regulations-assessments [Accessed: 07/01/2020].
[4] People Over Wind and Sweetman v Coillte Teoranta (C-3.23/17).
[5] Case C-461/17.

considerable precedent concerning the level of detail that a Neighbourhood Plan document needs to contain regarding mitigation for recreational impacts on European 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.

2.11 When discussing ‘mitigation’ for a Neighbourhood Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the details of the mitigation measures themselves since the Local Development Plan document is a high-level policy document. A Neighbourhood Plan is a lower level constituent of a Local Development Plan.

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

2.12 It is a requirement of the Conservation of Habitats and Species Regulations 2017 (as amended) 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 European site(s) in question.

2.13 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 may 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 or policy would otherwise be screened out because its individual contribution is inconsequential.

Scope of the HRA

2.14 There is no guidance that dictates the physical scope of an HRA of a plan. Therefore, in considering the physical scope of the assessment we were guided primarily by the identified impact pathways rather than by arbitrary 'zones', i.e. a source-pathway-receptor approach. Consistent with MHCLG guidance on Appropriate Assessment and established HRA practice, the following international sites were included in the scope of assessment:

2.15 All sites within the Neighbourhood Plan Area (the area covered by the Neighbourhood Plan); and

2.16 Other sites shown to be linked to development within the Neighbourhood Plan Area through a known “impact pathway” (discussed below). Specifically, this refers to:

- The Mens SAC
- Ebernoe Common
- Arun Valley SPA/Ramsar
- Arun Valley SAC

2.17 This was based upon a search within the parish boundary and a 10km zone surrounding it as well as consideration of the vulnerabilities of these sites.

2.18 The above sites were subjected to the initial screening exercise. It should be noted that the presence of a conceivable pathway linking the district to a European site does not mean that LSEs will occur.

3. European Sites Relevant to the Neighbourhood Plan

3.1 Appendix C shows all the European sites discussed in this HRA.

The Mens SAC

Introduction

3.2 The Mens SAC is a 204.69ha large site, comprising one of the largest ancient woodlands in West Sussex and supports a significant population of barbastelle *Barbastella barbastellus*. This site lies approx. 4.9km to the south of Loxwood Parish. Most of the SAC woodland lies on Weald Clay with some restricted areas of limestone. The site harbours a wide range of woodland communities and age structures, primarily as a result of past management regimes and underlying geology. The SAC also supports outstanding invertebrate, fungi, lichen and bryophyte assemblages.

3.3 The woodland harbours primarily high forest of sessile oak *Quercus petraea*, pedunculate oak Q*uercus robur,* beech *Fagus sylvatica*, holly *Ilex aquifolium* and, locally, ash *Fraxinus excelsior*, birches *Betula* spp. and wild service tree *Sorbus torminalis*. On the heavier clay soils oak-ash woodland occurs over a shrublayer consisting of hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, crab apple *Malus sylvestris* and blackthorn *Prunus spinosa*. The site is developing a near-natural high forest structure, in response to only limited silvicultural intervention over the 20th century. Barbastelles roost within the site boundary, but tend to forage outside the SAC, commuting along woodland corridors into the wider countryside[6].

Qualifying Features[7]

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

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

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

- Barbastelle Barbastella barbastellus

[6] Natural England (2019). *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features.* Available online from: http://publications.naturalengland.org.uk/publication/5642356338458624 [Accessed; 14/01/20].

[7] Available online at*:* https://sac.jncc.gov.uk/site/UK0012716 [Accessed on the 13/10/2020]

Conservation Objectives[8]

3.6 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;

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

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

Threats / Pressures to Site Integrity[9]

3.8 The following threats / pressures to the integrity of The Mens SAC have been identified in Natural England's Site Improvement Plan:

- Forestry and woodland management
- Habitat connectivity
- Invasive species
- Change in land management
- Air pollution: Risk of atmospheric nitrogen deposition
- Public access / disturbance

Historic Trends and Current Pressures

3.9 The Mens is one of the largest ancient woodlands in West Sussex and supports a significant population of barbastelle *Barbastella barbastellus*. It falls within the Low Weald National Character Area (NCA 121). Most of the woodland lies on Weald Clay although in some places Paludina limestone outcrops at the surface. It is a varied site with a range of woodland communities and age structures which have developed due to differences in underlying soils and past management.

[8] Available at: http://publications.naturalengland.org.uk/publication/5642356338458624 [Accessed on the 13/10/2020]
[9] Available at: http://publications.naturalengland.org.uk/publication/5548316158853120 [Accessed on the 13/10/2020]

The site also supports outstanding invertebrate, fungi, lichen, and bryophyte assemblages.

3.10 The woodland is predominantly high forest of sessile oak Quercus petraea and pedunculate oak *Quercus robur*, beech *Fagus sylvatica*, holly *Ilex aquifolium* and locally, ash *Fraxinus excelsior*, birches *Betula* spp. and wild service tree *Sorbus torminalis*. Beech dominates the lighter soils over an understorey of holly and yew *Taxus baccata*. On the heavier clay soils oak-ash woodland occurs over a mixed shrub layer which includes hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, crab apple *Malus sylvestris* and blackthorn *Prunus spinosa*. It is developing a near-natural high forest structure, in response to only limited silvicultural intervention over the 20th century, combined with the effects of natural events such as the 1987 great storm. Barbastelles roost within the woodland but tend to forage outside of the site, commuting along woodland corridors into the wider countryside.

3.11 The Mens SAC is owned and managed by Sussex Wildlife Trust. The Mens SAC is important for its barbastelle populations and radio-tracking studies have been undertaken to identify core foraging areas. These reports have identified that the barbastelles of The Mens SAC forage to the east of the SAC, principally on the floodplain of the river Arun from close to Horsham in the north to Parham in the south. They also cross to the Adur floodplain. In some cases, the bats travelled up to 12.2km to visit foraging areas[10]. The currently available radio-tracking evidence indicates that 75% of the bat population forage within 9km of the SAC although it is conceivable for barbastelle bats of the SAC to use a wider area for activities such as migrating between hibernation roosts and summer roosts. Natural England's Supplementary Advice on the Conservation Objectives (SACO) for the SAC contain a map showing key flightlines and foraging areas for the SAC. These indicate that the key flightlines are to the north and east of the SAC. Loxwood place lies approx. 4.9km north of the SAC.

3.12 The key vulnerabilities to the SAC are:

- Traditional management to maintain the structural diversity and associated lichen and fungal flora, including appropriate grazing regime.
- The retention of deadwood within the site
- 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. For barbastelle bats this is up to 7km from a known roost and up to 1.5km for Bechstein bats.
- Both bat species have close association with woodland. Areas of undesignated woodland adjacent to SAC may be of most importance to population.
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

[10] Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008

Arun Valley SPA / Ramsar

Introduction

3.13 The Arun Valley SPA / Ramsar comprises an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley. The grassland is neutral wet and subject to winter as well as occasional summer flooding. An extensive network of drainage ditches runs through the SPA, providing habitat for biodiverse aquatic flora and invertebrate communities. Additionally, the site is also classified as a Site of Community Importance (SCI) for little whirlpool ram's-horn snail *Anisus vorticulus*.

3.14 The plant communities present in the fields are primarily determined by the management history and water levels present. For example, the drier fields are dominated by meadow grasses, such as crested dog's-tail *Cynosurus cristatus* and perennial rye-grass *Lolium perenne*. In wetter areas rushes, sedges and tufted hair-grass *Deschampsia cespitosa* are more frequent. The ungrazed fields have developed into fen, scrub and woodland. Fen areas comprise common reed *Phragmites australis* and greater tussock-sedge *Carex paniculate*. On drier ground there is alder *Alnus glutinosa*, willow *Salix* sp. and birch *Betula* sp.

3.15 Most notably the Arun Valley SPA supports important numbers of wintering waterfowl, such as Bewick's swan *Cygnus columbianus bewickii*, shoveler *Anas clypeata*, teal *Anas crecca* and wigeon *Anas Penelope*. These feed in the wetter, low-lying fields of the floodplain adjacent to drainage ditches.

SPA Qualifying Features[11]

3.16 Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1)

- Bewick's swan Cygnus *columbianus bewickii*
- Qualifying assemblage of species (Article 4.2)

3.17 During the non-breeding season, the SPA regularly supports an assemblage of waterfowl with the area regularly supporting 27,241 individual waterfowl (5 year peak mean for 1992/93 to 1996/97) including: Shoveler *Anas clypeata*, teal *Anas crecca*, wigeon *Anas penelope*, Bewick's swan *Cygnus columbianus bewickii*.

Ramsar Qualifying Features[12]

3.18 The Arun Valley qualifies as a Ramsar site under the following Ramsar criteria:

Criterion 2

3.19 The site holds seven wetland invertebrate species listed in the British Red Data Book as threatened. One of these, *Pseudamnicola confusa*, is considered to be endangered. The site also supports four nationally rare and four nationally scarce plant species.

Criterion 3

[11] http://publications.naturalengland.org.uk/publication/4567444756627456 [Accessed on the 14/10/2020]
[12] https://jncc.gov.uk/jncc-assets/RIS/UK11004.pdf [Accessed on the 14/10/2020]

3.20 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 *Lemna* species, all five water-cress *Rorippa* species, and all three British water milfoils (*Myriophyllum* species), all but one of the seven British water dropworts (*Oenanthe* species), and two-thirds of the British pondweeds (*Potamogeton* species) can be found on site.

Criterion 5

Assemblages of international importance

3.21 Species with peak counts in winter: 13,774 waterfowl (5 year peak mean 1998/99-2002/03)

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

3.22 Species with peak counts in winter: Northern pintail, *Anas acuta*, NW Europe: 641 individuals, representing an average of 1% of the population (5-year peak mean 1998/99-2002/03)

Conservation Objectives[13]

3.23 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;

3.24 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

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

Threats / Pressures to Site Integrity[14]

3.25 The following threats / pressures to the site integrity of the Arun Valley SPA / Ramsar have been identified in Natural England's Site Improvement Plan:

- Inappropriate water levels
- Water pollution
- Inappropriate ditch management

[13] http://publications.naturalengland.org.uk/publication/4567444756627456 [Accessed on the 14/10/2020]

[14] http://publications.naturalengland.org.uk/publication/5353882309885952 [Accessed on the 14/10/2020]

Arun Valley SAC

Introduction

3.26 The Arun Valley SAC, largely overlapping with the Arun Valley SPA / Ramsar, is a 487.48ha site comprising humid / mesophile grassland (95%), inland water bodies (2%) and bogs / marshes (2%). Given the overlap with the SPA / Ramsar (discussed in the previous section), the ecological characteristics are similar. However, the SAC is primarily designated for the ramshorn snail *Anisus vorticulus*. The snail occurs across a range of sites in southern and eastern England, with the Arun Valley being one of the three main population centres in the UK. Two of the core sites for the ramshorn snail lie in the wash lands of the Arun floodplain: the Pulborough Brooks and Amberley Wild Brooks SSSIs.

Qualifying Features[15]

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

- Ramshorn snail *Anisus vorticulus*

Conservation Objectives[16]

3.28 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;

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

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

Threats / Pressures to Site Integrity[17]

3.30 The following threats / pressures to the site integrity of the Arun Valley SAC have been identified in Natural England's Site Improvement Plan:

- Inappropriate water levels
- Water pollution
- Inappropriate ditch management

[15] https://sac.jncc.gov.uk/site/UK0030366 [Accessed on the 14/10/2020]
[16] http://publications.naturalengland.org.uk/publication/4924283725807616 [Accessed on the 14/10/2020]
[17] http://publications.naturalengland.org.uk/publication/5353882309885952 [Accessed on the 14/10/2020]

- Potential loss of functionally linked habitat has also been identified as a concern, although it is not mentioned in the Site Improvement Plan.

Ebernoe Common SAC

Introduction

3.31 Ebernoe Common is a 234.93ha site of international importance as an 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 bat and Bechstein's bat occur within the woodland.

Reasons for Designation

3.32 Ebernoe Common SAC qualifies as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitats of:

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

3.33 Secondly, the site contains the Habitats Directive Annex II species:

- Barbastelle bat; and
- Bechstein's bat

Conservation Objectives[18]

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

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

Historic Trends and Current Pressures

3.35 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

[18] http://publications.naturalengland.org.uk/file/5942973099671552 [accessed 16/12/2020]

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)[19].

3.36 In the most recent Natural England condition assessment process, 92.81% of Ebernoe Common SSSI was considered to be in favourable condition with the remainder recovering from unfavourable status.

3.37 Ebernoe Common is an exceptional site for both barbastelle and Bechstein bats. Most of what is known about the foraging behaviour of barbastelle bats has been derived by studies carried out over the past ten years, and the studies are able to give detailed information on flight lines surrounding Ebernoe Common of the barbastelle bat:

- Greenaway, F. (2004) Advice for the management of flightlines and foraging habitats of the barbastelle bat *Barbastellus barbastellus*. *English Nature Research Report*, Number 657.
- Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008

3.38 The barbastelles at Ebernoe Common SAC had flightlines that followed watercourses, particularly the River Kird, and woodland cover for distances of typically 7km. Flightlines outside the SAC are particularly to the south (the Petworth and Tillington area) but also to the west, north and east. There has been less study of the Bechstein bat populations. However, those radio-tracking projects which have been implemented for the species have established that the tracked individuals generally remained within approximately 1.5 km of their roosts[20]. These distances do fit with those identified from radio-tracking of Bechstein's that has been undertaken at Ebernoe Common SAC from 2001, which identified that the maximum distance travelled by a tagged Bechstein's bat to its foraging area was 1,407m, with the average 735.7m[21]. Natural England's Supplementary Advice on the Conservation Objectives (SACO) for the SAC contain a map showing key flightlines and foraging areas for the SAC.

3.39 Studies have indicated that barbastelle bat flightlines from Ebernoe Common SAC cross the northern part of Chichester District. Most of this area now lies within the South Downs National Park for strategic planning purposes.

3.40 The key vulnerabilities to the SAC are:

- Traditional management to maintain the structural diversity and associated lichen and fungal flora, including appropriate grazing regime.
- The retention of deadwood within the site
- Minimal atmospheric pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities.
- Absence of disturbance.

[19] Monk-Terry, M and Lyons, G. Sussex Wildlife Trust Ebernoe Nature Reserve Management Plan 2010-2015.
[20] Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust
[21] Fitzsimmons P, Hill D, Greenaway F. 2002. Patterns of habitat use by female Bechstein's bats (Myotis bechsteinii) from a maternity colony in a British woodland

- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting. For barbastelle bats this is up to 7km from a known roost and up to 1.5km for Bechstein bats.
- Both bat species have close association with woodland. Areas of undesignated woodland adjacent to SAC may be of most importance to population.
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

4. Relevant Impact Pathways

Effects on Functionally Linked Habitat

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

4.2 For example, the highly mobile nature of waterfowl necessarily means that areas of habitat of crucial importance to the maintenance of the bird populations lie outside the physical limits of European sites. Despite not being designated, these habitats are integral to the maintenance of the structure and function of European sites. Therefore, land use plans that may result in the loss of functionally linked habitat need to be subject to further assessment.

4.3 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[22]. 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.

4.4 Generally, functionally linked (but non-designated) land parcels may not be immediately obvious. An assessment of existing data sources (e.g. bird atlases showing species distributions, Environmental Record Centre data, results from bespoke bird surveys) might be required to firmly established functional linkage to European sites. In some instances, data may not be available at all, requiring further survey work.

4.5 Although this section has focussed on direct loss of functionally linked habitat, other effects on such habitat can arise short of direct habitat loss that could affect the usability of that habitat, such as noise and lighting disturbance adjacent to areas of functionally-linked land or habitat used as bat commuting routes.

Recreational pressure

4.6 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfil conservation objectives while also providing recreational opportunity. Various research reports have

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

provided compelling links between changes in housing and access levels[23], and impacts on European protected sites[24] [25]. This applies to any habitat, but recreational pressure from housing growth is of particular significance for European sites designated for their bird interest, with some species being especially sensitive to disturbance. Different European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of planning documents tend to focus on recreational sources of disturbance as a result of new residents[26].

4.7 Human activity can affect organisms directly (e.g. loss of habitat or by causing species to flee) and indirectly (e.g. by damaging their habitat or reducing their fitness in less obvious ways e.g. stress). The most obvious direct effect is the loss of habitat as a result of increased visitors to a site (i.e. trampling). 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 to species (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[27].

4.8 Impacts of bird disturbance are particularly well studied. Much research concern stem from the fact that birds expend energy unnecessarily when disturbed and the time they spend responding to humans is time that is not spent feeding[28]. 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[29]. Moreover, the more time a breeding bird spends disturbed from its nest, the more

[23] Weitowitz D.C., Panter C., Hoskin R. & Liley D. 2019. The effect of urban development on visitor numbers to nearby protected nature conservation sites. *Journal of Urban Ecology* 5. https://doi.org/10.1093/jue/juz019

[24] 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.

[25] 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.

[26] 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'.

[27] Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.

[28] Riddington, R. *et al*. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

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

its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators.

4.9 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance compared to hiking[30]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[31]. Furthermore, differences in route lengths and usage patterns on site is likely to imply that key spatial and temporal parameters (such as the area of a site potentially impacted and the frequency of disturbance) are also likely to differ between recreational activities. This suggests that activity type is a factor that should be taken into account in HRAs.

Non-breeding Birds (September to March)

4.10 The Arun Valley SPA / Ramsar is designated for overwintering waterfowl and this section summarises academic research available on these groups of birds.

4.11 Evans & Warrington[32] found that on Sundays total water bird numbers (including shoveler and gadwall) 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.

4.12 Tuite et al[33] 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 shoveler 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[34] [35].

4.13 A study on recreational disturbance in the Humber[36] assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt

[30] Banks P.B., Bryant J.Y. 2007. Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* 3: 14pp.
[31] Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.
[32] 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
[33] 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
[34] Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary
[35] Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent disturbance and mitigation project – various reports.
[36] Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

1999[37]), traffic (Reijnen, Foppen, & Veenbaas 1997)[38], dogs (Lord, Waas, & Innes 1997[39]; Banks & Bryant 2007[40]) 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[41] 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 response (Delaney et al. 1999[42]; Beale & Monaghan 2005[43]). 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)[44].

4.14 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 water bodies 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. Therefore, 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.

4.15 The specific distance at which a species takes flight when disturbed is known as the ‘tolerance distance’ (also called the ‘escape flight distance’) and may greatly differ between species. Tolerance distances from various literature sources are summarised in Table 1. It is reasonable to assume from this evidence that disturbance is unlikely to be relevant at distances of beyond 200m.

[37] Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature, Peterborough.
[38] 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.
[39] 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.
[40] 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.
[41] 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.
[42] 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.
[43] 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.
[44] 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.

Table 1. Tolerance distances in metres of 21 species of waterfowl to various forms of recreational disturbance, as described in the literature. Where the mean is not available, distances are provided as a range. [45]

Species	Type of disturbance. [1] Tydeman (1978), [2] Keller (1989), [3] Van der Meer (1985), [4] Wolff et al (1982), [5] Blankestijn et al (1986)		
	Rowing boats/kayak	Sailing boats	Walking
Little grebe		60 – 100 [1]	
Great crested grebe	50 – 100 [2]	20 – 400 [1]	
Mute swan		3 – 30 [1]	
Teal		0 – 400 [1]	
Mallard		10 – 100 [1]	
Shoveler		200 – 400 [1]	
Pochard		60 – 400 [1]	
Tufted duck		60 – 400 [1]	
Goldeneye		100 – 400 [1]	
Smew		0 – 400 [1]	
Moorhen		100 – 400 [1]	
Coot		5 – 50 [1]	
Curlew			211 [3]; 339 [4]; 213 [5]
Shelduck			148 [3]; 250 [4]
Grey plover			124 [3]
Ringed plover			121 [3]
Bar-tailed godwit			107 [3]; 219 [4]
Brent goose			105 [3]
Oystercatcher			85 [3]; 136 [4]; 82 [5]
Dunlin			71 [3]; 163 [2]

4.16 Mitigation measures to avoid recreational pressure effects usually involve a combination of access and habitat management, and sometimes the provision of alternative recreational space. Access management (restricting access to some

[45] Tydeman, C.F. 1978. Gravel Pits as conservation areas for breeding bird communities. PhD thesis. Bedford College
Keller, V. 1989. Variations in the response of Great Crested Grebes *Podiceps cristatus* to human disturbance - a sign of adaptation? *Biological Conservation* 49: 31-45
Van der Meer, J. 1985. *De verstoring van vogels op de slikken van de Oosterschelde*. Report 85.09 Deltadienst Milieu en Inrichting, Middelburg. 37 pp.
Wolf, W.J., Reijenders, P.J.H. & Smit, C.J. 1982. The effects of recreation on the Wadden Sea ecosystem: many questions but few answers. In: G. Luck & H. Michaelis (Eds.), *Schriftenreihe M.E.L.F., Reihe A: Agnew. Wissensch* 275: 85-107
Blankestijn, S. et al. 1986. Seizoensverbreding in de recreatie en verstoring van Wulp en Scholkester op hoogwatervluchplaatsen op Terschelling. Report Projectgroep Wadden, L.H. Wageningen. 261pp.

or all of a European site) is not typically within the remit of a Parish Council and may contravene a range of Government policies on access to open space and objectives for increasing exercise, improving health etc. However, active management of access may be possible, such as that practised on nature reserves. Habitat management also does not lie within the direct remit of Parish Councils. However, the Council can help to set a framework for improved habitat management by promoting collaboration with neighbouring parishes and Local Planning Authorities. The provision of alternative recreational space may absorb some recreational pressure, thereby reducing the recreational footfall in the more sensitive European sites. However, the location and habitat type of such alternative destinations must be carefully selected to be effective.

Bat Disturbance

4.17 Human presence can also lead to the disturbance of bat interest features, particularly surrounding maternity roosts and hibernacula. Disturbance of bats at critical times of the year (e.g. during hibernation) is likely to affect population viability and site usage. Due to this many roost sites are secured against unauthorised access such as through grilles at site access points. However, the roost locations of barbastelle bats are typically unknown because they are hidden in mature trees. Furthermore, barbastelle bats display significant flexibility in roost site selection within and between seasons. Therefore, these bats can generally respond to disturbance events (i.e. part of a site being subjected to high recreational pressure) by switching roost locations to less frequented areas.

Trampling / Mechanical Damage

4.18 Most aquatic or terrestrial sites can be affected by trampling and other mechanical damage, which in turn causes soil compaction and erosion:

- Wilson & Seney)[46] examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.

- Cole et al[47] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were

[46] Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off road bicycles on mountain trails in Montana. Mountain Research and Development 14:77-88

[47] Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. Journal of Applied Ecology 32: 203-214
Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. Journal of Applied Ecology 32: 215-224

considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.

- Cole [48] conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampler weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier tramplers caused a greater reduction in vegetation height than lighter tramplers, but there was no difference in the effect on cover.

- Cole & Spildie[49] experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.

Water Quality

4.19 An increase in the extent of residential or employment development can lead to reduced water quality of surface freshwater bodies, such as rivers and lakes. Sewage and industrial effluent discharge can result in an increased nutrient input to European sites leading to unfavourable conditions. Diffuse pollution, for example due to urban run-off, has been identified during an Environment Agency Review of Consents process and a joint Environment Agency and Natural England evidence review, as being a major contributor to pollution in aquatic ecosystems.

4.20 The quality of the water that feeds European sites is an important determinant of the nature 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 all biological activity and leads to significant changes in the composition and structure of aquatic food webs. Two of the most frequent eutrophication effects are shifts in algal species compositions and the frequency of

[48] Cole, D.N. 1995c. Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.
[49] Cole, D.N., Spildie, D.R. 1998. Hiker, horse and llama trampling effects on native vegetation in Montana, USA. Journal of Environmental Management 53: 61-71

nuisance algal blooms[50]. These blooms have a multitude of consequences, including changes in vascular plant production (and biomass and species composition), reduced water clarity, increased pH, dissolved oxygen depletion and, ultimately, an increased likelihood of death of ecologically and economically important animal species[51]. 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 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.

- Increased discharge of treated sewage effluent can result in high levels of macroalgal growth, smothering sandflats and mudflats, and in increased scour (as a result of greater flow volumes).

4.21 At sewage treatment works, catering for a growing population increases the risk of effluent escaping into aquatic environments in addition to consented discharges to the catchment. In many urban areas, sewage treatment and surface water drainage systems are combined, and therefore a predicted increase in flood and storm events could increase pollution risk.

Background information on Phosphate Impacts on the Arun Valley SPA/SAC/Ramsar

4.22 The characteristics of many freshwater habitats are governed by the availability of nutrients such as phosphorus (commonly assessed in the form of phosphates), which limits primary productivity and thus prevents vegetative communities from being dominated by certain species (e.g. filamentous algae, duckweed (Lemna sp.)). Where excessive phosphate levels accumulate a process of eutrophication can occur, whereby these species proliferate, resulting in adverse effects on the existing plant and invertebrate communities through a variety of mechanisms (e.g. shading, smothering, increased turbidity, anoxia). The result is an overall reduction of the quality of the habitats present and their ability to support priority species.

4.23 The Arun Valley SAC/SPA/Ramsar is sensitive to elevated nutrient levels, including phosphorus (phosphates), which can lead to eutrophication and adverse effects on designated habitats and species. Natural England has identified nutrient enrichment, including inputs from wastewater and agricultural sources, as a key pressure affecting the ecological condition of the site.

4.24 The classified bird species are also vulnerable to increased levels of nutrient enrichment as there is an increased likelihood of certain disease. Increase in growth of vegetation from sustained nutrient enrichment can make the habitat unsuitable for many bird species (Literature Review, Mott McDonald, 2006).

[50] Smith V.H., Joye S.B. & Howarth R.W. 2006. Eutrophication of freshwater and marine ecosystems. Limnology and Oceanography 51: 351-355.
[51] Smith V.H., Tilman G.D. & Nekola J.C. 1999. Eutrophication: Impacts of excess nutrient inputs on freshwater, marine, and terrestrial ecosystems. Environmental Pollution 100: 179-196.

Diffuse pollution from agricultural run off is likely to be contributing to the phosphate levels (this issue is managed via Catchment Sensitive Farming)."

4.25 Nutrient inputs to the Arun Valley arise from a combination of sources, including wastewater discharges and diffuse agricultural runoff. Agricultural practices can contribute phosphorus to watercourses, particularly where nutrients are mobilised through soil erosion and surface runoff.

4.26 As stated by Natural England and described by Jarvie *et al*.[52] , new residential units within the hydrological hatchment are likely (through increased sewage production) to add phosphates to the Arun Valley SPA/SAC/Ramsar via wastewater treatment effluent.

4.27 As such, any developments with potential to cause a net increase in phosphate levels within the catchment (permanent or temporary) should be subject to HRA to identify any likely significant effects, and if necessary, an Appropriate Assessment.

Water Quantity, Level and Flow

4.28 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.

4.29 Winter flooding is integral to the function of most wetlands and essential in maintaining a variety of foraging habitats for SPA birds. Maintaining a steady water supply during key stages of their life cycle will be critical for survival. However, different species vary in their requirements of 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 these habitats for Bewick's swans and some duck species. For aquatic species, such as the Arun Valley SAC's ramshorn snail, the extent of freshwater directly determines the amount of habitat available and is therefore critical to the species' survival.

4.30 Wetland habitats rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of water is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range for SPA birds, their prey items or key plant species. This might lead to the loss of the structure and functioning of wetland habitats. There are two mechanisms through which urban development might negatively affect the water level in aquatic SPAs / Ramsars / SACs:

- The supply of new housing with potable water will require an increase in the abstraction of water from surface water and groundwater bodies. Depending

[52] Jarvie, H. P., Neal, C., & Withers, P. J. (2006) *Sewage-effluent phosphorus: a greater risk to river eutrophication than agricultural phosphorus?* Science of the total environment, *360*(1-3), 246-253.

on the level of water stress in the geographic region, this is likely to reduce the water level in SPAs that share the same catchment.

- The expansion 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.

4.31 The Arun Valley SAC has a relatively narrow hydrological catchment, and its water levels are influenced by a limited number of rivers and groundwater sources, including abstractions associated with public water supply. Natural England previously identified concerns regarding groundwater abstraction at Hardham, which were considered to have potential implications for the hydrological regime of the Arun Valley. However, following the introduction of strategic measures, including changes to abstraction licensing, Natural England confirmed in October 2025 that its previous Water Neutrality Position Statement for the Sussex North Water Supply Zone has been withdrawn. This reflects a position that water resources in the Arun Valley catchment are now managed through a strategic regulatory framework. Accordingly, while the hydrological sensitivity of the Arun Valley SAC remains an important consideration, it is appropriate to assess potential effects of development in the context of this updated regulatory position, rather than assuming a blanket constraint on growth.

Atmospheric Pollution

4.32 The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2) 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[53]. NOx can also be toxic at very high concentrations (far above the annual average critical level). However, in particular, high levels of NOx and NH_3 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[54] [55].

[53] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.
[54] 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
[55] 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 2. Main sources and effects of air pollutants on habitats and species[56]

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO_2)	The main sources of SO_2 are electricity generation, and industrial and domestic fuel combustion. However, total SO_2 emissions in the UK have decreased substantially since the 1980's. Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO_2 have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO_2 emissions in the UK.	Wet and dry deposition of SO_2 acidifies soils and freshwater, and may alter the composition of plant and animal communities. The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species. However, SO_2 background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	Leads to acidification of soils and freshwater via atmospheric deposition of SO_2, NOx, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels. 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.	Gaseous precursors (e.g. SO_2) can cause direct damage to sensitive vegetation, such as lichen, upon deposition. Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants. Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.
Ammonia (NH_3)	Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia	The negative effect of NH_4+ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.

[56] Information summarised from the Air Pollution Information System (http://www.apis.ac.uk/)

Pollutant	Source	Effects on habitats and species
	concentrations are directly related to the distribution of livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+) - containing aerosol. Due to its significantly longer lifetime, NH_4+ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.	Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen. As emissions mostly occur at ground level in the rural environment and NH_3 is rapidly deposited, some of the most acute problems of NH_3 deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides (NO_x)	Nitrogen oxides are mostly produced in combustion processes. Half of NO_X emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes. In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles.	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NOx for all vegetation types has been set to 30 ug/m3. Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.
Nitrogen deposition	The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_X) or reduced (e.g. NH_3) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices. The N pollutants together are a large contributor to acidification (see above).	All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally. Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.

Pollutant	Source	Effects on habitats and species
		N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions involving NOx, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above). Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to both humans and wildlife, and can affect buildings. High O_3 concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.

4.33 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[57]. Ammonia emissions originate from agricultural practices[58], with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO_2 or NH_3 emissions will be associated with the neighbourhood planning document.

4.34 NO_x emissions, however, 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 NO_x footprint (92%) through the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[59]. Emissions of NO_x could therefore be reasonably expected to increase because of a higher number of vehicles due to implementation of the Neighbourhood Plan.

4.35 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}; the threshold for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[60] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH_3).

[57] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[58] 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
[59] 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
[60] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

4.36 The Department of Transport's Transport Analysis Guidance stipulates that, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant[61] (Figure 2). This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development outlined in the Loxwood Neighbourhood Plan.

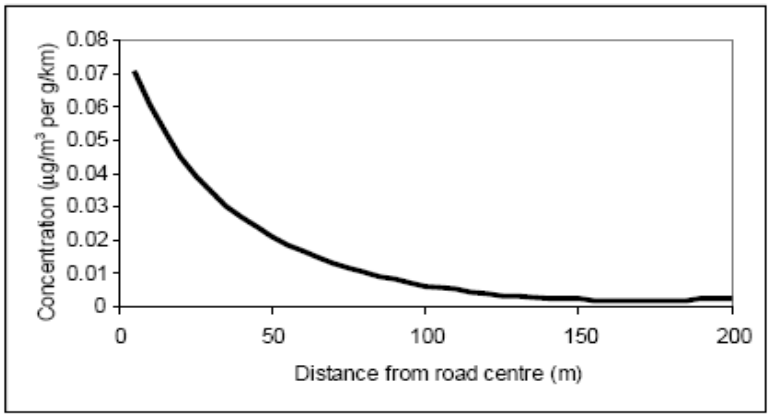

Figure 2: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT[62])

4.37 Exhaust emissions from increased vehicle usage linked to residential and employment development are capable of adversely affecting most plants and potentially altering community composition. Considering this, an increase in the net population and potential employment growth allocated in the Loxwood Neighbourhood Plan could result in increased traffic adjacent to European sites that are sensitive to atmospheric pollution.

[61] http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013 [Accessed on the 08/10/2019]
[62] http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf [Accessed on the 08/10/2019]

5. Test of Likely Significant Effects (LSEs)

Background to Loxwood Parish

5.1 The Neighbourhood Plan states that the Parish of Loxwood is located in the north-east of Chichester District, adjacent to the border with Surrey. According to the 2021 Census, the Parish has a population of 1,780.

5.2 Loxwood is a predominantly rural parish characterised by a dispersed and linear settlement pattern focused along the B2133. The Parish comprises the village of Loxwood together with the hamlets of Alfold Bars and Roundstreet Common. It does not contain a Conservation Area and lies outside the South Downs National Park.

5.3 Together with the parishes of Kirdford, Wisborough Green, Plaistow & Ifold, and part of Lynchmere, the Parish of Loxwood forms part of the northern area of the Chichester District Local Plan area. This northern area is separated from the southern part of the district by the South Downs National Park, for which the South Downs National Park Authority is the local planning authority.

Physical scope of the HRA

5.4 There are four European Sites described in the previous chapter that are relevant to Loxwood Parish. Two lie within 10km of the Parish: The Mens SAC and Ebernoe Common SAC. Two further sites are hydrologically connected to the Parish: the Arun Valley SPA/Ramsar and the Arun Valley SAC. The Arun Valley SAC is connected via the River Lox, which flows into the River Arun.

5.5 The Arun Valley SAC/SPA and Ramsar is located south of the Parish and from initial inspections of aerial imagery, there are no connecting major roads from the Parish to within 200m of these European Sites. Therefore, air quality is screened out in relation to these sites. Additionally, these European Sites are the only sites out of those considered in this assessment that are sensitive to water quality and hydrological changes as specified in the Natural England Site Improvement Plan[63]. This impact pathway is considered in relation to these Sites below. The SPA/Ramsar and the SAC are designated for their populations of wintering birds, notably the Bewick's swan, and the little ramshorn snail respectively. The Ramsar site is also designated for a number of other rare aquatic plants and invertebrates. These qualifying species are sensitive to development. Therefore, recreational pressure and loss of functionally linked land are also considered further in relation to these sites.

5.6 Although The Mens SAC is located 4.9km south of the Parish, the parish is not hydrologically connected to the SAC. Therefore, this site is screened out of further assessment with regard to water quality and water quantity, level and flow.

5.7 However, both The Mens SAC and Ebernoe Common SAC are designated for their populations of rare UK bat species and have been screened in for further

[63] Natural England Site Improvement Plan – Arun Valley, available at: http://publications.naturalengland.org.uk/publication/5353882309885952 [accessed 20/01/2021]

consideration regarding recreational pressure, air quality and loss of functionally linked land.

5.8 Based on conclusions drawn from Natural England Site Improvement Plans and previous HRA work undertaken for surrounding parishes, as summary of the impact pathways that require consideration regarding increased development within the Loxwood Parish and the aforementioned European Sites. These are:

- Effects on functionally linked land
- Recreational pressure
- Air quality
- Water Quality
- Hydrological changes, including water abstraction

5.9 Table 3 describes these environmental impact pathways. The consideration of Neighbourhood Plan policies (the Test of Likely Significant Effects) is then documented in Table 4.

5.10 For the Screening assessment (Table 4) green shading in the final column indicates that the proposed development site or policy has been determined not to lead to a likely significant effect on any European sites due to the absence of any mechanism for an adverse effect. Orange shading indicates that a pathway of impact exists, and further discussion is therefore required. Note that where European Site boundaries overlap, the closest distance to the SAC, SPA or Ramsar is taken.

Table 3. Description of potential impact pathways from increased development to European Sites

Impact pathway	Discussion
Effects on functionally linked land	Simply described, habitat fragmentation is the division of an expanse of habitat into smaller, individual patches that are isolated from each other by the removal of the original habitat[64]. Increased residential development within Loxwood could lead to a loss or disturbance of suitable habitat used by highly mobile species for which European Sites are designated. This habitat loss would restrict the movement of protected species which could lead to a decline in numbers. This impact pathway is relevant to the Arun Valley SPA which is designated for populations of wintering birds such as Bewick's swan. It is also relevant to the Mens SAC and Ebernoe Common SAC which are designated for their populations of barbastelle and Bechstein's bats.
Recreational Pressure	Increased development within Loxwood could lead to higher numbers of visitors to European Sites, particularly those within relatively easy recreational access. For example, the nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. Increased visitors can have direct and indirect for a European Site that could prevent said site achieving its conservation objectives. One European Site could be impacted by recreational pressure, The Mens SAC. Ebernoe Common SAC and the Arun Valley SPA/SAC/Ramsar falls outside the accepted recreational zone of inland European designations (5km).
Air quality	Increased residential development within Loxwood Parish would likely lead to a greater number of vehicles within the parish. As such, increased air pollution could arise relative to a situation of no growth. Pollutants released from vehicles may be carried directly by wind currents and deposited to European Sites or pollutants may become soluble and taken up during evaporation and deposited to said sites during precipitation. Guidance from the Institute of Air Quality Management and Highways England both set an impact zone of 200m from the roadside for potential significant air quality effects to vegetation from main road traffic. The Mens SAC is located within 200m of a major road from the parish towards a major employment hub.

[64] Wilcove, D.S., McLellan, C.H. and Dobson, A.P., 1986. Habitat fragmentation in the temperate zone. *Conservation biology*, *6*, pp.237-256.

Water quality (surface water runoff)	Increased residential development within Loxwood Parish could lead to the loss of previously undeveloped land and increased surface water runoff to nearby European Sites. There is a risk that inappropriate drainage design may lead to increased surface water runoff from new development. The Mens SAC is located approximately 4.9km from the closest site allocation within Loxwood Parish but is not hydrologically linked to the allocated site. Ebernoe Common is located 6.9km from the closest allocated site, the Arun Valley SPA/SAC/Ramsar is located more than 13km from the Parish. These distances are considered too great a distance to be impacted by issues of polluted surface water runoff from increased development in the Parish.
Water quality (discharge of treated sewage effluent)	Increased housing development within Loxwood Parish will result in additional wastewater generation, which is conveyed via the local sewer network to a wastewater treatment works serving the area. Treated effluent from this system is discharged to the Loxwood Stream, which forms part of the River Lox and ultimately flows into the River Arun. As such, the Parish lies within the hydrological catchment of the Arun Valley SAC/SPA/Ramsar, and a pathway exists for effects on the European site via water quality. The Arun Valley SAC/SPA/Ramsar is sensitive to elevated nutrient levels, including phosphorus, which can lead to eutrophication and adverse effects on designated habitats and species. While strategic measures have been implemented to manage water resources and water quality within the catchment, nutrient inputs associated with wastewater discharges remain an important consideration for Habitats Regulations Assessment. Accordingly, it is necessary to consider whether increases in wastewater associated with new development could lead to changes in water quality, including increased nutrient loading, that may affect the integrity of the Arun Valley SAC/SPA/Ramsar, taking into account the operation of the regulatory framework and wastewater treatment processes.
Water Quantity, level and flow including water abstraction	The qualifying species of the Arun Valley SPA/ SAC/ Ramsar are dependent upon the freshwater habitats provided at these European Sites. Significant changes in water levels due to development within the same hydrological catchment could impact the survival of these species.

Table 4. Screening assessment (Likely Significant Effects) of the Loxwood Neighbourhood Plan

Policy	European Sites and Proximity to Allocation Area	Brief summary	Screening outcome
Policy 1 – Spatial Strategy	Mens SAC 4.9km Ebernoe SAC 5.8km	The NP allocates minimum of 188 dwellings (plus 17 at Farm Close).	**Likely Significant Effects. Screened In.** This policy allocates specific quanta of dwellings for the Plan Area which detailed further in subsequent policies. However, this policy, generally speaking may have likely significant effects on surrounding European Sites via the following impact pathways: • Loss of functionally linked land • Recreational pressure • Air quality • Water quality • Water quantity level & flow Therefore, this policy is screened in for further assessment.
Policy 2 – Land at Farm Close	Mens SAC 5km Ebernoe SAC 6.6km	The NP allocates site for a minimum of 17 dwellings and parkland including biodiversity planting and community space.	**Likely Significant Effects. Screened In.** This policy allocates a site for residential development. The site contains boundary hedgerows and adjacent woodland which may provide functionally linked habitat for bats. Likely significant effects may arise via the following impact pathways:

			• Loss of functionally linked land • Recreational pressure • Air quality • Water quality • Water quantity level & flow Therefore, this policy is screened in for further assessment.
Policy 3 – Land at Loxwood Place (major allocation)	Mens SAC 4.9km Ebernoe SAC 5.8km	The NP allocates site for a minimum of 188 dwellings and employment and community facilities. Includes green infrastructure, BNG land and access upgrades.	**Likely Significant Effects. Screened In.** This policy allocates a large greenfield site comprising agricultural land with boundary hedgerows and adjacent woodland, forming part of the wider green infrastructure network. Likely significant effects may arise via the following impact pathways: • Loss of functionally linked land • Recreational pressure • Air quality • Water quality • Water quantity level & flow Therefore, this policy is screened in for further assessment.
Policy 4 – Local Green Space	N/A	Designates areas of local green space where development is restricted to protect community and environmental value.	**No Likely Significant Effects. Screened out.** This is a protective policy preventing development and therefore introduces no pathways to European sites. Therefore,

			no impact pathways exist to European Sites.
Policy 5 – Street Lighting	N/A	Controls external lighting to protect dark skies and minimise light pollution.	**No Likely Significant Effects. Screened out.** This policy reduces potential ecological disturbance (including to bats) and does not enable development. Therefore, no impact pathways exist to European Sites.
Policy 6 – Foul Water	N/A	Requires development to demonstrate adequate wastewater infrastructure capacity before connection.	**Likely Significant Effects. Screened In.** Policy 6 relates to wastewater infrastructure and seeks to prevent development where capacity is insufficient. However, given existing constraints and the potential for increased wastewater flows associated with planned growth, a likely significant effect cannot be ruled out at this stage.
Policy 7 – Flood Risk and Surface Water	N/A	Ensures development is located appropriately in relation to flood risk and incorporates sustainable drainage.	**No Likely Significant Effects. Screened out.** A precautionary approach has been applied to Policy 6 in relation to wastewater, as this represents a clear hydrological pathway to the Arun Valley SAC/SPA/Ramsar via the River Lox. In contrast, policies relating to surface water drainage and flood risk are considered to have predominantly localised effects, with

			no direct pathway to European sites, and are therefore screened out.
Policy 8 – Housing Density	N/A	Requires development to reflect the character of the surrounding area in terms of density and layout.	**No Likely Significant Effects. Screened out.** Design-based policy does not allocate development or introduce new pathways. Therefore, no impact pathways exist to European Sites.
Policy 9 – Design and Vernacular	N/A	Ensures new development reflects local character, materials, and design principles.	**No Likely Significant Effects. Screened out.** A development management policy with no impact pathways. Therefore, no impact pathways exist to European Sites.
Policy 10 – Wey and Arun Canal	N/A	Protects the setting and character of the Wey and Arun Canal and its corridor.	**No Likely Significant Effects. Screened out.** Protective environmental policy; no mechanism for European site effects. Therefore, no impact pathways exist to European Sites.
Policy 11 – Development in the countryside	N/A	Controls development outside settlement boundaries to protect countryside character.	**No Likely Significant Effects. Screened out.** This policy supports the re-use of existing rural buildings and limited agricultural or business development on land already in agricultural or commercial use. It is criteria-based, does not allocate sites or specify a quantum of development, and is limited to existing land uses.

			As such, the policy does not in itself create a mechanism for likely significant effects on Habitats sites. Therefore, no likely significant effects are identified, and the policy is screened out.
Policy 12 – Housing Extensions	N/A	Sets criteria for extensions to existing dwellings to ensure appropriate scale and design.	**No Likely Significant Effects. Screened out.** Minor-scale development with no meaningful pathways to European sites. Therefore, no impact pathways exist to European Sites.
Policy 13 – Local Economy	N/A	Supports small-scale economic development where compatible with the rural setting.	**No Likely Significant Effects. Screened out.** This policy supports the expansion of existing business sites and small-scale economic development where it meets defined criteria. It is criteria-based, does not allocate sites or specify a quantum of development and is focused on existing sites and small-scale proposals. As such, the policy does not in itself create a mechanism for likely significant effects on European sites. Therefore, no likely significant effects are identified and the policy is screened out.

Policy 14 – High Speed Broadband	N/A	Supports high speed broadband	**No Likely Significant Effects. Screened out.** Related to broadband infrastructure. Therefore, no impact pathways exist to European Sites.
Policy 15 – Active travel	N/A	Promotes walking, cycling, and improved connections to the local rights of way network.	**Likely Significant Effects. Screened in.** This policy supports the enhancement of pedestrian and cycle infrastructure, including the creation and improvement of footpaths and links to the wider rights of way network. Likely significant effects may arise via the following impact pathways: • Recreational pressure • Loss or disturbance of functionally linked habitat Therefore, Likely Significant Effects cannot be ruled out, and the policy is screened in for further assessment.
Policy 16 – Public Rights of Way (PROW)	N/A	Protects and enhances the Public Rights of Way network and ensures development does not adversely affect existing routes or connectivity. It also explicitly states it will create new links and improve usability.	**Likely Significant Effects. Screened In.** Potential for indirect effects on the function of supporting habitats through increased recreational pressure and disturbance arising from enhanced and extended access routes. This policy, generally speaking may have likely

			significant effects on surrounding European Sites via the following impact pathways: • Loss of functionally linked land • Recreational pressure Therefore, this policy is screened in for further assessment.
Policy 17 – Sustainable Design and Construction	N/A	Requires development to achieve high environmental and energy efficiency standards. Also requires a reduction in water consumption to 110 litres per person and a reduction in pollution and more sustainable transport.	**No Likely Significant Effects. Screened out.** Policy 17 promotes sustainable design, reduced water consumption and lower emissions. It does not give rise to any pathways for adverse effects on European sites and may provide minor beneficial effects. Therefore, no impact pathways exist to European Sites.
Policy 18 – Wildlife-Friendly Development	N/A	Requires development to protect and retain existing habitats (trees, hedgerows, woodland) and to incorporate biodiversity enhancement. Replace lost trees and strengthen green infrastructure corridors.	**No Likely Significant Effects. Screened out.** Policy 18 requires the protection and enhancement of habitats and the delivery of biodiversity net gain. It does not introduce pathways for adverse effects on European sites and is expected to have minor beneficial effects at the local level. Therefore, no impact pathways exist to European Sites.
Policy 19 – Public Waste Bins	N/A	Requires developments (5 dwellings or more) to provide public waste bins.	**No Likely Significant Effects. Screened out.** Policy 19 relates to the provision and management of public waste bins associated with new development. It does

not introduce any pathways for adverse effects on European sites.
Therefore, no impact pathways exist to European Sites.

Results of the Test of Likely Significant Effects

Effects on functionally linked habitat

The Mens SAC

5.11 The Mens SAC is designated for its population of barbastelle bats, which comprises more than 80 breeding females. Barbastelle bats are sensitive to the loss of functionally linked habitat for several reasons. Firstly, they are dependent on flightlines from the SAC into surrounding foraging areas. It is known that the bats forage up to 5km from their maternity roosts, with some individuals flying much longer distances to traverse sub-optimal habitat to reach suitable feeding grounds. Flightlines used by this species include linear hedgerows, waterways, blocks of scrubs, wooded rides and walking tracks. Secondly, barbastelles rely on foraging areas outside the SAC boundary, most notably wet grassland and riparian habitats. Such foraging areas may lie 10-15km away from their roost sites.

5.12 Loxwood Parish lies approximately 4.9km to the north of the Mens SAC and therefore lies within the foraging ranges observed for barbastelle bats. Additionally, the Parish contains suitable foraging and navigational features such as the River Lox, the Wey and Arun Canal and a network of hedgerows and woodland which provide functionally linked habitat to the SAC. Therefore, development within the Loxwood Parish boundary could result in the loss of linear commuting features and foraging habitats (e.g. wet meadows and waterbodies[65]) that are functionally linked to the Mens SAC.

5.13 Even if development did not lead to direct loss of features, it could still impact the SAC and its functionally-linked habitat by failing to provide an adequate physical buffer zone against construction and operational lighting that in turn could reduce the functionality of these features for barbastelle bat.

5.14 In addition, policies within the Neighbourhood Plan seek to improve and extend the public rights of way network, which may lead to increased recreational use of these routes. While such routes are typically retained within defined corridors, increased levels of activity could give rise to disturbance along functionally linked habitat, particularly where routes coincide with hedgerows or other bat commuting features.

5.15 Overall LSEs of the emerging Loxwood Neighbourhood Plan on The Mens SAC regarding the impact pathway loss or disturbance of functionally linked habitat cannot be excluded. Therefore, the site is screened in for Appropriate Assessment in relation to this impact pathway.

Ebernoe Common SAC

5.16 Ebernoe Common lies 5.8km southwest of Loxwood Parish at its closest point and like the Mens SAC, is designated for its populations of rare UK bat species.

65 https://cdn.bats.org.uk/pdf/About%20Bats/barbastelle_11.02.13.pdf?mtime=20181101151250&focal=none [accessed 20/01/2021]

5.17 For Ebernoe Common, radio tracking of barbastelle bats in August 2008 by the Sussex Wildlife Trust showed that some bats travelled up to 10.46km from their roosts within the SAC however the average distanced travelled by barbastelles in this study was 5.1km which is a marked decrease on the same study conducted 10 years previously.

5.18 Barbastelle bats are known to travel substantial distances from their roosts to feeding sites. Another study on barbastelle bats determined that home range distances show considerable inter-individual differences, with bats travelling between 1 and 20km to reach their foraging areas[66]. In 2016, the Bat Conservation Trust published guidelines on how to determine CSZs for bats and highlighted that barbastelles have a mean maximum CSZ of 6.47km[67].

5.19 Given the findings of the Sussex Wildlife Trust and the Bat Conservation Trust, an increase in residential development within Loxwood, could result in adverse impacts on bats using watercourses and linear features such as hedgerows.

5.20 Even if development did not lead to direct loss of features, it could impact the SAC by failing to provide an adequate physical buffer zone against operational lighting that in turn could reduce the functionality of these features for barbastelle bat.

5.21 Increased use of public rights of way within the parish has the potential to increase disturbance along linear habitat features used by commuting bats associated with Ebernoe Common SAC.

5.22 Overall LSEs of the emerging Loxwood Neighbourhood Plan on Ebernoe Common SAC regarding the impact pathway loss of functionally linked habitat cannot be excluded. Therefore, the site is screened in for Appropriate Assessment.

Arun Valley SPA/Ramsar

5.23 The Arun Valley SPA / Ramsar is designated for a range of waterfowl and wader species, including Bewick's swan *Cygnus columbianus bewickii*, which are known in some circumstances to utilise habitats beyond the designated site boundary (referred to as functionally linked habitat). Natural England's Supplementary Advice indicates that this may include supporting habitat outside the site boundary where it is functionally connected to the designated features. However, such use is typically concentrated within relatively close proximity to the SPA/Ramsar site.

5.24 Developments have the potential to result in the loss of functionally linked habitat where greenfield land within the typical foraging range of qualifying species is affected. This is most relevant where agricultural land parcels provide suitable feeding resources in close proximity to the SPA/Ramsar site, enabling regular use by qualifying species.

[66] 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.

[67] Bat Conservation Trust. (2016). Core Sustenance Zones: Determining zone size. Available at Bat Conservation Trust. (2016). Core Sustenance Zones: [Accessed on the 20/01/2021].

5.25 Loxwood Parish lies over 13km from the Arun Valley SPA/Ramsar. This is beyond the typical foraging range of Bewick's swans and other qualifying waterfowl species associated with the site, which are generally recorded within approximately 5 km of core wetland areas and up to 10km from European sites.

5.26 In the absence of any evidence indicating that land within Loxwood Parish is used as functionally linked habitat by qualifying species of the Arun Valley SPA/Ramsar, it is considered that the loss of such habitat as a result of development can be ruled out.

5.27 Accordingly, likely significant effects arising from the loss of functionally linked habitat can be excluded at the screening stage.

Arun Valley SAC

5.28 Ramshorn snails are a species with limited mobility, which lives within the ditch system of the SAC. These snails move between streams and water ditches with the help of winter flooding events. The colonisation of new foraging and breeding areas is considered to be critical to the long-term viability of the species. Given that newly colonised ditches may lie within or outside the designated site boundary, there is a potential risk of urban development to result in the loss of functionally linked habitat for this species. However, it is considered extremely unlikely that ramshorn snails from the Arun Valley SAC would colonise new habitats beyond a few hundred metres from the site boundary.

5.29 Given that Loxwood Parish lies approx. 13km to the north-west of the Arun Valley SAC, it is concluded that there will be no LSEs of the emerging Loxwood Neighbourhood Plan on the Arun Valley SAC regarding the impact pathway loss of functionally linked habitat. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Recreational Pressure

The Mens SAC

5.30 Public access/disturbance has been cited in the Natural England Site Improvement Plans for The Mens SAC due to concern over the existing light levels at each site and the potential impact of increased light levels on the resident bat populations. However, site allocation at Loxwood are too far from either SAC to affect light levels.

5.31 The Mens SAC mainly receive visitors during daylight hours which provides little opportunity for overlap between visitors and bat activity although recently it has been noted that there has been an increase in cyclists using high powered headlamps at night in order to enjoy off-road cycling. However, given the quanta of the allocations proposed and the low levels of overlap between human activity and bat foraging it is possible to conclude no likely significant effects of recreational pressure on The Mens SAC as a result of development within Loxwood Parish. Light levels from human sources is cited in the Natural England Site Improvement Plans for both sites as a potential issue however given the low quanta of the allocations proposed for Loxwood Parish, the associated increase in visitors is not predicted to significantly impact the foraging behaviour of bats using these SACs.

5.32 The Mens SAC is also designated for its mature beech forests. Veteran and mature trees within the SAC are potentially vulnerable to trampling and soil compaction. It is well known that the soil conditions surrounding mature trees affect their roots, mycorrhizal fungi, nutrient uptake and growth rate. Recreational activities undertaken around the base of such trees are likely to lead to compacted soil with less space for air and water, both essential for plant growth. Over time this may negatively impact trees in the SAC. However, Natural England's Site Improvement Plan does not specify recreational pressure as a threat or pressure to the SAC's beech forest, indicating that the overall recreational use of the site is limited. This is supported by a review of published walking routes in the ViewRanger application, which does not show any routes traversing the SAC.

5.33 Given this evidence, recreational pressure is not considered further in relation to the qualifying mature beech forest or the qualifying populations of Bechstein's and barbastelles in The Mens SAC. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Arun Valley SPA/ SAC/ Ramsar

5.34 The component parts of the SPA / Ramsar are the following SSSIs: Pulborough Brooks SSSI, Waltham Brooks SSSI and Amberley Wild Brooks SSSI. These subcomponents all lie within the South Downs National Park and the Loxwood Neighbourhood Plan allocated a minimum of 205 residential dwellings at a distance of more than 13km from the SPA / Ramsar. This is outside of the core recreational catchments for inland European sites, which are usually around 5-7km. Therefore, impacts as a result of recreational pressure on the Arun Valley SPA/SAC/Ramsar can be ruled out.

Atmospheric Pollution

The Mens SAC

5.35 The Mens SAC lies approximately 4.9 km to the south-west of Loxwood Parish. The intervening area is predominantly rural, and there are no major road links directly between the parish and the SAC that are likely to experience substantial increases in traffic as a direct result of development proposed within the Neighbourhood Plan.

5.36 Whilst some increase in vehicle movements may arise as a result of new housing, these would be dispersed across the local road network and are unlikely to lead to a measurable increase in traffic flows at a level sufficient to affect atmospheric pollution at the SAC. Ultimately some traffic arising from Loxwood parish may utilise the A272 with traverses The Mens SAC approximately 6km south west of Loxwood. An assessment of air quality on The Mens SAC was undertaken for the HRA of the adopted Chichester Local Plan, and this made an allowance for all traffic growth expected over the plan period on the A272 including from other plans and projects. It was concluded that ammonia impacts on the SAC could not be dismissed on mathematical grounds and an Air Quality Mitigation Strategy was jointly produced by Chichester and Horsham Councils in 2024 to address this issue.

5.37 Given the relatively small scale of development proposed within the Loxwood Neighbourhood Plan, the absence of major road links in close proximity to the

SAC, and the fact that Horsham and Chichester District Councils are implementing a strategic Air Quality Mitigation Strategy for the A272 past The Mens SAC, it is considered that likely significant effects arising from atmospheric pollution can be ruled out at the screening stage. Accordingly, The Mens SAC is not taken forward to Appropriate Assessment in relation to this impact pathway.

Ebernoe Common SAC

5.38 The woodland of Ebernoe Common SAC is sensitive to nitrogen deposition which could affect the ground flora and epiphytic communities of the beech forest, although it is unlikely to affect tree survival. According to the UK Air Pollution Information System nitrogen deposition is not believed to have a direct, major effect on tree growth in the UK.[68]

5.39 Ebernoe Common SAC lies approximately 5.8km to the south-west of Loxwood Parish. The SAC is located within a predominantly rural area, and whilst the A283 lies in proximity to the site, it is not a major strategic route that would be expected to experience substantial increases in traffic flows as a result of development within the Neighbourhood Plan area.

5.40 The designated habitat for the SAC is beech woodland. This habitat has a minimum Critical Load of 10 kg/N/ha/yr, and as such the background nitrogen deposition is above this Critical Load (being approximately 22 kg/N/ha/yr) according to APIS. Relatively high nitrogen deposition rates compared to relatively low NOx concentrations suggests that much of the nitrogen deposition at this SAC derives from surrounding agriculture rather than road traffic.

5.41 Additionally, the A283 past this SAC is not a major route from Loxwood to likely employment locations such as Guildford. This is demonstrated by investigation using Google maps which recommends other routes as shorter journey times.

5.42 Given this, it is considered that likely significant effects regarding air quality can be reasonably dismissed. Therefore, this site screened out for Appropriate Assessment in relation to this impact pathway.

Water quality

5.43 This impact pathway relates to Arun Valley SAC/SPA/Ramsar site, as this is the only European site in the HRA for which water quality, and nutrients specifically, (as well as being the only one hydraulically linked to allocated sites) have been identified by Natural England as being fundamentally relevant to site integrity. Good water quality is related to foraging habitat quality for The Mens SAC or Ebernoe Common SAC but it has not been raised by Natural England as being sufficient to require a nutrient neutrality approach and it is in any event illegal to pollute watercourses irrespective of designation, under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015 and the Environmental Permitting (England and Wales) Regulations 2016.

Arun Valley SPA/SAC/Ramsar

5.44 Given the relatively long distance (approximately 13km) between the parish and Arun Valley, direct surface runoff from impermeable surfaces and overflowing septic tanks is not considered to be an issue for the Loxwood Neighbourhood

68 http://www.apis.ac.uk/node/965

Plan despite being located within the Upper Arun catchment area. However, the most likely problem arising from the Loxwood Neighbourhood Plan is the discharge of treated sewage effluent, which is likely to increase the input of phosphorus into the Arun Valley SPA / Ramsar / SAC through input to the River Lox which directly feeds into the Arun.

5.45 According to the Natural England Site Improvement Plan for the Arun Valley SPA / Ramsar / SAC, these sites are sensitive to changes in water quality, such as from siltation and high phosphate concentrations. Natural England's Site Improvement Plan for the Arun Valley SAC/SPA and Ramsar also states "*The classified bird species are also vulnerable to increased levels of nutrient enrichment as there is an increased likelihood of certain disease. Increase in growth of vegetation from sustained nutrient enrichment can make the habitat unsuitable for many bird species (Literature Review, Mott McDonald, 2006).*

5.46 Nitrogen enrichment is a key pressure affecting the freshwater habitats of the Arun Valley SAC/SPA/Ramsar. Elevated levels of nutrients, particularly phosphorus (phosphates), can lead to eutrophication, resulting in changes to plant communities, reduced water quality, and adverse effects on the habitats and species for which the site is designated. Natural England has identified nutrient inputs, including those from wastewater discharges and diffuse agricultural sources, as contributing to pressures on the Arun Valley. While phosphorus is generally the principal nutrient of concern for freshwater systems, nitrogen can also contribute to eutrophication processes. The River Arun and its tributaries have historically experienced elevated nutrient levels, with inputs arising from a combination of point sources, such as wastewater treatment works, and diffuse sources, including agricultural runoff. Siltation is also recognised as a pressure, typically associated with erosion and agricultural practices.

5.47 The Neighbourhood Plan identifies that the existing wastewater treatment infrastructure is already operating beyond capacity, with no confirmed upgrades in the current funding period. Additional development is expected to exacerbate these constraints.

5.48 Given this evidence, LSEs of the emerging Loxwood Neighbourhood Plan on the Arun Valley SPA / Ramsar / SAC regarding water quality cannot be excluded. These European sites are screened in for Appropriate Assessment in relation to this impact pathway.

5.49 Accordingly, potential effects on water quality, including nutrient enrichment arising from increased wastewater generation within the catchment, remain an important consideration for Habitats Regulations Assessment.

Water Quantity, Level and Flow

Arun Valley SPA/SAC/Ramsar

5.50 The qualifying species of the Arun Valley SPA / Ramsar / SAC are all sensitive to hydrological changes, potentially resulting from changes in the hydrological regime in the wider catchment of the Arun Valley.

5.51 The ramshorn snail, the SAC's qualifying feature, ideally requires minimum summer water depths of 0.5-1m. Ramshorn snails are unable to survive periods of ditch drying. Winter flooding within natural limits is likely to be important for this species to colonise new ditches, an essential prerequisite for maintaining a healthy population. Natural England specifies that at least 30% of ditches should not exceed 1m in depth.

5.52 As highlighted in the previous section, the qualifying waterfowl species of the Arun Valley SPA / Ramsar require naturally fluctuating water levels within set limits for loafing, roosting and foraging. Furthermore, the Ramsar is designated for its outstanding assemblage of wetland plants and invertebrates, all of which depend on appropriate water levels throughout at least parts of their life cycle.

5.53 Increases to the quantity and rate of water delivery can result in summer flooding and prolonged / deeper winter flooding. This in turn results in the reduction of suitable feeding and roosting sites for birds. For example, in areas where water is too deep, most waders will be unable to reach their food sources close to the ground. Generally, wetlands within and downstream of urban areas are likely to have some limited capacity to absorb some of the surface water runoff from pavement and buildings, thereby providing flood control and preventing water logging of crops. However, if this capacity is exceeded, there might be adverse effects on the integrity of such sites.

5.54 The River Lox flows through Loxwood Parish and forms part of the River Arun catchment, ultimately contributing to flows within the Arun Valley SAC/SPA/Ramsar. While the allocated development sites are located at some distance from the European site, this hydrological connection indicates a potential pathway for effects via water quality and water resources. However, direct impacts arising from surface water runoff can be ruled out given the scale of development proposed and the 13km distance to the European sites.

5.55 The Neighbourhood Plan proposes a relatively modest level of residential development, which will result in a corresponding increase in water demand within the Parish. Changes to the hydrological regime of the Arun Valley SAC/SPA/Ramsar could, in principle, arise through increased abstraction for public water supply. However, following the introduction of strategic measures, including changes to abstraction licensing, Natural England confirmed in October 2025 that previous water neutrality requirements affecting the Arun Valley catchment have been withdrawn. This reflects an updated position that water resources are now managed through a strategic regulatory framework.

5.56 Notwithstanding this, a pathway linking increased water demand to the hydrological regime of the Arun Valley SAC/SPA/Ramsar cannot be entirely excluded at the screening stage. Therefore, likely significant effects in relation to water quantity, levels and flows are screened in for Appropriate Assessment. The implications of this pathway are considered further in the Appropriate Assessment, taking into account the current regulatory framework and strategic mitigation measures.

6. The in-combination scope

6.1 It is a requirement of the Conservation of Habitats and Species Regulations 2017 (as amended) that the impacts and effects 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 internationally designated site(s) in question.

6.2 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. The overall approach is to exclude the risk of there being unassessed likely significant effects in accordance with the precautionary principle. This was first established in the seminal Waddenzee[69] case.

6.3 For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects with potential for in combination likely significant effects are those schemes that have the following impact pathways: Loss of functionally linked land, recreational pressure, air quality impacts, water quality impacts and water quantity level and flow. The following plans have been assessed for their in-combination impact to interact with the Loxwood Neighbourhood Plan:

- Chichester Local Plan 2014-2029 (7,388 dwellings over the plan period 2012 – 2029. Superseded by the adopted Local Plan)[70]
- Chichester Local Plan Review 2035 (12,350 dwellings over the plan period 2016 – 2035)
- Chichester Site Allocation Development Plan Document 2014-2029
- South Downs National Park Authority Local Plan (4,750 dwellings over the plan period 2014 – 2033)
- Southern Water, Water Resources Management Plan
- Chichester District Council Water Quality Assessment
- Chichester District Council Transport Study
- Horsham District Council Local Plan (16,000 dwellings over the plan period)
- Arun Local Plan (20,000 dwellings over the plan period 2011 – 2031)[71]

[69] Waddenzee case (Case C-127/02, [2004] ECR-I 7405)
[70] https://www.chichester.gov.uk/newlocalplan
[71] Adopted Arun Local Plan

7. Appropriate Assessment

Introduction

7.1 The law does not prescribe how an Appropriate Assessment should be undertaken or presented but the Appropriate Assessment must consider all impact pathways that have been screened in, whether they are due to policies alone or to impact pathways that arise in combination with other projects and plans. That analysis is the purpose of this section. The law does not require the 'alone' and 'in combination' effects to be examined separately provided all effects are discussed.

7.2 By virtue of the relatively modest growth the NP specifies for Loxwood, the main impact pathways of concern to this HRA (effects on functionally linked land, water quality, air quality, recreational pressure, and hydrological changes including water abstraction) are inherently 'in combination' with neighbouring plans and projects. However, for completeness, potential impacts of the minimum 205 net residential dwellings allocated within Loxwood Parish in isolation are also assessed.

7.3 The adopted Chichester Local Plan 2021–2039, through Policies H2 and A15, identifies a housing requirement for Loxwood Parish of approximately 220 dwellings. When combined with the 60 dwellings delivered through the made Loxwood Neighbourhood Plan, this results in a total of approximately 280 dwellings across the plan period.

7.4 When considered in the context of the overall housing requirement of approximately 11,484 dwellings across Chichester District for the period 2021/22 – 2038/39, the level of development proposed within Loxwood is relatively small. As such, it will not materially alter the conclusions of the Chichester Local Plan 2021–2039 Habitats Regulations Assessment in relation to in-combination effects, subject to the safeguards identified through this assessment.

7.5 The HRA screening exercise undertaken in Chapter 5, Table 4 indicates potential site allocations that may have likely significant effects on the European Sites due to loss of functionally linked land, water quality and hydrological changes including water abstraction. At the screening stage, the following policies were screened in requiring further assessment:

- **Policy 1 – Spatial Strategy**
  Allocates overall housing growth (minimum ~188 dwellings + commitments) and directs development locations.
- **Policy 2 – Land at Farm Close**
  Allocates a small residential site (minimum 17 dwellings) with associated green space.
- **Policy 3 – Land at Loxwood Place**
  Allocates the main development site (minimum ~188 dwellings and employment and community facilities) with supporting infrastructure and green space.
- **Policy 6 – Foul Water**
  Restricts development unless sufficient wastewater capacity is demonstrated and infrastructure is adequate.

- **Policy 15 – Active Travel**

  Promotes walking, cycling, and improved connections to the local rights of way network.

- **Policy 16 – Public Rights of Way**
  Requires protection, enhancement and creation of footpaths/bridleways, improving access and connectivity.

Effects on functionally linked habitat

The Mens SAC & Ebernoe Common SAC

7.6 The Mens SAC and Ebernoe Common SAC are designated for their populations of rare bats; Bechstein's and barbastelle. Bats are not expected to be confined to the boundaries of European Sites and are anticipated to forage within the wider vicinity; In 2016, the Bat Conservation Trust published guidelines on how to determine Core Sustenance Zones (CSZs) for bats and highlighted that barbastelles have a mean maximum CSZ of 6.47km. However, data collated by the Bat Conservation trust to determine the CSZ for different bats suggests a CSZ of 3km for Bechstein's bats due to their rarity and specialised habitat requirements. However, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of several kilometres[72].

7.7 Radio-tracking studies have been undertaken to identify core foraging areas for these particular SACs. These reports have identified that the barbastelles of The Mens SAC forage to the east of the SAC, principally on the floodplain of the River Arun from close to Horsham in the north to Parham in the south. They also cross to the Adur floodplain. In some cases, the bats travelled up to 12.2km to visit foraging areas. The currently available radio-tracking evidence indicates that 75% of the bat population forage within 9km of the SAC although it is conceivable for barbastelle bats of the SAC to use a wider area for activities such as migrating between hibernation roosts and summer roosts.

7.8 For Ebernoe Common, radio tracking of barbastelle bats in August 2008 by the Sussex Wildlife Trust showed that some bats travelled up to 10.46km from their roosts within the SAC however the average distanced travelled by barbastelles in this study was 5.1km which is a marked decrease on the same study conducted 10 years previously.

7.9 Barbastelle bats generally forage in woodland canopy and forest margins, although they may also forage in more open areas. In order to get to suitable foraging areas, they use linear features in the landscape, such as hedgerows, waterways, blocks of scrub, wooded rides, roads and tracks, and can traverse extensive areas of unsuitable habitats. Both commuting features and foraging areas can lie far beyond the designated site boundary. Natural England's Site Conservation Objectives Supplementary Advice Note for this European Site states that the target in relation to flightlines is set as 'restore', because many

[72] 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 bechsteinii*). *Behavioural Ecology and Sociobiology* **50**: 283-291.

flightlines are now fragmented (e.g. by breaks in hedgerows, road infrastructure or light pollution).

7.10 Natural England advice to South Downs National Park Authority related to the HRA of their Local Plan proposed the following zone-based approach when assessing potential impact pathways for these SACs:

- A '**key conservation area'** – for any development proposed within 6.5km of the SAC, all impacts will be considered; and
- A '**wider conservation area'** – for any development proposed 6.5 - 12km from the SAC, significant impacts or severance of flightlines will be considered. This area encompasses the full extent from the SAC in which bats may forage.

7.11 This approach is reflected in the adopted Chichester Local Plan 2021–2039, including Policies NE6 with other relevant Local Plan policies (including NE7 where applicable), which establish a strategic framework for the protection of European sites and functionally linked habitat. The Local Plan Habitats Regulations Assessment also considers these pathways and identifies mitigation to ensure that adverse effects on site integrity can be avoided.

7.12 This is reflected in the Sussex Bat Protocol[73]. The Loxwood Neighbourhood Plan Site allocations fall within the 'key conservation area' zone for both The Mens SAC and Ebernoe Common SAC, and within the aforementioned CSZ for both species from both sites. Additionally, they all contain instances of what can be considered functionally linked habitat for bats:

- **The Loxwood Place** allocation comprises a large greenfield site located to the west of the village, currently in agricultural use. The site includes a range of ecological features, including hedgerows, trees, and proximity to the Wey and Arun Canal corridor, which form part of the wider green infrastructure network within the parish.
- These features are considered to contribute to habitat connectivity within the local landscape and may provide functionally linked habitat for bat species associated with The Mens SAC and Ebernoe Common SAC.
- The site lies approximately 4.9km from The Mens SAC and 5.8km from Ebernoe Common SAC. Linear features within the wider landscape, including hedgerows and watercourses, provide connectivity between the site and these designated areas. While the A272 to the south forms a notable barrier to movement between the site and The Mens SAC, it does not preclude bat movement entirely, and the potential for commuting and foraging activity between the site and the SAC remains. In contrast, fewer and less significant barriers exist between the site and Ebernoe Common SAC, indicating a greater potential for functional connectivity.
- The proposed development, at a density of approximately 25 dwellings per hectare, represents a relatively low-density, semi-rural form of growth. This provides scope for the layout and design of the development to retain and

[73] https://www.southdowns.gov.uk/wp-content/uploads/2018/04/TLL-15-Draft-Sussex-Bat-SAC-Protocol.pdf

enhance important habitat features, including hedgerows and green corridors.

- Temporary lighting associated with construction could give rise to disturbance of bat species, particularly given the sensitivity of barbastelle and Bechstein's bats to artificial lighting. However, such effects are temporary and would be controlled through standard construction management measures secured at the project level, including sensitive lighting design and directional lighting.

- Taking these factors into account and given the policy framework set out in Policies NE6 and NE7 of the adopted Chichester Local Plan 2021–2039, which direct the protection of ecological features and the control of lighting, the development of the site will not interrupt or reduce the functionality of the wider habitat network supporting SAC bat populations. **Impacts will be addressed through project-level ecological assessment in accordance with relevant legislation and policy.**

- A planning application has been submitted for the site (ref: 25/01686/OUT). Any potential effects and required mitigation will be subject to detailed assessment at the project level, including through the Habitats Regulations Assessment process where required.

- **The Farm Close** allocation comprises an area of predominantly rough grassland located adjacent to existing residential development. The site appears to be semi-improved in character, with patches of taller ruderal vegetation and scrub, and is enclosed by boundary vegetation including trees and hedgerows.

- These features provide some ecological value at a local level, particularly in terms of habitat structure and potential foraging opportunities for common species. The presence of boundary vegetation may also contribute to local habitat connectivity, forming part of the wider green infrastructure network within the parish.

Given the limited scale of the allocation (minimum 17 dwellings), potential impacts are likely to be localised and minor, with 60% of the site will not be developed and will be used as community green space. With the retention of boundary vegetation and appropriate design measures, including sensitive lighting, the ecological functionality of the site within the wider network can be maintained. These measures are embedded in the NP policy framework directing the protection of ecological features and the control of lighting. **Impacts will be addressed through project-level ecological assessment in accordance with relevant legislation and policy.**

A planning application has been submitted for the site (ref: 26/01055/FUL) for a higher number of dwellings. However, the Neighbourhood Plan allocates a minimum of approximately 17 dwellings, and this HRA assesses the effects of the Plan on that basis. Any additional effects associated with a greater quantum of development will be assessed at the project level, including through the Habitats Regulations Assessment process where required.

7.13 This conclusion is consistent with the findings of the Chichester Local Plan 2021–2039 Habitats Regulations Assessment, which, taking into account mitigation secured through Policies NE6 and NE7, concludes that:

7.14 “The Local Plan Review does not allocate any new residential development north of the South Downs National Park Authority boundary within either the key conservation area or wider conservation area. However, it does allocate a quantum of growth to Loxwood parish. Therefore, this could impact upon the supporting habitat of bats associated with Mens SAC and Ebernoe Common SAC. The same applies to any windfall development that could feasibly occur within the north of the District.” [74]

7.15 The scale and nature of development are consistent with those assessed through the Local Plan HRA and do not give rise to any new or materially different impact pathways.

7.16 Furthermore, the Neighbourhood Plan and Local Plan includes embedded policies requiring the retention of key habitat features, maintenance of ecological connectivity, and a restrictive approach to lighting, which collectively support the continued functionality of the wider bat habitat network. In addition, the relatively low-density nature of the proposed development allows for the incorporation of green infrastructure and the avoidance of fragmentation of key commuting and foraging routes.

7.17 The Neighbourhood Plan (Policy 18: Wildlife-Friendly Development) includes policies that require the retention of key linear habitat features and the minimisation of street lighting within new development (Policy 5: Street Lighting). These provisions are embedded within the Plan and will help to maintain dark corridors and ecological connectivity across the site, reducing the potential for disturbance to bat commuting and foraging routes.

7.18 Policy 2: Land at Farm Close and Policy 3: Land at Loxwood Place require on-site community parkland, retains open space around the developments, requires habitat creation with extensive green infrastructure and secures dedicated on-site Biodiversity Net Gain (BNG) land.

7.19 Taking into account the embedded policy framework within the Neighbourhood Plan, which requires the retention of key linear habitat features, maintenance of ecological connectivity and the control of artificial lighting, together with the established ability to address site-specific ecological considerations through survey and design at the planning application stage, it can be concluded that the implementation of the Loxwood Neighbourhood Plan will not result in an adverse effect on the integrity of The Mens SAC or Ebernoe Common SAC, either alone or in combination with other plans and projects.

[74] AECOM (2018) Available at: https://www.chichester.gov.uk/media/30918/Habitat-Regulations-Assessment-Chichester-Local-Plan-Review/pdf/Chichester_Local_Plan_Review_HRA_Issue_V2_9_Nov_2018_(2).pdf [accessed 20/01/2021]

Existing Policy Protection

7.20 Linear features and suitable foraging habitat within the Parish are indirectly protected under the policies of the **Chichester Local Plan 2021–2039 (adopted August 2025)**.

7.21 These policies, particularly Policy NE6, provide a framework to ensure that development does not result in adverse effects on the integrity of European sites, including through the protection of functionally linked habitat and the application of the Habitats Regulations Assessment process where required. Additional safeguards are provided through other relevant policies, including Policy NE7 where applicable.

- **Policy NE4: Strategic Wildlife Corridors**
- **Policy NE5: Biodiversity and Biodiversity Net Gain**
- **Policy NE6: International and European Designated Habitats**
- **Policy NE7: The Mens SAC and Air Quality**

*7.22 In particular, **Policy NE5: Biodiversity and Biodiversity Net Gain** requires that development:*

- *Conserves, protects and enhances biodiversity,*
- *Avoids harm to habitats and species, with mitigation or compensation where necessary,*
- *Contributes to the preservation, restoration and re-creation of priority habitats,*
- *Supports ecological networks, including wildlife corridors and stepping stones, and,*
- *Delivers measurable biodiversity net gain in line with statutory requirements.*

7.23 This reflects national requirements for a minimum 10% Biodiversity Net Gain, ensuring habitats are left in a measurable better state following development.

7.24 In addition, **Policy NE4: Strategic Wildlife Corridors** seeks to:

Protect and enhance the District's ecological networks by maintaining and strengthening habitat connectivity, including corridors, stepping stones and linkages between designated sites and priority habitats.

7.25 There is a long history of development being delivered whilst taking into account roosting, commuting and foraging locations for bats. The NPPF, Environment Act 2021 and the adopted **Chichester Local Plan 2021–2039 (Policies NE4, NE5 and NE6)** together provide a robust framework requiring the protection and enhancement of ecological networks and legally protected species.

7.26 This includes:

- Retention of key commuting routes such as mature linear features,
- Incorporation of habitat enhancements,
- Delivery of Biodiversity Net Gain, and,

- The control of lighting to avoid impacts on sensitive habitats (such as maintaining lux levels below thresholds such as 0.5 lux along corridors where required)

7.27 All new development within the Plan Area should seek to retain existing hedgerows and other linear features, where possible, in order to ensure that protected species and habitats are not harmed by the proposal.

7.28 Biodiversity considerations are also addressed through national policy and the wider planning framework.

7.29 National policy requires that all development proposals protect and enhance biodiversity and geodiversity, in accordance with the National Planning Policy Framework (paragraphs 187–193). Proposals should therefore:

1. **Protect, conserve and enhance** internationally, nationally and locally designated sites, protected species, and priority habitats, including ancient woodland, species-rich hedgerows, and grasslands.
2. **Maintain, restore and strengthen ecological networks**, including wildlife corridors and the movement of species.
3. **Protect ancient and veteran trees, ancient woodland, and trees of arboricultural value**, recognising their irreplaceable nature.
4. **Promote the conservation, restoration and enhancement of priority habitats and species**, supporting their long-term protection and recovery.
5. **Deliver measurable net gains for biodiversity**, where reasonable and proportionate, in line with national policy.
6. **Avoid adverse impacts on designated sites**, including European sites and other sites of ecological importance, and demonstrate that ecological impacts have been appropriately assessed in accordance with the mitigation hierarchy (avoid, mitigate, compensate).

7.30 The National Planning Policy Framework (NPPF) sets out government policy regarding consideration of biodiversity in planning decisions. Under the NPPF the presence of a protected species (such as the barbastelle bat) is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat, as such all bat species are protected irrespective of whether they are associated with an SAC. This would be through the detailed design of individual developments, the delivery of the developments and relevant planning obligations. This could include provisions including habitat retention, habitat enhancements and designing lighting for the development that will not expose boundary features of retained/ enhanced habitats to artificial illumination greater than 0.5 lux through a combination of careful luminaire and lighting column design and physical separation between the relevant corridors and the built footprint of the development. The SAC and presence of functionally-linked habitat on the boundaries of the allocated sites therefore do not provide a fundamental obstacle to site allocations that may be utilised by barbastelle bats as impacts to bats can be ‘designed out’ at the site development and masterplanning stage.

7.31 Deferring detailed bat surveys to the planning application stage is in line with the advice of Advocate-General Kokott[75] to the European Court of Justice regarding the appropriate approach to HRA, and level of detail required, when a multi-stage planning process exists. She commented that: *"It would …hardly be proper to require a greater level of detail in preceding plans* [rather than planning applications] *or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure"*.

7.32 The Court of Appeal has ruled that provided the competent authority is duly satisfied that mitigation can be achieved in practice (in other words that solutions exist that are likely to be effective) this will suffice to enable a conclusion that the proposed development would have no adverse effect (reference No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015)

7.33 The High Court has 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 the Habitats Regulations*' (High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015)

7.34 The UK courts have also clarified that when reaching decisions over adverse effects on integrity 'absolute certainty that there would be no adverse effects was not required; a competent authority could be certain that there would be no adverse effects even though, objectively, absolute certainty was not proved' (case [2019] EWHC 3242 (Admin)). What is required for the Neighbourhood Plan is a suitable policy framework that will protect the SAC and set out the further work required for the planning application stage.

7.35 With this wording included it is considered that a policy framework would exist to ensure no adverse effects on the integrity of The Mens SAC or Ebernoe Common SAC as a result of development within the Parish.

Water Quality (discharge of treated sewage effluent)

Arun Valley SPA/Ramsar/SAC

7.36 The section on impact pathways and the test of LSEs section established that the Arun Valley SPA / Ramsar / SAC is particularly sensitive to negative impacts on water quality, because all its qualifying species either directly or indirectly depend on good water quality.

[75] Opinion of Advocate-General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49.
http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN

7.37 Development proposed through the Loxwood Neighbourhood Plan would result in an increase in wastewater generation. Wastewater from the Parish is treated at Loxwood Wastewater Treatment Works (WwTW), which discharges to the Loxwood Stream, within the catchment of the Arun Valley SPA/SAC/Ramsar.

7.38 There is therefore a clear potential pathway for effects on the water-dependent qualifying features of the Arun Valley European sites.

7.39 While the Arun Valley catchment has historically been subject to concerns relating to water resources and water quality, including previous requirements for water neutrality, these restrictions were withdrawn in 2025 following strategic mitigation measures at the catchment scale. There is no current requirement for development within this area to demonstrate nutrient or water neutrality.

7.40 Nevertheless, wastewater discharge remains a relevant pathway for Habitats Regulations Assessment and must be appropriately controlled.

7.41 Taking into account the policy requirement within the Neighbourhood Plan to prevent development that would exceed wastewater capacity, alongside the adopted Chichester Local Plan 2021–2039 (in particular Policy NE17: Water Management and Water Quality), the regulatory controls applied through the Environmental Permitting regime, and the ability to secure any necessary infrastructure upgrades prior to the occupation of development, it is considered that appropriate safeguards are in place to ensure that wastewater generated by any proposed development will not result in adverse effects on the receiving environment.

7.42 Headroom capacity of the relevant wastewater infrastructure is protected by **Policy 6 (Foul Water)** of the Loxwood Neighbourhood Plan, which requires that development is supported by adequate sewerage infrastructure and does not result in adverse impacts on the existing network.

7.43 The policy states:

7.44 ‘’Any new connections to the Loxwood sewer network will not be supported unless it can be shown that the new connection will not exacerbate the existing system hydraulic overloading, system back up and flooding, taking into account both the dry weather flow and the wet weather flow’

7.45 It further requires that:

7.46 ‘Where necessary, foul water infrastructure and network upgrades for new developments should be subject to a planning condition which stipulates that such upgrades must be implemented prior to occupation of the development. The condition to be agreed with Southern Water and the local planning authority.’

7.47 This policy provides a clear and enforceable safeguard to ensure that development is constrained by the capacity of the wastewater network and treatment works. As such, development cannot proceed unless it can be demonstrated that sufficient capacity exists, or that appropriate upgrades will be delivered in advance.

Existing Policy Protection

7.48 Wastewater treatment and discharge are regulated through the Environmental Permitting regime, which is designed to ensure that discharges are controlled so

as to prevent unacceptable impacts on water quality and the receiving environment. In addition, water undertakers are under a statutory duty to provide and maintain adequate sewerage infrastructure to accommodate planned growth.

7.49 Up-to-date estimates of wastewater treatment headroom are published periodically by Chichester District Council. These indicate that headroom capacity is subject to change over time, reflecting variations in flows and infrastructure performance. As such, the Neighbourhood Plan does not rely on a fixed assumption regarding available capacity. Instead, **Policy 6 (Foul Water)** requires that development is contingent on demonstrating that sufficient wastewater infrastructure capacity exists, or that necessary upgrades will be delivered prior to occupation. This approach ensures that development will only proceed where it can be accommodated without giving rise to adverse effects on the wastewater network or receiving water environment, and avoids reliance on potentially outdated or time-specific capacity assessments.

Table 5: CDC's published headroom estimates for all WwTWs in the plan area

WWTW	1. Consented DWF (EA permit) (m3/day)	2. Average Q80 DWF/day 2023-25	3. Average remaining DWF headroom within the Q80 (m3 per day) (1-2)	4. Estimated remaining dwelling capacity (based on 500l phpd)
Apuldram (Chichester)	13524	12210	1314	**0**
Bosham	1221	1283	-62	**-124**
Kirdford	165	102	63	**125**
Lavant	1696	1851	-155	**0**
Loxwood	767	737	30	**60**
Pagham	2309	2082	227	**454**
Sidlesham	5800	6244	-444	**-889**
Tangmere	3000	2098	902	**1805**
Thornham	6565	6247	318	**636**
Wisborough Green	324	207	117	**234**

7.50 The headroom estimates are based on a precautionary assumption of 500 litres per person per day. In practice, current policy requirements for water efficiency (typically 110 litres per person per day or lower) are likely to reduce wastewater flows below this level. However, for the purposes of this assessment, a precautionary approach has been adopted and no reliance is placed on reduced flows to demonstrate the absence of adverse effects.

7.51 Wastewater discharges from Loxwood Wastewater Treatment Works are subject to regulation under the Environmental Permitting regime, which includes controls on effluent quality such as phosphorus concentrations.

7.52 The Environmental Permit for Loxwood Wastewater Treatment Works includes specific limits on effluent quality, including a total phosphorus limit of 0.7 mg/l (rolling 12-month mean). The permit also confirms that the discharge comprises secondary treated sewage effluent with nutrient removal. These controls are supported by a programme of regular monitoring, reporting and regulatory oversight by the Environment Agency.

7.53 This demonstrates that nutrient inputs from the works are actively controlled and regulated to prevent deterioration in water quality. The permitting regime therefore provides an effective safeguard to ensure that wastewater discharges do not give rise to adverse effects on the integrity of downstream European sites, either alone or in combination with other plans and projects.

Water Quantity Level and Flow

Arun Valley SPA/SAC/Ramsar

Abstraction

7.54 The Arun Valley SPA/SAC/Ramsar is sensitive to changes in water levels and hydrological regimes, which can influence the ecological function of its floodplain habitats and supporting ditch systems.

7.55 Development proposed through the Loxwood Neighbourhood Plan would result in an increase in potable water demand, with water supplied by Southern Water from sources within the Sussex North Water Resource Zone.

7.56 Historically, concerns were raised regarding the potential effects of water abstraction on the Arun Valley European sites, particularly in relation to groundwater abstraction at Hardham and its influence on water levels within the floodplain.

7.57 However, these concerns have been addressed through strategic water resource management measures. In October 2025, Natural England withdrew its previous Water Neutrality Position Statement following agreement with the Environment Agency and Southern Water to implement changes to abstraction licensing and management. These measures provide sufficient certainty that public water supply abstraction will not adversely affect the integrity of the Arun Valley European sites.

7.58 As a result, there is no longer a requirement for developments within this area to demonstrate water neutrality. Strategic abstraction controls are now managed at the water company and regulatory level, rather than through development-specific mitigation.

7.59 The Neighbourhood Plan is required to be in general conformity with the strategic policies of the Chichester Local Plan, which addresses water resources at the district scale. In addition, water companies are subject to statutory duties and regulatory controls to ensure that sufficient water supply is available to meet demand without causing environmental harm.

7.60 Given the relatively small scale of development proposed through the Neighbourhood Plan, and the strategic measures now in place to manage abstraction within the Sussex North Water Resource Zone, it can be concluded that increases in water demand arising from the Plan will not result in adverse effects on the integrity of the Arun Valley SPA/SAC/Ramsar, either alone or in combination with other plans and projects

8. Conclusions

8.1 This assessment undertook both Screening and Appropriate Assessment of the policies and any allocations within the Loxwood Neighbourhood Plan Review.

8.2 The international designated sites considered within the Appropriate Assessment for impact pathways that could not be screened out at the screening stage were:

- The Mens SAC
- Ebernoe Common SAC
- Arun Valley SAC
- Arun Valley SPA/Ramsar

8.3 Impact pathways considered during the screening were: loss of functionally linked land, recreational pressure, water quality, water quantity, level and flow and air pollution. Recreational pressure and air pollution were screened out at the Screening stage due to a lack of linking impact pathways. Loss of functionally linked land, water quality, water quantity and level of flow could not be screened out at the Screening stage and were therefore further discussed within the Appropriate Assessment.

8.4 Five policies which proposed new development were subject to Appropriate Assessment as they were located within the accepted zones of influence of the aforementioned international sites and could result in adverse effects on the integrity of an international site in combination with other projects and plans. These were:

- **Policy 1 – Spatial Strategy:** Allocates overall housing growth within the Neighbourhood Plan area.
- **Policy 2 – Land at Farm Cross:** Allocates a site for a minimum of 17 dwellings, including parkland, biodiversity planting and community space.
- **Policy 3 – Land at Loxwood Place:** Allocates the main development site (188 dwellings and employment and community facilities), including green infrastructure, biodiversity net gain and access improvements.
- **Policy 6 – Foul Water:** Requires development to demonstrate adequate wastewater infrastructure capacity and avoid overloading the sewer network.
- **Policy 16 – Public Rights of Way (PROW):** Protects, enhances and creates public rights of way and connectivity, including new routes and improved usability.

8.5 Following Appropriate Assessment, consideration has been given to whether any additional measures are required to support the policy framework of the Loxwood Neighbourhood Plan in ensuring that potential effects on European sites are appropriately managed.

8.6 The Neighbourhood Plan includes a strong policy framework requiring high-quality design, habitat retention, and biodiversity enhancement, particularly through Policies 3 and 18. These provisions, together with relevant wildlife legislation and national planning policy, are considered sufficient to ensure that impacts on protected species, including bats, will be appropriately assessed and addressed at the planning application stage through project-level ecological assessment. As such, no additional policy wording is required in this respect.

8.7 In relation to water quality, it is recommended that the Neighbourhood Plan acknowledges that nutrient neutrality requirements may evolve over time, subject to the outcomes of ongoing regulatory review. Development proposals will be required to demonstrate compliance with relevant environmental regulations to ensure no adverse effects on the integrity of the Arun Valley SAC/SPA/Ramsar site. This provides flexibility and ensures the Plan remains robust in the context of any future changes in regulatory requirements.

8.8 With regard to water resources, it is recognised that strategic regulatory controls are in place to manage water abstraction and that water neutrality is no longer identified as a requirement within the relevant water resource zone. Notwithstanding this, the Neighbourhood Plan appropriately supports the efficient use of water within new development, in line with best practice and local plan policy, thereby reinforcing sustainable water management principles.

8.9 It can be concluded beyond reasonable scientific doubt that, subject to the policy framework of the Loxwood Neighbourhood Plan, and taking account of the safeguards provided through the Local Plan, national legislation, project-level assessment, and wider regulatory controls, the Plan will not result in adverse effects on the integrity of European sites, either alone or in combination with other plans and projects.