

Horsham Local Plan Habitats Regulations Assessment Updated for Main Modifications for the Horsham District Local Plan (2023 - 2040)

Horsham District Council

July 2026

Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	15/10/2021	The initial draft for client comment	JR	James Riley	Technical Director
1		Update following Natural England comments	JR	James Riley	Technical Director
2	01/12/22	Update for Regulation 19 Local Plan	JR	James Riley	Technical Director
3	16/11/23	Finalise updated for Regulation 19 Local Plan	JR	James Riley	Technical Director
4	03/07/26	Updated to include Main Modifications	JR	James Riley	Technical Director

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1. Background

Introduction

- 1.1 Under the Conservation of Habitats and Species Regulations 2017 (as amended), an Appropriate Assessment is required, where a plan or project is likely to have a significant effect upon a European Site, either individually or 'in combination' with other projects.
- 1.2 AECOM was appointed by Horsham District Council to undertake a Habitats Regulations Assessment of its Local Plan. The objective of this assessment is to identify any aspects of the Plan that would cause an adverse effect on the integrity of European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), candidate Special Areas of Conservation (cSACs), potential Special Protection Areas (pSPAs) and, as a matter of Government policy, Ramsar sites), either alone or in combination with other plans and projects, and to advise on appropriate policy mechanisms to avoid an adverse effect on the integrity of a European site resulting where such effects were identified.
- 1.3 Horsham District contains a single European site (the Arun Valley SAC, SPA and Ramsar site) that is very hydrologically sensitive (both in terms of water quality and water levels and flows) and is also designated for wildfowl (notably Bewick swan but also a non-breeding bird assemblage) that often feed some distance beyond the SPA boundary. Horsham lies relatively close to (i.e. within 3km of) The Mens SAC and within 12km of Ebernoe Common SAC. Both of these sites are designated for highly mobile bat species, which in the case of barbastelle can travel to forage up to 12km from their maternity roosts within the SAC based on radio-tracking. As such, the identification and protection of functionally linked habitat within the wider landscape is a key consideration of this HRA. Several site allocations fall within 5km of Arun Valley SAC, SPA, Ramsar and within the defined bat consultation zones (up to 12km) for the Mens SAC and Ebernoe Common SAC.
- 1.4 The district boundary also lies 2.5km from Duncton to Bignor Escarpment SAC, but this site is designated for immobile beech forest and is also remote from any roads likely to be used for journeys to work associated with new housing in Horsham.
- 1.5 An HRA was produced for the submitted Local Plan and finalised in January 2024, with updated air quality modelling for The Mens SAC undertaken in July 2024. This 2026 version of the Local Plan HRA has reviewed and updated the previous assessment, taking into account the fact that water neutrality is now a resolved issue that does not need assessment, changes to site allocations and housing numbers as part of the Main Modifications and implications of those changes for the Local Plan approach to mitigation, including air quality impacts on The Mens SAC.

Legislative Context

- 1.6 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (“the Withdrawal Act”). This established a transition period, which ended on 31 December 2020. However, the Withdrawal Act retains the body of existing EU-derived law within our domestic law and it is clear that the HRA process continues post-Brexit.
- 1.7 The need for Appropriate Assessment (Figure 1) is set out within the Conservation of Habitats and Species Regulations 2017 (as amended).
- 1.8 The HRA process applies the ‘Precautionary Principle’¹ to Habitats sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the Habitats site(s) in question. Plans and projects with predicted adverse impacts on Habitats sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.
- 1.9 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

Figure 1: The legislative basis for Appropriate Assessment

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

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

- 1.10 Over time the phrase ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Habitats Directive from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an ‘Appropriate Assessment’.
- 1.11 In spring 2018 the ‘Sweetman’ European Court of Justice ruling² clarified that ‘mitigation’ (i.e. measures that are specifically introduced to avoid or reduce a harmful effect on a Habitats site that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA has been cognisant of that ruling.

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”.

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

Scope of the Project

1.12 There is no guidance that dictates the physical scope of an HRA of a Plan document in all circumstances. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than by arbitrary 'zones'. Current guidance suggests that the following Habitats sites be included in the scope of assessment:

- All sites within the boundary of Horsham District; and,
- Other sites shown to be linked to development within the authority boundary through a known impact 'pathway' (discussed below).

1.13 Briefly defined, impact pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon a Habitats designated site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect Habitats sites by, for example, disturbance of wintering or breeding birds.

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

The Layout of this Report

1.15 Chapter 2 of this report explains the methodology by which this HRA has been carried out, including the three essential tasks that form part of HRA. Chapter 3 provides detailed background on the main impact pathways identified in relation to the Local Plan and the relevant Habitats Sites (see Appendix A for detail on the Habitats Sites). Chapter 4 undertakes the screening assessment of Likely Significant Effects (LSEs) of the Plan's policies (see Appendix B for the screening tables of Plan policies and Appendix C for the screening of the site allocations). The conclusions arising from the screening assessment are provided in Chapter 5. Chapter 6 contains the Appropriate Assessment and Chapter 7, the conclusions and recommendations.

Quality Assurance

1.16 This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical

excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

- 1.17 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017).

2. Methodology

Introduction

- 2.1 The HRA has been carried out with reference to the general EC guidance on HRA³; the UK government has also produced its own internal guidance⁴. These have been referred to in undertaking this HRA.
- 2.2 Figure 2 below outlines the stages of HRA. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations, and any relevant changes to the plan until no significant adverse effects remain.

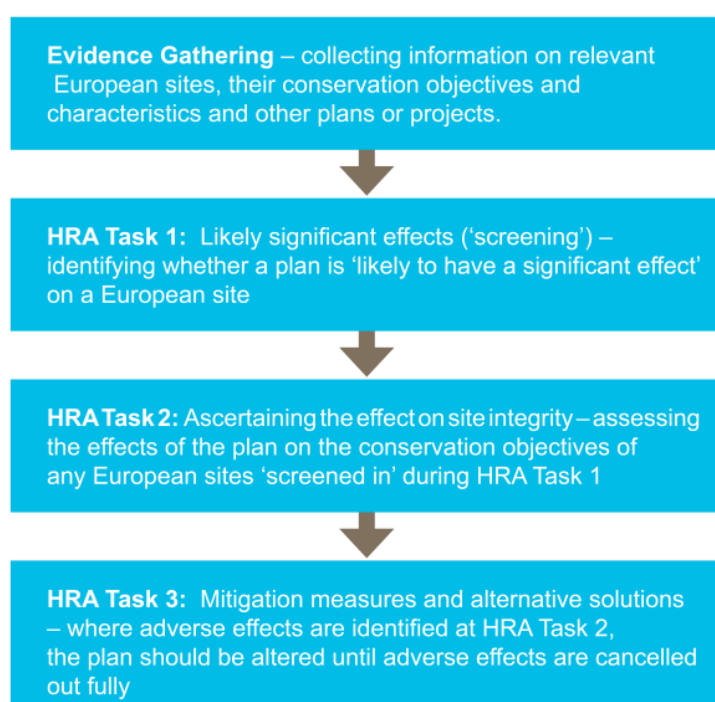


Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001¹.

Description of HRA Tasks

HRA Task 1 – Likely Significant Effects (LSE)

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

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

³ European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.

⁴ <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>

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

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 By virtue of the fact that it follows the screening process, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level screening analysis and assess the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the Habitats site(s)).
- 2.7 Also, in 2018 the Holohan ruling⁵ was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states that ‘*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*’ [emphasis added]. This has been considered in relation to the Arun Valley SPA / Ramsar, which supports mobile bird species.

HRA Task 3 – Avoidance and Mitigation

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

⁵ Case C-461/17

than the details of the mitigation measures themselves since the Local Plan document is a high-level policy document.

Geographical Scope of the HRA

2.11 There are no standard criteria for determining the ultimate physical scope of an HRA. Rather, the source-pathway-receptor model should be used to determine whether there is any potential pathway connecting development to any Habitats sites. In the case of Horsham District, it was determined that for the initial coarse screen the following Habitats Sites required consideration:

- Arun Valley SAC, SPA and Ramsar site
- The Mens SAC
- Duncton to Bignor Escarpment SAC
- Ebernoe Common SAC
- Singleton & Cocking Tunnels SAC
- Ashdown Forest SAC and SPA

2.12 This was based upon a search within 15km surrounding the District boundary as well as consideration of the vulnerabilities of these sites. All 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 Habitats site does not mean that likely significant effects will occur.

3. Relevant Impact Pathways

3.1 The following impact pathways are considered relevant to the Horsham District Local Plan:

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

Background to Recreational Pressure

3.2 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfill conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels and impacts on Habitats protected sites⁶ ⁷. This applies to any habitat, but the additional recreational pressure from housing growth on destinations designated for bird interests can be especially strong and some waterfowl qualifying for SPA designation are known to be susceptible to disturbance. Different Habitats sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of Local Plans tend to focus on recreational sources of disturbance as a result of new residents⁸.

3.3 Human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat or reducing their fitness in less obvious ways e.g. stress). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While these are less noticeable, they might result in major population-level changes by altering the balance between immigration/birth and emigration/death⁹.

3.4 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding¹⁰. 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.

⁶ 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.

⁷ 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.

⁸ 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'.

⁹ Riley, J. 2003. Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.

¹⁰ Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

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 birds¹¹. Moreover, the more time a breeding bird spends disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar^{12 13}. Recreation disturbance in winter can be more adverse because birds are more vulnerable at this time of year due to food shortages.

- 3.5 Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance than hiking¹⁴. Furthermore, key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers¹⁵. Data on route length and the spatial mapping of routes indicate that key spatio-temporal features (e.g. the potentially impacted area of a site, how frequent or long activities are undertaken) are likely to differ between recreational activities. Overall, activity type is therefore a factor that should be taken into account in HRAs.
- 3.6 The potential for disturbance may be different in winter than in summer, in that there is often a smaller number of recreational users present on site. Furthermore, the impacts of disturbance at a population level may be reduced because birds are not breeding. However, recreational disturbance in winter may also be more impactful, because birds face seasonal food shortages and are likely to be sensitive to any nutritional loss. Therefore, the abandonment of suitable feeding areas due to disturbance can have serious consequences for their ability to find suitable alternative feeding sites.
- 3.7 Evans & Warrington¹⁶ found that on Sundays total waterbird numbers (including shovelers and gadwalls) were 19% higher on Stocker's Lake LNR in Hertfordshire and attributed this to observed greater recreational activity on surrounding water bodies at weekends relative to weekdays displacing birds into the LNR. However, in this study, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.
- 3.8 Tuite et al¹⁷ used a large (379 sites), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They determined that shovelers was one of the most sensitive species to recreational activities, such as sailing, windsurfing and rowing. Studies on recreation in the Solent have established that

¹¹ Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

¹² Clarke R.T., Liley D., Sharp J.M., Green R.E. 2013. Building development and roads: Implications for the distribution of stone curlews across the Brecks. *PLOS ONE*. doi:10.1371/journal.pone.0072984.

¹³ Liley D., Clarke R.T. 2003. The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. *Biological Conservation* 114: 219-230.

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

¹⁵ Miller S.G., Knight R.L., Miller C.K. 2001. Wildlife responses to pedestrians and dogs. 29: 124-132.

¹⁶ 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

¹⁷ 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

human leisure activities cause direct disturbance to wintering waterfowl populations^{18 19}.

- 3.9 A recent study on recreational disturbance on the Humber²⁰ assesses different types of noise disturbance on waterfowl referring to studies relating to aircraft (see Drewitt 1999²¹), traffic (Reijnen, Foppen, & Veenbaas 1997)²², dogs (Lord, Waas, & Innes 1997²³; Banks & Bryant 2007²⁴) 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. 2004²⁵ 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. 1999²⁶; Beale & Monaghan 2005²⁷). 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)²⁸.
- 3.10 Disturbing activities present themselves on a continuum. Generally, activities that involve irregular, infrequent and loud noise events, movement or vibration are likely to be the most disturbing. For example, the presence of dogs around waterbodies generate substantial disturbance due the areas accessed and their impact on bird behaviour. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable and quiet patterns of sound, movement or vibration. The further any activity is from the birds, the less likely it is to result in disturbance. The factors that determine species responses to disturbance include species sensitivity, timing/duration of the recreational activity and the distance between source and receptor of disturbance.
- 3.11 Overall, the available baseline information suggests that the wintering waterfowl interest of the Arun Valley SPA / Ramsar is sensitive to recreational pressure because of the risk of disturbance. Any potential for an increase in recreational pressure due to the emerging Local Plan must therefore be investigated for the SPA / Ramsar. The following Habitats Sites are considered to be sensitive to recreational pressure and are taken forward to the following chapters of the HRA:
- Arun Valley SPA and Ramsar site

- 3.12 The little whirlpool ram's-horn snail (the reason for designation of Arun Valley SAC) is not vulnerable to recreational pressure. Ebernoe Common SAC and The

¹⁸ Footprint Ecology. 2010. Recreational Disturbance to Birds on the Humber Estuary

¹⁹ Footprint Ecology, Jonathan Cox Associates & Bournemouth University. 2010. Solent disturbance and mitigation project – various reports.

²⁰ Helen Fearnley Durwyn Liley and Katie Cruickshanks (2012) Results of Recreational Visitor Survey across the Humber Estuary produced by Footprint Ecology

²¹ Drewitt, A. (1999) Disturbance effects of aircraft on birds. English Nature, Peterborough.

²² 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.

²³ 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.

²⁴ 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.

²⁵ 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.

²⁶ 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.

²⁷ 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.

²⁸ 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.

Mens SAC are both designated for fauna that are potentially susceptible to disturbance. However, the nature of the interest features and the fact that they are not found at ground level makes them much less susceptible to the kind of casual recreational activities (e.g. dog walking) in which most people will engage than Arun Valley SPA/Ramsar. The Site Improvement Plans for both SACs identify 'disturbance' as a pressure, but this is clearly associated with the potential for increased lighting around the SAC due to development, rather than recreational footfall.

Background to Water Quality

3.13 The quality of the water that feeds Habitats 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 plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the 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.

3.14 The main risk associated with the Horsham Local Plan is the discharge of treated sewage effluent from Wastewater Treatment Works (WwTWs) serving the District. This could increase the nutrient concentrations in the water feeding Habitats Sites that are hydrologically linked to waterbodies that receive treated wastewater, such as the Arun Valley SAC/SPA/Ramsar site. The Rother, the Storr and the Arun are all thought to contribute to the nutrient and sediment loading in the Arun Valley.

Nutrient Neutrality

3.15 Previous iterations of this HRA considered, as a future-proofing precaution in an Appendix, the potential for nutrient neutrality requirements affecting the Arun Valley SAC/SPA/Ramsar, reflecting wider national policy developments. However, no nutrient neutrality requirement has ever been introduced for the Arun valley catchment and there is no evidence or policy basis requiring such an approach. Therefore, nutrient neutrality specifically has not been included in this Main Modifications HRA.

3.16 Accordingly, nutrient neutrality is not considered further in this HRA update.

Background to Water Quantity, Level and Flow

- 3.17 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.
- 3.18 Maintaining a steady water supply is of critical importance for many hydrologically dependent SPAs, SACs and Ramsars. For example, in many wetlands winter flooding is essential for sustaining a variety of foraging habitats for SPA / Ramsar wader and waterbird species. However, different species vary in their requirements for specific water levels. Splash and / or shallow flooding is required to provide suitable feeding areas and roosting sites for ducks and waders. In contrast, deeper flooding is essential to provide foraging habitats for Bewick's swans and other ducks.
- 3.19 Wetland habitats (and thus the fauna they support) rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of water is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range of qualifying birds, invertebrate or plant species. This might lead to the loss of the structure and functioning of wetland habitats. There are two mechanisms through which urban development might negatively affect the water level in Habitats Sites:
- The supply of new housing with potable water will require increased abstraction of water from surface water and groundwater bodies. Depending on the level of water stress in the geographic region, this may reduce the water levels in Habitats Sites sharing the same catchment.
 - The proliferation of impermeable surfaces in urban areas increases the volume and speed of surface water runoff. As traditional drainage systems often cannot cope with the volume of stormwater, sewer overflows are designed to discharge excess water directly into watercourses. Often this pluvial flooding results in downstream inundation of watercourses and the potential flooding of wetland habitats.
- 3.20 Specifically, the Site Improvement Plans for Arun Valley SAC/SPA/Ramsar identify inappropriate water levels as threats to the respective sites. 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 feeding and roosting sites for birds and be harmful to the little whirlpool ram's-horn snail, which has very specific water level requirements.
- 3.21 The Arun Valley SAC/SPA/Ramsar is sensitive to changes in water quantity, level and flow, and site improvement plans identify inappropriate water levels as a threat to site integrity. However, water resource management and abstraction are controlled through regulatory mechanisms, including water resource management plans and Environment Agency licensing regimes.

- 3.22 These mechanisms are designed to ensure that water abstraction and supply are managed sustainably and do not result in adverse effects on the integrity of Habitats sites. Accordingly, the Arun Valley SAC/SPA/Ramsar is taken forward for consideration in this HRA in relation to water quantity, level and flow.

Background to Loss of Functionally Linked Habitat

- 3.23 While most Habitats sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not necessarily the case. A diverse array of qualifying species including birds, bats and amphibians are not always confined to the boundary of designated sites.
- 3.24 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of Habitats sites. Despite not being designated, these habitats are integral to the maintenance of the structure and function of the designated site and, therefore, land use plans that may affect such functionally linked habitat require further assessment.
- 3.25 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 land²⁹. 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.
- 3.26 Generally, the identification of an area as functionally linked habitat is not always a straightforward process. The importance of non-designated land parcels may not be apparent and require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring further survey work.

Arun Valley SPA and Ramsar

- 1.1 Over winter the Arun Valley supports 115 Bewick's swans, representing approximately 1.6% of Britain's migratory population³⁰. The Bewick's swan is a highly migratory bird species that spends summer in Russia. However, during the autumn months these swans migrate to northern Europe where they feed upon a diet of grasses, sedges and aquatic plants. The Arun Valley consists of mixed wet grasslands that provides optimal over wintering habitat for these species. In addition, much of the wider surrounding area of Arun consists of floodplain grazing marsh due to the periodic flooding of the River Arun; also supporting suitable over wintering grounds. The Bewick's swan has seen recent

²⁹ Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to Habitat sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

³⁰ JNCC (2001) SPA Description: Arun Valley (www.jncc.defra.gov.uk)

declines of 27% from 1995 to 2005³¹ with national trends indicating continual declines. Preservation of significant habitat for Bewick's swan, whether it occurs within or outside the SPA and Ramsar site boundary is therefore essential.

- 1.2 The Arun Valley SPA and Ramsar site is designated for its wintering population of Bewick's swan. It is widely accepted³² that Bewick's swans frequently feed on suitable farmland up to **5km** from the designated site. As such, suitable fields within 5km of the SPA could constitute important supporting habitat if they support a large enough percentage of the SPA population on a regular basis. Bewick's swan feed during the day on pastures within the SPA or at a range of sites to the south of the SPA, between Arundel and Amberley. However, Bewick's swans will fly up to 10km from their roost sites to feed. Consultation with Natural England (November 2021) identified that much of the functionally linked land is located within a designated important bird area (which includes Ramsar sites and SPA sites).
- 1.3 The species of waterfowl that contribute to the designated bird assemblage of the SPA are not identified by the SPA citation. The Supplementary Advice on the Conservation Objectives for the SPA states that in addition to Bewick swan key assemblage species comprise: widgeon, teal, shoveler, pintail, lapwing, ruff, black-tailed godwit and green sandpiper³³.
- 1.4 Most of these remaining avian features of the Arun Valley SPA and Ramsar site (pintail, ruff, shoveler, teal and widgeon), primarily frequent waterbodies such as lakes, and will be found foraging and roosting around these waterbodies rather than within arable parcels of land. Lapwing, black-tailed godwit and green sandpiper may use farmland. In broad terms if fields are suitable for foraging non-breeding Bewick swan they are also likely to be suitable for these other species.
- 1.5 Within the Local Plan HRA for adjacent Arun District (2017) two impact risk zones were identified³⁴:
 - **Impact Risk Zone 1** – this is a core area where there is good evidence/high probability of use by SPA bird species³⁵. As such comprehensive ornithological studies must be conducted within proposed development sites before planning permission is granted.
 - **Impact Risk Zone 2** – this is a 500m buffer beyond zone 1 and is where functionally linked habitat is present and loss of such could therefore impact over wintering bird populations.

The Mens SAC and Ebernoe Common SAC

- 3.27 Ebernoe Common SAC and The Mens SAC are designated for their populations of rare bats; Bechstein's and barbastelle. Bats are not expected to be confined to the boundaries of Habitats Sites and are anticipated to forage within the wider

³¹ Rees, E.C. & Beekman, J. Submitted. Bewick's Swan: a population in decline. British Birds.

³² Whilst there is no formal publication confirming this, from discussions with the Royal Society for the Protection of Birds (RSPB), Wildfowl and Wetland Trust (WWT) and Natural England (NE) on other projects it has been established that Bewick's Swan often use habitat up to 5km from the designated site for foraging in the winter months. As such 5km has been defined as a zone within which likely significant effects could result from loss of supporting habitat.

³³ <http://publications.naturalengland.org.uk/publication/4567444756627456>

³⁴ Urban Edge Environmental Consulting (2016) Habitats Regulations Assessment for the Arun Local Plan: Supplementary Work. Stage 2 Report: Screening for Likely Significant Effects. Available at: [download.cfm \(arun.gov.uk\)](#) [accessed 17/03/2021]

³⁵ <https://data.gov.uk/dataset/5ae2af0c-1363-4d40-9d1a-e5a1381449f8/ssi-impact-risk-zones> [Accessed: 20/09/2018]

vicinity of their Core Sustenance Zone (CSZ). For example, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of up to 1km³⁶. A second radio-tracking study in 2002 of Ebernoe Common SAC, showed that the maximum distance travelled by tagged individuals was 1,407m, with an average of 735.7m³⁷. For Bechstein's it is reasonable to assume that the core foraging areas around the Ebernoe Common SAC and The Men's SAC, for which they are designated, is likely to be within c.1km of each site boundary.

3.28 Barbastelle bats are known to travel substantial distances from their roosts to feeding sites. A study on barbastelle bats determined that home range distances show considerable inter-individual differences, with bats traveling between 1 and 20km to reach their foraging areas³⁸. 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 6.47km³⁹.

3.29 As a precaution, Natural England and South Downs National Park Authority have since agreed a Sussex Bat Protocol⁴⁰, which identifies a maximum 12km zone around the Sussex bat SACs (Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC) in which HRAs investigating habitat fragmentation are required. This is based on the furthest distance from the first two SACs at which foraging bats were radio-tracked. The protocol identifies two key impact zones surrounding the three bat SACs as follows:

- 6.5km: Key conservation area – all impacts assessed;
- 12km: Wider conservation area – significant impacts or severance to flightlines to be considered

3.30 The 6.5 km includes the key conservation area in which all impacts must be considered as habitats within this zone are considered critical for sustaining the populations of bats within the SACs. Horsham District lies more than 12km from Singleton and Cocking Tunnels SAC but lies within 12km of Ebernoe Common SAC and within 6.5km of The Mens SAC.

3.31 Therefore, the following Habitats Sites are taken forward into the following chapters:

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

Background to Atmospheric Pollution

3.32 The main pollutants of concern for Habitats sites are oxides of nitrogen (NOx), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in Table 1.

³⁶ 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.

³⁷ 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.

³⁸ 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.

³⁹ Bat Conservation Trust. (2016). Core Sustenance Zones: Determining zone size. Available at https://cdn.bats.org.uk/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?mtime=20190219173135 [Accessed on the 14/10/2019].

⁴⁰ South Downs National Park Authority/ Natural England (2017). Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Final Draft

Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges⁴¹. NOx can also be toxic at very high concentrations (far above the annual average critical level). However, in particular, high levels of NOx and NH₃ 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^{42 43}.

Table 1: Main sources and effects of air pollutants on habitats and species⁴⁴

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO ₂)	The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's. Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.	Wet and dry deposition of SO₂ 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, SO₂ background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, 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. SO₂) 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.

⁴¹ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

⁴² 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

⁴³ 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

⁴⁴ Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>)

Pollutant	Source	Effects on habitats and species
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 concentrations are directly related to the distribution of livestock. Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) - containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.	The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation. 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 NH₃ is rapidly deposited, some of the most acute problems of NH₃ 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. Nitrogen oxides have been consistently falling for decades due to a combination of coal fired power station closures, abatement of other combustion point sources and improved vehicle emissions technology. They are expected to continue to fall over the plan period.	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³. Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. 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. NH₃) 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 NO_x, 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 O₃ above 40 ppb can be toxic to both humans and wildlife and can affect buildings. High O₃ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.

- 3.33 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) shipping⁴⁵. As such, it is unlikely that material increases in SO₂ emissions will be associated with the emerging HLP.
- 3.34 In contrast, NO_x emissions are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NO_x footprint (92%) through its associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison⁴⁶. The emerging HLP, which will result in an increase in Horsham District's population, can therefore be reasonably expected to increase emissions of NO_x through an increase in vehicular traffic. Ammonia emissions originate from agricultural practices⁴⁷, with some chemical processes also making notable contributions, but some vehicle exhausts (notably petrol cars) also contribute ammonia at a local scale.
- 3.35 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, while that for ammonia is 1 µgm⁻³. In addition, ecological studies have determined 'critical loads'⁴⁸ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃).
- 3.36 According to the Department of Transport's Transport Analysis Guidance, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is insignificant (Figure 3 and see reference ⁴⁹). This is therefore

⁴⁵ http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

⁴⁶ 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>

⁴⁷ 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

⁴⁸ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

⁴⁹ <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013>; accessed 12/05/2016

the distance that has been used throughout this HRA to identify major commuter routes along Habitats Sites, which are likely to be significantly affected by development outlined in the HLP.

3.37 Overall, an increase in the net population and employment opportunities within Horsham District will result in more inward and outward commuter traffic. The following sites are taken forward to the following chapters of the HRA since they all lie within 200m of roads that may constitute significant journey to work routes for surrounding settlements:

- The Mens SAC
- Ebernoe Common SAC
- Duncton to Bignor Escarpment SAC
- Ashdown Forest SAC

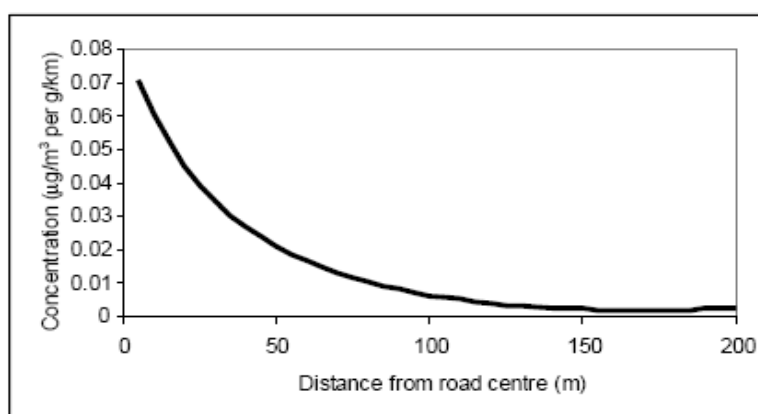


Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road
(Source: DfT⁵⁰)

⁵⁰ <http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf>; accessed 13/07/2018

4. Screening for Likely Significant Effects (LSEs)

Introduction

- 4.1 Consultation with Natural England on 25 November 2021 identified that Natural England were undertaking a condition assessment review of the Arun Valley SAC, SPA and Ramsar site. That review has subsequently been completed and published as *Condition Review: Arun Valley Sites (Natural England Research Report NERR143, 2025)*. The review identified significant deterioration in a number of designated features across the Arun Valley sites and highlighted the importance of water quality, hydrological conditions and habitat management to the conservation of the designated features.
- 4.2 Information available to Natural England at the time of consultation identified that, due to increased survey effort in 2021, a small population of little whirlpool ram's-horn snail *Anisus vorticulus* (the SAC feature) had been identified within one location in Amberley. Despite the increased survey effort, the species had declined from much of its former range within the designated sites and was not considered to be meeting its conservation objectives. The subsequent condition review also identified a severe decline in the SAC feature and confirmed it to be in unfavourable condition.
- 4.3 Natural England also advised that a number of SPA bird features were not meeting their conservation objectives. The condition review subsequently confirmed significant declines in several wintering bird features, including Bewick's swan, although trends for some species such as teal were more positive in parts of the Arun Valley.

Recreational Pressure

Arun Valley SPA/Ramsar site

- 4.4 The component parts of the SPA/Ramsar site are Pulborough Brooks SSSI, Waltham Brooks SSSI and Amberley Wild Brooks SSSI. All of these are within the South Downs National Park and the Horsham Local Plan will not be allocating sites within the National Park. However, the settlement of Pulborough is within 300m of Pulborough Brooks SSSI at its closest, West Chiltington is just over 1km to the east of the same SSSI and Storrington is 2.5km east of Amberley Wild Brooks SSSI.
- 4.5 Although disturbance is therefore a theoretical potential pathway for this SPA/Ramsar site, it is not noted as a concern or priority for action in Natural England's Site Improvement Plan. This is presumably because two of the most potentially sensitive parts of the SPA (Amberley Wild Brooks SSSI and Pulborough Brooks SSSI) are managed by the RSPB. Unlike many other RSPB reserves, recreational visitors are not encouraged to Amberley Wild Brooks SSSI because of the sensitivity of the site, and the site is not designed or promoted to attract visitors. Access within the site is severely restricted specifically in order to

ensure that disturbance is not possible. Access is therefore restricted to the Wey South Path.

- 4.6 Pulborough Brooks SSSI is open to the public under normal circumstances but access is well-managed with a network of hides and prohibitions on dogs in the most sensitive areas. Whilst a single Public Right of Way passes through the site from the village of Pulborough (in the north) to Wiggonholt and the RSPB visitor centre (in the south), the site is located approximately 0.6km from the village itself. Additionally, parking provision and access to the site is not advertised from the village of Pulborough. It is likely that the majority of visitors will access the site from the RSPB car park visitor centre as access is publicly advertised and managed from this location. With the exception of RSPB members, a per visit charge is in place (albeit there is no charge for accessing along the public right of way) and the limited parking provision will also limit the number of casual walkers.
- 4.7 Moreover, there are ample areas of alternative attractive natural greenspace already available to residents of Storrington and West Chiltington: Rackham Hill (located within the South Downs National Park) is the closest landmark, Parham Park SSSI lies between Storrington and Amberley Wild Brooks SSSI, while Hurston Warren SSSI lies between West Chiltington and the same SSSI.
- 4.8 Notwithstanding the proximity of some site allocations to the Arun Valley SAC/SPA/Ramsar, GIS analysis indicates that these allocations are generally associated with existing settlements and will not materially alter patterns of recreational access to the Habitats site. In particular, the presence of access restrictions, site management measures and alternative recreational resources is likely to limit any increase in disturbance.
- 4.9 GIS analysis further indicates that a number of allocations will contribute additional residential development within approximately 3km of the SAC/SPA/Ramsar. However, these settlements already exist in close proximity to the Arun Valley. The highly managed nature of the site access, limited availability of unrestricted entry and the presence of alternative natural greenspace are expected to continue to limit recreational use of the SAC/SPA/Ramsar by both existing and future residents.
- 4.10 Consultation comments from both the Coldwaltham Meadows Conservation Trust and the Sussex Wildlife Trust to the South Downs Local Plan HRA did identify concerns regarding recreational pressure on the Waltham Brooks SSSI component of the SAC, SPA and Ramsar site. The primary risk here would be an increase in visitor pressure (particularly involving dog walkers) disturbing grazing livestock which are used to manage the Waltham Brooks SSSI, the condition of which is 'Recovering'. However, this part of the SPA is a minimum of 2.5km from the closest settlement in Horsham District (excluding those within the National Park) and residents would need to bypass Pulborough Brooks SSSI in order to visit the much smaller Waltham Brooks SSSI. The HRA for the adopted Horsham Core Strategy HRA scoped out recreational pressure as a significant impacts pathway, and this conclusion remains valid.
- 4.11 The principal other plans and projects of relevance to development around the Arun Valley SAC/SPA/Ramsar site are the Local Plans for South Downs National Park and to a lesser extent Arun and Adur districts. The HRA of the adopted South Downs National Park Local Plan considered recreational pressure from

these local authorities collectively (including Horsham District). Both Adur and Arun have begun preparation of their new Local Plans which provide for an increase in dwelling provided during their Plan periods (Adur are currently providing for 3,609 new dwellings during its Plan period, whilst Arun are providing for approximately 16,700 new dwellings during its emerging Plan period).

- 4.12 The HRAs for the Arun, South Downs and Adur Local Plans all considered that there would be no likely significant effects on Arun Valley SAC, SPA and Ramsar site 'in combination' with each other and growth in Horsham.
- 4.13 **It is therefore considered that a conclusion of no likely significant effect can be drawn regarding this impact pathway.**

Duncton to Bignor Escarpment SAC

- 4.14 This site lies 2.5km from the Horsham District boundary. However, that part of Horsham is in the South Downs National Park and Horsham District Council will therefore not be allocating any dwellings in that location. The nearest allocation within the Horsham Local Plan is the Land at Highfields, Pulborough which is approximately 8km from Duncton to Escarpment SAC. There is no direct easy road access to the SAC such that the trip by car from Pulborough to the SAC is closer to 14km. **Given the distance separating relevant new site allocations and proposed site allocations (at least 8km) from the SAC it is considered that likely significant effects can be reasonably dismissed.**

Water Quality

Arun Valley SAC/SPA/Ramsar

- 4.15 The current Water Framework Directive (WFD) assessment⁵¹ for the Arun and Stor (a tributary to the Arun) have identified that they are failing on phosphate levels. The failure on phosphate levels is directly linked to point source pollution from a sewage treatment works (STW) upstream of the site. Natural England's Site Improvement Plan⁵² for the Arun Valley SAC and SPA identifies that features for designation are known to be vulnerable to changes in water quality from siltation and nutrient inputs.
- 4.16 Consultation with Natural England in November 2021 identified that new targets for the interest features of the Arun Valley have been agreed as part of the condition assessment review based on national guidance changes. These include a reduced total phosphorus target and the introduction of a total nitrogen target. These will be included in updates to the favourable condition tables and supplementary advice as outcomes of the condition evidence review. Natural England's November 2021 Consultation states *'Early indications from the site specific water quality monitoring started in June 2021 and due for completion in June 2022 suggest the designated sites are likely to fail both total nitrogen and total phosphorus targets. Most of the wastewater treatment work in the Arun Rother and Stor do not have nitrogen stripping. Though agriculture will form a source of nitrogen sediment and phosphorus, the precise relationship cannot be known until the source apportionment is completed. Nitrogen is particularly impactful on aquatic and riparian plants which include those that form part of the*

⁵¹ <https://environment.data.gov.uk/catchment-planning/WaterBody/GB107041012100> [accessed 03/12/2020]

⁵² Natural England Site Improvement Plan Arun Valley (2014) <http://publications.naturalengland.org.uk/file/5185212862431232>

Ramsar features. The SAC snail is thought to require high water quality and both phosphorus and nitrogen targets are important for the SAC. All the supporting habitats for the birds and invertebrate SPA and Ramsar features also require low nitrogen and phosphorus.

4.17 *Data from habitat work on Pulborough, early results of the ongoing condition assessment and other surveys of the SAC species suggest that sediment is also an issue in the drying ditches on Pulborough and possibly on Amberley.'*

4.18 This issue (the potential for an effect from increased volume of treated sewage effluent) was considered in the HRA of the adopted Southern Water WRMP19, which stated that: *'Detailed water quality assessment previously undertaken identified that the River Rother had the best water quality of the major tributaries entering the tidal Arun, with the River Stour having relatively poorer water quality; treated effluent from Horsham WwTW also results in lower water quality entering from the Upper Arun.'* The Southern Water WRMP24 HRA identifies one scheme affecting Arun Valley SAC/SPA/Ramsar (Ford WwTW recycling). The analysis concludes that *'discharge will be treated to tertiary standards for ammonia, phosphate and BOD, potentially generating an improvement for the phosphate status (currently moderate).'*

4.19 The following policies have the potential to link the Plan to the Arun Valley designated sites via water quality because they will increase the volume of wastewater produced in the District:

- Strategic Policy 4 - Horsham Town
- Strategic Policy 5: Broadbridge Heath Quadrant
- Strategic Policy 29: New Employment
- Strategic Policy 30: Enhancing Existing Employment
- Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
- Strategic Policy 37 - Housing Provision
- Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation

4.20 The following residential site allocations have the potential to link the Plan to the Arun Valley designated sites via water quality because wastewater produced is likely to discharge to a Wastewater Treatment Works that ultimately drain into the Arun catchment:

- HA4: Land East of Billingshurst
- HA3: Land North West of Southwater
- CW1: Land at Brook Hill & Cowfold Glebe
- CW2: Field West of Cowfold, North of A272
- CW3: Fields West of Cowfold, South of A272/Field W of Cowfold, S of A272, W of Little Potters
- HOR1: Land at Hornbrook Farm
- BGR1: Land South of Smugglers Lane
- BGR2: Land South of Muntham Drive

- BGR3: Land at the Old School Site, Itchingfield
- BRH1: South of Lower Broadbridge Farm
- HOR1: Land at Hornbrook Farm
- HOR2: Land at Mercer Road
- LWB4: Land At Cyder Farm, Crabtree
- PLB1: Land at Highfields, Codmore Hill
- Land at Adversane, West Chilton (Kingswood) (SA597)
- RD1: Land North of Guildford Road, Bucks Green
- RD2: The former Pig Farm, Bucks Green
- STO1 Land to the North of Melton Drive, Storrington
- STO2: Land at Rock Road (Thakeham Parish)
- STO3: Land South of Northlands Lane (appears likely to be associated with, or form part of, the STO1 allocation area and has therefore been considered within the wider Northlands Lane assessment)
- STO4: Land at Fryern Road
- STO5: Land at Bax Close
- TH1: Land North of High Bar Lane
- TH2: Land West of Stream House
- WRN1: Land south of Bell Road
- WCH1: Land at Hatches Estate
- WCH2: Land West of Smock Alley, S of Little Haglands
- WCH3: Land East of Hatches House

4.21 The Environment Agency undertook a Review of Consent Process (RoC) that examined whether consents needed to be tightened to protect the Habitats sites and, where necessary, required the water company to make improvements (called sustainability reductions). Several of the Wastewater Treatment Works (WwTW) that provide wastewater treatment for Horsham District that ultimately discharge to the Arun were identified to have their phosphorous permits tightened to address the issue of elevated phosphate in the Arun. These were Horsham WTW (permit to be tightened from 1mg/l to 0.25mg/l annual average), Warnham WTW (permit to be tightened from 1mg/l to 0.5mg/l annual average), Rudgwick WTW (permit to be introduced at 0.4mg/l annual average), and Storrington WTW (permit to be introduced at 0.5mg/l annual average)⁵³. Since the wastewater treatment standards of the relevant Sewage Treatment Works are already being tightened to protect the Arun Valley international sites from excessive phosphate loading the Horsham District Local Plan is screened out at this time (October 2023).

4.22 Natural England have subsequently completed and published a condition review of the Arun Valley SAC, SPA and Ramsar site (*Condition Review: Arun Valley*

⁵³ <https://data.gov.uk/dataset/a1b25bcb-9d42-4227-9b3a-34782763f0c0/water-industry-national-environment-programme> [accessed 11/12/2020]

Sites (NERR143), 2025). The review identified continuing concerns regarding a number of designated features and highlighted the importance of water quality, hydrological conditions and habitat management in achieving favourable condition. While the wastewater treatment improvements identified above provide confidence that the Local Plan will not adversely affect the integrity of the Arun Valley designated sites through phosphorus loading, the findings of the review indicated that phosphorus, nitrogen and wider water management issues would need to continue to be considered through future monitoring, catchment management initiatives and any subsequent review of the Local Plan.

- 4.23 Experience across the UK (such as in Ashford and Folkestone & Hythe where phosphorus and nitrogen inputs to Stodmarsh SAC/SPA/Ramsar site is a concern) indicates mitigation strategies are available, the most common of which is to create a small wetland to treat runoff from the site to an equivalent standard to offset net increases in nitrogen and phosphorus from treated wastewater. Natural England is undertaking a source apportionment study for the Arun Valley designated sites looking at total nitrogen, total phosphorus and sediment supply, and has also been undertaking water quality monitoring. If a formal nutrient neutrality requirement is introduced, the calculation method presented in this Appendix will be supplanted by the methodology produced by Natural England, as for other Habitats sites.

Water Quantity, Level and Flow

Arun Valley SAC / SPA / Ramsar

- 4.24 Excessive changes to the hydrological integrity, such as through effects on water flow and volume, of Habitats Sites are most likely to be the consequence of increased water abstraction for the public water supply and surface water run-off from impermeable urban surfaces. The area around Upper Beeding in the south east of the Southern Water Sussex North WRZ, does not usually receive its water from the Pulborough abstractions, instead having its own supply. However, there is still a connection to Pulborough, and so development in this area could contribute to an increased water demand in the water resource zone.
- 4.25 The Arun Valley SAC is designated for its population of little whirlpool ram's-horn snails and Natural England's Site Improvement Plan highlights that a maintenance of adequate water levels (0.3cm below ditch neck) is critical to the survival and migration of this species. 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. The SAC has a relatively narrow hydrological catchment and its water level is primarily maintained by a few key rivers that traverse the plain.
- 4.26 Recent evidence has highlighted the sensitivity of the Arun Valley SAC/SPA/RAMSAR to changes in water levels and flows, particularly in relation to groundwater abstraction within the catchment. Management of these issues is being addressed through water resource planning by Southern Water and regulatory oversight by the Environment Agency.
- 4.27 Given the sensitivity of the Arun Valley SAC/SPA/Ramsar to changes in water quality, level and flow, and the potential for increased water demand arising from

the Local Plan, Likely Significant Effects cannot be excluded at the screening stage. The site is therefore screened in for Appropriate Assessment in relation to water quality.

4.28 Whilst individual site allocations would not result in likely significant effects in isolation, in combination the scale of growth could result in increased demand on water resources within the catchment.

4.29 The following policies are screened in because they will increase the demand for clean drinking water within Horsham District:

- Strategic Policy 4 - Horsham Town
- Strategic Policy 5: Broadbridge Heath Quadrant
- Strategic Policy 29: New Employment
- Strategic Policy 30: Enhancing Existing Employment
- Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
- Strategic Policy 37 - Housing Provision
- Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation

4.30 This impact pathway cannot be screened out and is subject to Appropriate Assessment in the following chapter.

Loss of Functionally Linked Habitat

Arun Valley SPA / Ramsar

4.31 The Arun Valley SAC / SPA / Ramsar is designated for several mobile waterfowl and wader species, which are known to depend on habitats beyond the designated site boundary (known as functionally linked habitat). This particularly applies to Bewick's swans *Cygnus columbianus bewickii*, which routinely forage in agricultural land parcels up to 5km from their core wetlands and can do so up to 10km from Habitats Sites; black-tailed godwit, lapwing and green sandpiper may also forage on fields around the SPA/Ramsar. The remaining avian features of the Arun Valley SPA and Ramsar site (pintail, ruff, shoveler, teal and widgeon), primarily frequent waterbodies such as lakes, and will be found foraging and roosting around these waterbodies rather than within arable parcels of land. Natural England's Supplementary Conservation Advice Note specifies that maintaining the extent and distribution of supporting habitat for the non-breeding season does also '*apply to supporting habitat which also lies outside the site boundary*'. Therefore, the remainder of this section assesses the potential effects of development on functionally linked habitat within the district.

4.32 Generally, development plans may lead to the loss of functionally linked habitat (mainly winter foraging resources) through the allocation of greenfield sites (e.g. grassland, agricultural stubble / cereals), meaning that qualifying species have to compete for dwindling forage. There are a cluster of settlements within Horsham District in the 5km zone around the SPA/Ramsar site including Pulborough, West Chiltington, Thakeham, Storrington and Abingworth. GIS analysis indicates that a number of allocations within these areas are located on greenfield land of a scale that could, in principle, support the qualifying bird

species. Development within the built-up areas of these settlements would not affect the availability of functionally-linked land, but greenfield development beyond the boundaries could do so if it resulted in the loss of farmland areas large enough to support a significant proportion (i.e. 1% of more) of the SPA/Ramsar population of Bewick swan (i.e. generally 2ha in size and upwards) or the non-breeding bird assemblage and with suitably clear sightlines.

4.33 Section 3 refers to Impact Risk Zones identified in the Arun District Local Plan HRA. These include a core zone and a wider zone extending to approximately 6.5km from the SAC/SPA/Ramsar, within which the potential for effects on functionally linked habitat should be considered.

4.34 Review of site allocations indicates that several sites within approximately 6.5km of the SAC/SPA/Ramsar are located on greenfield land and are of a scale that could potentially support functionally linked habitat. These include:

- ASN1: Land East of Mousdell Close
- SA597: Land at Adversane, West Chiltington
- PLB1: Land at Highfields, Codmore Hill
- STO1 Land to the North of Melton Drive, Storrington (5.4ha)
- STO2: Land at Rock Road (Thakeham Parish) (3.6ha)
- STO3: Land South of Northlands Lane (adjacent to the STO1 allocation area) (2.8ha)
- STO4: Land at Fryern Road (9.1ha)
- STO5: Land at Bax Close (2.4ha)
- TH1: Land North of High Bar Lane
- TH2: Land West of Stream House
- WCH1 (SA066 / SA500): Land at Hatches Estate
- Ashington North Cluster (SA790 / SA520 / SA539 / SA524 / SA085)
- ASN1 (SA866): Land East of Mousdell Close

4.35 In addition, a number of other allocations are located around Storrington, Pulborough and West Chiltington areas within the potential zone of influence. These sites have been considered as part of the screening process and are assessed in Appendix C.

4.36 Therefore, likely significant effects from this pathway cannot be dismissed and an Appropriate Assessment is required.

4.37 In particular, the following policies are screened in because they could increase the amount of greenfield development within the south-west corner of Horsham District:

- Strategic Policy 4 - Horsham Town
- Strategic Policy 5: Broadbridge Heath Quadrant
- Strategic Policy 29: New Employment
- Strategic Policy 30: Enhancing Existing Employment

- Policy 33: Equestrian Development
- Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
- Strategic Policy 37 - Housing Provision
- Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation

The Mens SAC and Ebernoe Common SAC

4.38 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 areas⁵⁴. 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.

4.39 A substantial proportion of Horsham District lies within 12km of the Mens SAC and Ebernoe Common SAC, including settlements such as Billingshurst, Pulborough, West Chiltington and Storrington. GIS analysis confirms that a large number of allocations fall within these zones. Developments within built-up areas is unlikely to adversely affect bat populations. However, greenfield development could result in adverse effects through the loss or fragmentation of foraging habitat and commuting routes, particularly linear features such as hedgerows, treelines and watercourses⁵⁵. Impacts may also arise from increased lighting if not appropriately controlled.

4.40 The following site allocations are located within 12km of The Mens SAC and Ebernoe Common SAC:

4.41 Site Allocations located within 6.5km of The Mens SAC:

- PLB1: Land at Highfields, Codmore Hill (3.44km)
- SA597: Land at Adversane, West Chiltington (Kingwood) (4.07km)
- HA4: Land East of Billingshurst (5.10km)
- SA757: Land at Rosier Park, East of Billingshurst (5.32km)

4.42 Site Allocations located between 6.5km and 12km from The Mens SAC:

- ASN1: Land east of Mousdell Close
- BGR1: Land South of Smugglers Lane
- BGR2: Land South of Muntham Drive
- BGR3: Land at the Old School Site, Itchingfield,
- STO1 Land to the North of Melton Drive, Storrington

⁵⁴ Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008

⁵⁵

- STO2: Land at Rock Road (Thakeham Parish)
- STO3: Land South of Northlands Lane (adjacent to the STO1 allocation area)
- STO4: Land at Fryern Road
- STO5: Land at Bax Close
- TH1: Land North of High Bar Lane
- TH2: Land West of Stream House
- WCH1: Land at Hatches Estate
- WCH2: Land West of Smock Alley, S of Little Haglands
- WCH3: Land East of Hatches House

4.43 Site Allocations located within 12km of Ebernoe Common SAC:

- HA4: Land East of Billingshurst
- PLB1: Land at Highfields, Codmore Hill
- RD1: Land North of Guildford Road, Bucks Green
- RD2: The former Pig Farm, Bucks Green
- EM3 - Land at Broomers Hill Business Park, Pulborough

4.44 In addition, the following policies are screened in because they could increase the amount of greenfield development west of the A24 in Horsham District:

- Strategic Policy 4 - Horsham Town
- Strategic Policy 5: Broadbridge Heath Quadrant
- Strategic Policy 29: New Employment
- Strategic Policy 30: Enhancing Existing Employment
- Policy 33: Equestrian Development
- Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
- Strategic Policy 37 - Housing Provision
- Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation

Atmospheric Pollution

4.45 The Local Plan provides for significant housing growth in the period between 2023 and 2040. This will lead to an increase in the District's population and the number of residents that will be commuting to workplaces outside the District. Similarly, the provision of new employment opportunities will likely lead to an increase in the commuter influx to Horsham from surrounding authorities. This has the potential to result in increased vehicle movements on road networks within 200m of Habitats sites that are sensitive to atmospheric nitrogen deposition and therefore requires consideration at the screening stage.

Arun Valley SAC/SPA/Ramsar site

- 4.46 There are no significant roads within 200m of Arun Valley SAC/SPA/Ramsar site and phosphorus is considered to be the principal growth limiting nutrient (i.e. the nutrient controlling eutrophication) for that site rather than nitrogen. Phosphorus does not come from vehicle exhausts. As such, there is no realistic linking impact pathway between the Arun Valley SPA/ Ramsar site and the Horsham Local Plan and thus no likely significant effects. This impact pathway in relation to the Arun Valley is not considered further.

The Mens SAC

- 4.47 The woodland of The Mens 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.⁵⁶
- 4.48 The Mens SAC is adjacent to an A road (the A272). Work undertaken for the South Downs Local Plan indicated that the road at this location has relatively low traffic flows such that modelled baseline NO_x concentrations did not exceed the critical level for that pollutant even at the roadside and are forecast to fall further over the plan period due to the improvements in vehicle emissions technology (i.e. people replacing older vehicles with those compliant with the most recent emissions standard, Euro6), outstripping the forecast increase in vehicle flows.
- 4.49 The designated habitat for this SAC is beech woodland. This habitat has a minimum Critical Load of 10 kg/N/ha/yr, and as such the background nitrogen deposition at this site is above this Critical Load (Site Minimum N Deposition 26.33 kg/N/ha/yr and Site Maximum N Deposition 26.36 kg/N/ha/yr) according to APIS. Relatively high nitrogen deposition rates compared to relatively low NO_x concentrations suggests that much of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.
- 4.50 Nonetheless, the Local Plan will result in increased traffic movements within the District, including on routes such as the A272 which connect to settlements within the plan area. At the screening stage, and in the absence of detailed traffic modelling, it cannot be concluded that increases in traffic associated with the Local Plan would be insignificant. As such, the potential for likely significant effects on The Mens SAC as a result of atmospheric pollution cannot be excluded, and this impact pathway is therefore screened in for Appropriate Assessment.

Ebernoe Common SAC

- 4.51 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.⁵⁷

⁵⁶ <http://www.apis.ac.uk/node/965>

⁵⁷ <http://www.apis.ac.uk/node/965>

4.52 This Habitats site is adjacent to an A road (the A283). Before undertaking air quality modelling it is necessary to determine the Affected Road Network i.e. the roads likely to be affected by traffic growth associated with Horsham Local Plan. The majority of the traffic passing The Mens SAC from Billingshurst will continue west along the A272 to Midhurst and Petersfield rather than turn north up the A283 past Ebernoe Common SAC. While the A283 does connect to Godalming there are much more direct, convenient and sensible routes to reach either settlement from Billingshurst such that those roads won't be significant journey to work routes for Horsham residents. Given this, it is considered that Ebernoe Common SAC can be screened out at the likely significant effects stage.

Ashdown Forest SAC

4.53 Ashdown Forest SAC is designated for two types of heathland habitat, namely Northern Atlantic wet heaths with *Erica tetralix* and Habitats dry heaths, both with a critical nitrogen load of 10-20 kg N/ha/yr. An exceedance of this critical load leads to a transition from heather to grass dominance, declines in lichen assemblages and an increase in susceptibility to abiotic stress. Furthermore, the broad habitats of great-crested newts (standing open water and canals) are also sensitive to excessive nitrogen deposition, although a critical nitrogen load for these habitats has not been established as they tend to be phosphate limited.

4.54 Due to the sensitivity of the qualifying habitats present in the SAC, atmospheric nitrogen deposition is a well-established impact pathway and represents a strategic cross-boundary issue in south-eastern England. This culminated in the preparation of a Statement of Common Ground by members of the Ashdown Forest Working Group, exercising their Duty to Co-operate regarding matters related to the Habitats and Species Regulations. Therefore, while the Borough of Horsham lies almost 15km in a straight-line distance from the Ashdown Forest SAC, the potential for growth in Horsham District to make a material contribution to any change in daily traffic flows through the SAC has been considered.

4.55 Ordinarily, a zone of 10km is used to screen in Habitats sites vulnerable to reductions in air quality. This is based on the average UK car journey being approximately 10.6km⁵⁸. Ashdown Forest SAC lies almost 15km from Horsham District and nearly 20km from the closest significant population centre within that district (Horsham itself). Moreover, there are no direct road links between Horsham town and Ashdown Forest SAC such that the journey by road is considerably more than 20km. This is clearly well outside the typical travel distance for a Horsham resident.

4.56 Given the distance involved it is considered very likely that any change in Annual Average Daily Traffic on roads through the SAC from growth in Horsham District would be in the low single figures at most. When translated into air quality results (NO_x concentrations and nitrogen deposition rates) this would be inconsequential even in-combination with other projects and plans for the following reasons:

- Daily traffic flows are not fixed numerals but fluctuate from day to day. The AADT for a given road is an annual average (specifically, the total volume of traffic for a year, divided by 365 days). It is this average number that is

⁵⁸ GOV.UK (2019). *Average number of trips made and distance travelled*. <https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled>, accessed 13/03/2020

used in air quality modelling, but the 'true' flows on a given day will vary around this average figure. Very small changes in average flow lie well within the normal variation (known as the standard deviation or variance) and would not result in a statistically significant difference in the total AADT; and

- When converted into NO_x concentrations, ammonia concentrations or nitrogen deposition rates, the experience of AECOM's air quality modelling team is that very small changes in AADT would only affect the third decimal place. The third decimal place is not normally reported in air quality modelling to avoid false precision. For this reason, pollution is generally not reported to more than 2 decimal places (0.01). Anything smaller is simply reported as less than 0.01 (< 0.01) i.e. probably more than zero but too small to model with precision.

4.57 In reaching this conclusion we are mindful of paragraph 48 of Advocate-General Sharpston's Opinion in European Court of Justice Case C-258/11 where she stated that: *'the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill'*.

4.58 It is also relevant that Mr Justice Jay, when ruling in *Wealden v SSCLG* [2017] EWHC 351 (Admin) (2017), did accept that if the contribution of an individual plan or project was 'very small indeed' (he quoted a notional 20 AADT in making this illustration) it could be legitimately and legally excluded from 'in combination' assessment. This is consistent with Advocate-General Sharpston's position.

4.59 Overall, given the very small likely increase in traffic on the road links identified in relation to the Ashdown Forest SAC, it is concluded that the Horsham Local Plan will not result in Likely Significant Effects on the site regarding atmospheric pollution even in combination with other projects and plans; in the words of Advocate-General Sharpston, it would have no appreciable effect on the SAC. This impact pathway is screened out from Appropriate Assessment.

Duncton to Bignor Escarpment SAC

4.60 Duncton to Bignor Escarpment SAC lies approximately 2.5km from the Horsham District boundary and approximately 8km from the nearest areas of the District subject to new allocations (e.g Pulborough). Other allocations, including those at Storrington and West Chiltington (Kingswood), are located at distances of approximately 8-11km from the SAC.

4.61 The principal road in proximity to the SAC is the A285, which connects to the wider road network including routes serving Pulborough and surrounding settlements. Whilst some limited redistribution of traffic associated with Local Plan growth could occur on this route, any such changes would arise from dispersed development located at a considerable distance from the SAC. The majority of the traffic passing The Mens SAC from Billingshurst will continue west along the A272 to Midhurst and Petersfield rather than turn south down the A285 past Duncton to Bignor Escarpment SAC. While the A285 does connect to Chichester there are much more direct, convenient and sensible routes to reach

either settlement from Billingshurst such that those roads won't be significant journey to work routes for Horsham residents.

- 4.62 Given the distance of the allocations from the SAC and the absence of any direct or significant increase in traffic flows on roads within 200m of the SAC, any change in vehicle movements attributable to the Local Plan would be very small in scale and would not result in a measurable change in pollution concentrations at the site, either alone or in combination with other plans or projects.
- 4.63 It is therefore concluded that the Horsham District Local Plan will not result in likely significant effects on Duncton to Bignor Escarpment SAC with respect to atmospheric pollution. This impact pathway is therefore screened out from Appropriate Assessment.

In-Combination Assessment

- 4.64 Under the Conservation of Habitats and Species Regulations 2017 (as amended) it is obligatory to not only assess LSEs of a proposed plan alone, but also to investigate whether there might be 'in-combination' effects with plans proposing development in other authorities surrounding a Habitats protected site.
- 4.65 In practice, much of the evidence base informing the HRA process is in-combination by nature. For example, Water Resources Management Plans (WRMPs) are published for entire regions and take the water demand of large-scale growth scenarios into account when projecting their supply-demand balance. Traffic and Air Quality Impact Assessments (AQIAs) generally take in-combination traffic into account. The latter compare three distinct scenarios, including the 'Do Something' case which considers traffic increases due to other Plans.
- 4.66 In practice, such an 'in-combination' assessment is of greatest relevance when a plan would otherwise be screened out, due to a small individual effect. The in-combination scope is most relevant to the following impact pathways that are linked to the HLP:
- Recreational pressure
 - Water quality
 - Water quantity, level and flow
 - Loss of functionally linked habitat
 - Atmospheric pollution
- 4.67 This is because these impact pathways are of a cumulative nature, incorporating impacts from a scope that extends beyond the geographic boundary of individual authorities.
- 4.68 For the purposes of this HRA, we have identified several other authorities that have put forward their own Local Plans or Core Strategies, outlining residential and / or employment growth within their own boundary. These include Arun, the South Downs National Park Authority, Crawley, Mid-Sussex, Waverley, Chichester, Worthing and Adur. Table 2 summarises the residential growth allocated within the respective plan documents for these authorities (taken from adopted or submitted local plans). The growth delivered in the respective

authorities will be taken into account at the Appropriate Assessment stage of this HRA.

- 4.69 The impact pathway loss of functionally linked land has an in-combination scope, because there might be a loss of multiple parcels of functionally linked land due to the implementation of several Local Plans. This might result in a cumulative, in-combination depletion of functionally linked land available to mobile SPA / Ramsar and SAC species.

Table 2: Quanta of housing and employment land that is to be delivered in other authorities surrounding the relevant Habitats Sites based on published plans at time of writing (July 2026)

Local Authority	Total housing provided	Source
Arun	20,000 by 2031	Adopted Local Plan
South Downs	6,137 by 2042/43	Adopted Local Plan
Crawley	–5,030 from 2024 to 2040	Adopted Local Plan
Mid-Sussex	17,543 from 2021-2039	Plan currently going through Examination
Waverley	11,210 by 2032	Adopted Local Plan
Chichester	11,484 from 2021 to 2039	Adopted Local Plan
Worthing	3,672 (2020 to 2036)	Adopted Local Plan
Adur	3,718 by 2032	Adopted Local Plan
Total	78,794	

5. Conclusion of Likely Significant Effects Test

- 5.1 This HRA assessed the development proposed in the Horsham District Local Plan including Main Modifications, including its policies and site allocations, which provide for significant housing and employment growth over the plan period. While a number of Habitats sites and impact pathways have been screened out due to the absence of likely significant effects, several impact pathways cannot be excluded at this stage and require Appropriate Assessment. The following Habitats sites and impact pathways are therefore screened in for Appropriate Assessment:

- Arun Valley SAC and Ramsar – water quality and water quantity, level and flow;
- Arun Valley SPA and Ramsar – loss of functionally-linked land; and
- The Mens SAC – loss of functionally-linked land and potential atmospheric pollution impacts from changes in traffic.
- Ebernoe Common SAC – loss of functionally-linked land

- 5.2 This is as a result of the following policies:

- Strategic Policy 4 - Horsham Town

- Strategic Policy 5: Broadbridge Heath Quadrant
- Strategic Policy 29: New Employment
- Strategic Policy 30: Enhancing Existing Employment
- Policy 33: Equestrian Development
- Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
- Strategic Policy 37 - Housing Provision
- Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation

5.3 This is as a result of the following site allocations:

5.4 Strategic Site Allocations:

- HA4: Land East of Billingshurst
- HA3: Land North West of Southwater
- SA597: Land at Adversane, West Chiltington

5.5 Residential Site Allocations:

- ASN1: Land east of Mousdell Close
- CW1: Land at Brook Hill & Cowfold Glebe
- CW2: Field West of Cowfold, North of A272
- CW3: Fields West of Cowfold, South of A272/Field W of Cowfold, S of A272, W of Little Potters
- HOR1: Land at Hornbrook Farm
- BGR1: Land South of Smugglers Lane
- BGR2: Land South of Muntham DriveBGR3: Land at the Old School Site, Itchingfield,
- BRH1: South of Lower Broadbridge Farm
- HOR2: Land at Mercer Road
- LWB4: Land At Cyder Farm, Crabtree
- PLB1: Land at Highfields, Codmore Hill
- RD1: Land North of Guildford Road, Bucks Green
- RD2: The former Pig Farm, Bucks Green
- STO1 Land to the North of Melton Drive, Storrington
- STO2: Land at Rock Road (Thakeham Parish)
- STO3: Land South of Northlands Lane
- STO4: Land at Fryern Road
- STO5: Land at Bax Close
- TH1: Land North of High Bar Lane
- TH2: Land West of Stream House

- WRN1: Land south of Bell Road
- WCH1: Land at Hatches Estate
- WCH2: Land West of Smock Alley, S of Little Haglands
- WCH3: Land East of Hatches House
- Ashington North Cluster (SA790 / SA520 / SA539 / SA524 / SA085)

5.6 Employment Site Allocations:

- EM3 - Land at Broomers Hill Business Park, Pulborough

5.7 It is these Policies and Site Allocations that will be subject to Appropriate Assessment in the following chapter.

6. Appropriate Assessment

Water Quantity, Level and Flow

Arun Valley SPA / Ramsar Site

- 6.1 The Arun Valley SAC, SPA and Ramsar site is sensitive to changes in hydrological conditions, including water levels and flows, which are critical to the maintenance of its qualifying habitats and species. In particular, the SAC supports populations of little whirlpool rams-horn snail, which is dependent on stable ditch water levels, while the SPA and Ramsar site support wintering waterfowl that require appropriate wetland conditions for foraging and roosting.
- 6.2 Development proposed through the Horsham Local Plan will result in an increase in the potable water demand. This water is supplied by Southern Water from sources within the Sussex North Water Resource Zone. In principle, increased demand could give rise to effects on Habitats sites through increased abstraction.
- 6.3 Historically, concerns were raised regarding the potential effects of abstraction on the Arun Valley, particularly in relation to groundwater abstraction at Pulborough. However, these issues are now addressed through a strategic regulatory framework. In October 2025, Natural England confirmed that the Sussex North Water Resource Zone Position Statement – which effectively required water neutrality across the Zone – has been withdrawn following agreement with the Environment Agency and water companies.
- 6.4 Water abstraction is regulated through abstraction licensing by the Environment Agency, alongside water resource planning undertaken by Southern Water through its Water Resources Management Plan. These processes ensure that water supply is managed in a way that does not result in adverse effects on the environment, including Habitats sites.
- 6.5 The Local Plan operates within this regulatory framework and does not itself control abstraction. Water companies are under a statutory duty to ensure that sufficient water supply is provided without causing environmental harm, and abstraction licences are granted and reviewed with regard to ecological constraints.
- 6.6 Given the strategic controls recently put in place and the fact that water resource management is addressed at the catchment and regional scale, it can be concluded that increases in water demand arising from the Local Plan will not result in adverse effects on the integrity of the Arun Valley SAC, SPA or Ramsar site, either alone or in combination with others plans or projects.
- 6.7 Taking into account the strategic regulatory framework governing water abstraction, the oversight provided by the Environment Agency and water companies and the revised position of Natural England, it can be concluded beyond reasonable scientific doubt that the Horsham Local Plan will not result in adverse effects on the integrity of the Arun Valley SAC, SPA or Ramsar site in relation to water quantity, level and flow.

Loss of Functionally Linked Habitat

Arun Valley SPA / Ramsar Site

- 6.8 The Arun Valley SPA and Ramsar site supports wintering waterfowl species including Bewick's swan, which are known to utilise habitats beyond the designated site boundary (functionally linked habitat). Such habitats typically comprise large, open and relatively undisturbed agricultural fields that provide sufficient scale, visibility and connectivity to support flocking and foraging behaviour.
- 6.9 The Test of Likely Significant Effects identified a number of site allocations within approximately 6.5km of the SPA/Ramsar site on greenfield land parcels of 2ha or greater that could, in principle, support functionally linked land. These allocations were subject to further detailed review using GIS analysis and aerial imagery to assess their suitability, including consideration of field size, enclosure, surrounding land use and levels of disturbance. The results of this analysis are presented in Table 3.

Table 3: Assessment of Potential Functionally Linked Habitat (Arun Valley SPA / Ramsar)

Site Ref	Description	Suitability	Key Reasoning	Project-level AA Required
STO1 (SA361)	Agricultural field, subdivided	Potential	Large field but enclosed, fragmented and disturbed	Yes
STO2 (SA384)	Single enclosed field	Not suitable	Strong enclosure and residential adjacency	No
STO3 (SA732)	Single open field	Borderline	Relatively open but settlement-edge and subject to disturbance	No (borderline)
STO4 (SA639)	Large field system	Not suitable	Fragmented field network enclosed by woodland and adjacent residential development, resulting in restricted openness and sightlines	No
STO5 (SA485)	Two enclosed fields	Not suitable	Fragmented, enclosed and adjacent to housing	No
WCH2 (SA429)	Enclosed pasture field	Not suitable	Limited openness, enclosed and disturbed	No
PLB1 (SA556)	Narrow elongated field	Not suitable	Poor shape, enclosure and disturbance	No
TH2 (SA873)	Field next to industrial use	Not suitable	High disturbance and enclosed	No
WCH1 (SA066 / SA500)	Fragmented paddock landscape	Not suitable	Highly fragmented, enclosed and disturbed	No
Ashington North Cluster (SA790 /	Cluster of fields	Not suitable	Fragmented field system, no cohesive habitat	No

Site Ref	Description	Suitability	Key Reasoning	Project-level AA Required
SA520 / SA539 / SA524 / SA085)				
ASN1 (SA866)	Small enclosed site	Not suitable	Limited size and enclosure	No
Adversane (SA597)	Large rural site	Not suitable	Extensive but fragmented field network lacking openness	No

- 6.10 This assessment confirms that, while several allocations fall within the relevant distance threshold, the majority comprise fragmented field systems characterised by strong hedgerow enclosure, subdivision into smaller parcels, restricted sightlines and proximity to existing residential development or other sources of disturbance. As such, these sites do not provide the large, open and continuous habitat required to support significant populations of Bewick's swan or other qualifying waterfowl species.
- 6.11 Following this detailed review, one allocation (STO1: Land to the North of Melton Drive, Storrington) has been identified as having some limited potential to provide functionally linked habitat due to its size and agricultural character. A further site (STO3; SA732) comprises a relatively open field and is considered borderline in suitability. However, both sites are located on the edge of existing settlements, are enclosed by hedgerows and influenced by adjacent development, and are therefore subject to disturbance and restricted sightlines which reduce their suitability.
- 6.12 All other allocations within the zone of influence have been screened out as unsuitable due to a combination of fragmentation, enclosure, irregular field morphology, restricted sightlines and proximity to development. These sites do not represent functionally linked habitat of ecological importance to the Arun Valley SPA/Ramsar site. A Full site-by-site assessment is provided in Table 3 above.
- 6.13 The Local Plan includes embedded policy safeguards to address any residual uncertainty. Strategic Policy 17 (Green Infrastructure and Biodiversity) requires that development proposals demonstrate that they do not result in adverse effects on the integrity of Habitats sites, including through impacts on supporting habitat. Site allocation policies also require appropriate ecological assessment for allocations, including wintering bird surveys where suitable habitat is present.
- 6.14 Where functionally linked habitat is identified at the project level, appropriate avoidance and mitigation measures can be secured through the planning process. These may include retention of suitable habitat, site layout design to avoid key areas, or provision of replacement habitat where necessary. Such measures are well established and feasible in practice.
- 6.15 In particular, where sites comprise or are adjacent to suitable habitat, wintering bird surveys will be required to determine whether the site (or surrounding land) supports qualifying species such as Bewick's swan. Surveys would be undertaken over an appropriate seasonal period and, where necessary, across more than one winter, in agreement with the Local Planning Authority and Natural England.

- 6.16 Where functionally linked habitat is identified through survey, appropriate avoidance and mitigation measures can be secured through the planning application process. These may include retention of suitable habitat, design measures to avoid areas of importance, or the provision of replacement habitat where required to ensure no net loss of supporting habitat.
- 6.17 The Habitats Regulations Assessment process operates on a tiered basis, with increasing levels of detail applied at each stage of plan-making and decision-making. The Local Plan establishes a robust framework to ensure that site-specific impacts on functionally linked habitat are identified and addressed at the project level, where detailed survey data is available.
- 6.18 Given these safeguards, and the nature of the habitats involved which are widespread and capable of being recreated or enhanced where necessary, it is considered that any residual uncertainty can be effectively addressed through the development management process.
- 6.19 Taking into account:
- The detailed assessment of allocations within the zone of influence confirming that the majority do not provide suitable functionally linked habitat,
 - The fragmented and enclosed nature of larger site allocations which prevents them functioning as cohesive feeding habitat,
 - The limited and constrained suitability of STO1 and STO3 (site SA732) and the borderline characteristics identified within this allocation area,
 - The absence of any large, open and continuous fields capable of supporting significant populations of SPA bird species, and
 - The embedded policy safeguards requiring project-level assessment and mitigation.
- 6.20 It can be concluded that the Horsham Local Plan has a sufficient policy framework to ensure that allocated sites will not result in adverse effects on the integrity of the Arun Valley SPA/Ramsar site in relation to the loss of functionally linked habitat, either alone or in combination with other plans and projects.

The Mens SAC and Ebernoe Common SAC

- 6.21 Any development that has potential to impact greenfield sites or existing mature vegetation lines and/ or riverbank corridors has potential to impact upon the commuting and foraging routes of bats for which these sites are designated. This could include direct loss of habitat and light and noise/ vibration pollution.
- 6.22 The Mens SAC and Ebernoe Common SAC are designated for populations of barbastelle bats, which rely on a network of functionally linked habitats beyond the designated site boundaries. These habitats include woodland, mature hedgerows, treelines and river corridors, which provide commuting routes and foraging areas. Barbastelle bats are particularly sensitive to the loss or severance of linear features and to increases in artificial lighting, which can disrupt connectivity.
- 6.23 Radio-tracking studies have demonstrated that barbastelle bats associated with these SACs may forage over considerable distances, in some cases up to

approximately 10–12km from roost sites, with the majority of activity typically occurring within approximately 6.5–9km. These studies also confirm that bats utilise linear landscape features such as hedgerows, woodland edges and watercourses to commute between roosting and foraging areas and may traverse extensive areas of intervening habitat.

- 6.24 Development proposals that result in the loss or fragmentation of greenfield land, mature vegetation or linear landscape features (such as hedgerows, treelines and watercourses), or which introduce artificial lighting, therefore have the potential to affect the commuting and foraging behaviour of barbastelle bats.
- 6.25 The Test of Likely Significant Effects identified that allocations within approximately 6.5km of The Mens SAC, and within 12km of either SAC, may provide functionally linked habitat in accordance with the Sussex Bat Protocol. As such, potential impacts relating to habitat loss, severance of commuting routes and disturbance through lighting and noise have been taken forward to Appropriate Assessment.
- 6.26 In addition, the following policies are screened in because they could increase the amount of greenfield development west of the A24 in Horsham District (and thus within the relevant zone):
- Strategic Policy 4 - Horsham Town
 - Strategic Policy 5: Broadbridge Heath Quadrant
 - Strategic Policy 29: New Employment
 - Strategic Policy 30: Enhancing Existing Employment
 - Policy 33: Equestrian Development
 - Strategic Policy 34 - Tourism Facilities and Visitor Accommodation
 - Strategic Policy 37 - Housing Provision
 - Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation
- 6.27 A wide range of allocations and proposed sites across the Local Plan fall within these zones, including those identified through the Regulation 19 update (including sites referenced using SA site codes). It should be noted that the potential effects on barbastelle bats relate to the cumulative loss or fragmentation of habitat networks rather than the suitability of any single site in isolation.
- 6.28 To support this assessment, a review of all allocation and proposed sites within 12km of The Mens SAC and Ebernoe Common SAC has been undertaken in relation to their potential to support functionally linked habitat. This is presented in Table 4. The table demonstrates that all relevant sites have been considered in accordance with the precautionary approach set out in the Sussex Bat Protocol, with particular regard to the presence of linear features, habitat connectivity and location within the recognised zones of influence.

Table 4: Assessment of potential impacts on functionally linked habitat in allocated and proposed sites within 12km of Ebernoe Common SAC and The Mens SAC

Site	Status	Distance	Description and FLH role	Outcome
PLB1 (SA556)	Allocation	3.4km	Settlement-edge grassland and paddock land adjacent to a well-defined linear corridor of dense tree and hedgerow vegetation, with connectivity to surrounding farmland and green space	Precautionary inclusion as habitat potentially suitable for SAC bats
Land at Adversane, West Chiltington (SA597)	Proposed	4.1km	Wider landscape habitat with watercourses and linear features on site	Precautionary inclusion as habitat potentially suitable for SAC bats
HA4 (SA118)	Allocation	5.1km	Core sustenance zone habitat with linear features and woodland	Precautionary inclusion as habitat potentially suitable for SAC bats
Land at Rosier Park, East of Billingshurst (SA757)	Proposed	5.3km	Linear features and watercourse on site	Precautionary inclusion as habitat potentially suitable for SAC bats
SA698	Proposed	5.5km	Within core sustenance zone, site has boundary hedgerows	Precautionary inclusion as habitat potentially suitable for SAC bats
WCH1 (SA066 and SA500)	Allocation	7.3km	Grassland field at the northern edge of West Chiltington with scattered mature trees and strong boundary hedgerows, adjoining residential gardens and connected to surrounding farmland	Precautionary inclusion as habitat potentially suitable for SAC bats
RD1 (SA574)	Allocation	7.9km	Settlement-edge agricultural land within an enclosed landscape characterised by pasture and arable fields, linear features on site	Precautionary inclusion as habitat potentially suitable for SAC bats

Site	Status	Distance	Description and FLH role	Outcome
RD2 (SA794)	Allocation	7.9km	Agricultural land adjoining the settlement edge within a connected mosaic of fields bounded by hedgerows	Precautionary inclusion as habitat potentially suitable for SAC bats
WCH2 (SA429)	Allocation	8km	Settlement-edge site south of West Chiltington adjacent to farmland and hedgerow boundaries	Precautionary inclusion as habitat potentially suitable for SAC bats
BGR1 (SA006)	Allocation	8.4km	Settlement-edge agricultural land adjoining woodland blocks and a network of pasture fields with strong hedgerow boundaries	Precautionary inclusion as habitat potentially suitable for SAC bats
BGR2 (SA510)	Allocation	8.5km	Agricultural land at the edge of the settlement comprising smaller enclosed fields with hedgerows and connectivity to nearby woodland and surrounding countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
SA442	Proposed	8.9km	Land at the edge of the settlement surrounded by a closely connected network of woodland corridors, hedgerows and small agricultural fields forming a continuous landscape. An area of woodland is present on site.	Precautionary inclusion as habitat potentially suitable for SAC bats
SA344	Proposed	8.9km	Agricultural land at the settlement edge within a well-connected mosaic of pasture, arable fields and extensive woodland blocks, with strong hedgerow boundaries linking to surrounding countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
STO3 (SA732)	Allocation	9km	Settlement-edge allocation comprising agricultural land with hedgerows and connectivity to surrounding countryside, contributing to the wider habitat network	Precautionary inclusion as habitat potentially suitable for SAC bats

Site	Status	Distance	Description and FLH role	Outcome
STO4 (SA639)	Proposed	9km	Linear features on the edge of settlement and adjacent to woodland	Precautionary inclusion as habitat potentially suitable for SAC bats
TH2 (SA873)	Allocation	9km	Edge-of-settlement site at Abingworth adjacent to farmland with partial connectivity to wider landscape	Precautionary inclusion as habitat potentially suitable for SAC bats
STO1 (SA361)	Allocation	9km	Settlement-edge allocation comprising agricultural land with hedgerows and connectivity to surrounding countryside, contributing to the wider habitat network	Precautionary inclusion as habitat potentially suitable for SAC bats
STO5 (SA485)	Proposed	9.1km	Linear features on the edge of settlement	Precautionary inclusion as habitat potentially suitable for SAC bats
BGR3 (SA522)	Allocation	9.6km	Small settlement-edge site adjoining extensive arable fields and directly connected to adjacent woodland blocks, with hedgerow boundaries linking to surrounding rural properties and farmland	Precautionary inclusion as habitat potentially suitable for SAC bats
STO2 (SA384)	Allocation	10.1km	Settlement-edge allocation comprising agricultural land with hedgerows and connectivity to surrounding countryside, contributing to the wider habitat network	Precautionary inclusion as habitat potentially suitable for SAC bats
HA3 (SA119a)	Allocation	10.9km	Extensive area at the edge of Southwater within a well-connected mosaic of pasture and arable fields, with numerous woodland blocks and strong hedgerow boundaries linking the site to surrounding countryside and residential green infrastructure	Precautionary inclusion as habitat potentially suitable for SAC bats

Site	Status	Distance	Description and FLH role	Outcome
BRH1 (SA386)	Allocation	11.2km	Agricultural land at the western edge of Horsham comprising arable and pasture fields with defined hedgerow boundaries, connected to surrounding rural landscape	Precautionary inclusion as habitat potentially suitable for SAC bats
(SA524)	Proposed	11.2km	Group of agricultural fields north of Ashington forming a connected landscape with hedgerows, tree lines and links to wider countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
ASN1 (SA866)	Allocation	11.3km	Settlement-edge site west of Ashington adjoining agricultural land with hedgerows and tree boundaries	Precautionary inclusion as habitat potentially suitable for SAC bats
SA790	Proposed	11.4km	Group of agricultural fields north of Ashington forming a connected landscape with hedgerows, tree lines and links to wider countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
SA520	Proposed	11.5km	Group of agricultural fields north of Ashington forming a connected landscape with hedgerows, tree lines and links to wider countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
SA539	Proposed	11.5km	Group of agricultural fields north of Ashington forming a connected landscape with hedgerows, tree lines and links to wider countryside	Precautionary inclusion as habitat potentially suitable for SAC bats
SA725	Proposed	11.7km	Agricultural land at the settlement edge adjoining extensive woodland blocks and a well-developed hedgerow network, with strong connectivity to surrounding farmland and residential vegetation	Precautionary inclusion as habitat potentially suitable for SAC bats

6.29 The mechanism to avoid of adverse effects on integrity in relation to these SACs is secured through the statutory requirements of the Habitats Regulations, which require project-level Habitats Regulations Assessment where there is potential

for likely significant effects. This is supplemented and clarified by policy in the Local Plan. The Local Plan provides a clear and consistent framework to support the implementation of these requirements.

6.30 In particular, Strategic Policy 17 (Green Infrastructure and Biodiversity) reinforces the statutory requirement for Habitats Regulations Assessment and establishes expectations for the protection of functionally linked habitat. Supporting text to this policy defines 'core bat sustenance zones' and 'key bat sustenance zones', reflecting the 6.5km and 12km zones of influence around the SACs, within which development proposals must assess potential impacts on commuting and foraging habitat.

6.31 Strategic Policy 17 - Green Infrastructure and Biodiversity states:

"11. Any development with the potential to impact the Arun Valley SPA / SAC / Ramsar site, The Mens SAC and / or Ebernoe Common SAC will be subject to a Habitats Regulation Assessment to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan."

6.32 A large number of allocations are located within the core (6.5km) and wider (12km) zones of influence for The Mens SAC and Ebernoe Common SAC, including sites in the Billingshurst, Pulborough, Bucks Green, Storrington and West Chiltington areas.

6.33 Within these zones, development proposals are required to evaluate the potential for loss of foraging habitat and severance of commuting routes. Where such features are present, the Local Plan requires their retention or appropriate compensation unless survey evidence demonstrates that they are not used by barbastelle bats and are not of ecological importance. Development must also be designed to avoid unacceptable levels of artificial lighting affecting these features.

6.34 Particular regard will be given to the control of artificial lighting, with development required to maintain dark corridors along key linear features used by bats, ensuring that commuting routes are not disrupted.

6.35 Mitigation measures for bats are well established and routinely implemented through the planning process. These include the retention and reinforcement of linear features, the creation of new habitat corridors, buffering of key features, and the use of sensitive lighting design to maintain dark corridors (typically below 0.5 lux). Such measures can be secured through planning conditions and obligations at the project level.

6.36 The Habitats Regulations Assessment process operates across plan-making and development management stages. Detailed ecological assessment, including bat activity surveys and the design of site-specific mitigation, is appropriately undertaken at the planning application stage where sufficient information is available.

6.37 Given the widespread distribution of suitable commuting and foraging habitat, the mobility of barbastelle bats, and the availability of effective and deliverable mitigation measures, it is considered that impacts associated with development can be appropriately avoided or mitigated through established processes.

6.38 Taking into account:

- The distribution of allocated sites within the recognised zones of influence for The Mens SAC and Ebernoe Common SAC,
- The nature of potential impacts, which relate to the cumulative loss or fragmentation of commuting and foraging habitats,
- The recognised reliance of barbastelle bats on linear habitat features across a wide geographical area,
- The statutory requirement for project level Habitats Regulations Assessment,
- The supporting Local Plan framework which guides the identification, protection and mitigation of functionally linked habitat and,
- The availability and proven effectiveness of measures to maintain habitat connectivity and dark corridors.

6.39 It can be concluded that the Horsham Local Plan contains a sufficient policy framework to ensure that allocated sites will not result in adverse effects on the integrity of The Mens SAC or Ebernoe Common SAC in relation to loss of functionally linked habitat, either alone or in combination with other plans or projects.

Atmospheric Pollution

The Mens SAC

6.40 It is considered that The Mens SAC is vulnerable to nitrogen deposition and is located within 200m of an A road likely to be utilised as a journey to work route, particularly for residents of Billingshurst: the A272. Modelling was undertaken along a single transect within the SAC adjacent to the road, with the closest part of the SAC being located immediately adjacent to the roadside.

6.41 Road traffic data in the form of 24-hour AADT (Annual Average Daily Traffic) based on 2025 data and forecast to 2040 were provided by the Stantec transport team, in line with the Horsham Transport Study. Stantec modelled additional journeys that will be taken at the transect point, firstly as a result of the Horsham Local Plan alone and then in combination with other plans and projects, particularly Chichester Local Plan.

6.42 The traffic modelling identified that the in combination effect exceeded 1000 AADT and that the Horsham Local Plan in isolation would provide approximately half of the increase in traffic flows on this link to 2039.

6.43 The designated habitat for The Mens SAC is beech woodland. The Air Pollution Information Service (APIS)⁵⁹, provides a national searchable database and information on pollutants and their impacts on habitats and species, maintained by the Centre for Ecology and Hydrology. It is the standard reference database for air quality background data and the sensitivities of particular designated sites.

⁵⁹ Air Pollution Information Service (APIS) (<https://www.apis.ac.uk/>). Online web app available at: <https://www.apis.ac.uk/app>

According to APIS, the minimum Critical Load⁶⁰ of nitrogen deposition for beech woodland is 10 kgN/ha/yr. APIS also identifies that the existing nitrogen deposition rate at the transect location is approximately 20 kgN/ha/yr. Therefore, nitrogen deposition rates are already in exceedance of the critical load. The Critical Level for ammonia for beech woodlands is 3 µg NH₃/m³. However, the site is also partially designated for its rich lichen and bryophyte populations which have a Critical Level of 1 µg NH₃/m³. As such, it is this lower level for ammonia that will be used in this assessment.

6.44 With regards to NO_x the critical level is set at 30 µg/m³. Baseline data were utilised from the year 2025 which recorded NO_x concentrations of 8.66 µg/m³ 10m from the roadside. As such the NO_x Critical Level is not exceeded.

Modelling results

6.45 An assessment of air quality was undertaken for both alone impacts i.e. the Horsham Local Plan and in-combination e.g. Horsham Local Plan in combination with all other growth from neighbouring authorities. In this section discussion will focus on the contribution of the Horsham Local Plan alone. The modelling is presented in Appendix D In summary:

6.46 At the worst-case non-roadside receptor along the transect (E1_10m; 10m back from the road edge), the updated modelling for the HRA showed the following:

- Ambient NO_x concentrations: both the impact alone (DS - DM), and impact in combination (DS-FB) were predicted to be below the 1% threshold of the annual mean NO_x Critical Level (30 µg/m³) in 2040.
- Ambient NH₃ concentrations: the impact alone (DS-DM) was predicted to be below the 1% threshold in 2040, however, the impact in combination (DS – FB) was predicted to be greater than the 1% threshold of the NH₃ Critical Level (1 µg/m³) for habitats containing lichens and bryophytes.
- Nitrogen deposition rates: both the impact alone (DS – DM, and impact in combination (DS – FB) were predicted to be below the 1% threshold of the annual mean nitrogen deposition Critical Load (20 kgN/ha/yr) in 2040.
- Nitrogen-based acid deposition rates: both the impact alone (DS – DM), and impact in combination (DS-FB) were predicted to be below the 1% threshold of the annual mean nitrogen deposition Critical Load (1.493 keq/ha/yr) in 2040.

6.47 Ammonia impacts on the SAC cannot therefore be dismissed on mathematical grounds. The modelling that underpinned the adopted 2024 Air Quality Mitigation Strategy produced by Chichester and Horsham Councils has been rerun to determine whether the additional housing added to the Main Modifications of the Horsham Local Plan made any change to the previously modelled impact assessment. The additional dwellings make no meaningful change and the data presented in Appendix D and in the summary above are in line with the

⁶⁰ The concepts of Critical Levels and Critical Loads were introduced by the United Nations Economic Commission for Europe (UNECE) Convention on Long-Range Transboundary Air Pollution (CLRTAP), and are defined as: “concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge.” Critical Levels apply to pollutants in atmosphere (NO_x and ammonia) while critical loads apply to pollutant deposition (nitrogen)

conclusions of the previous modelling i.e. that only ammonia would exceed 1% of the critical level alone or in combination.

- 6.48 It is of relevance to note that the Site Improvement Plan for the SAC highlights that although the critical level is exceeded the '*sensitive features are currently considered to be in favourable condition on this site*⁶¹'. Therefore, the site continues to support a diverse flora despite high ammonia concentrations. The Supplementary Advice for Conservation Objectives⁶² for the site provides no further information on potential impact due to air quality.
- 6.49 However, it should be noted that the SIP for the SAC states that '*Nitrogen deposition exceeds the site-relevant critical load for ecosystem protection and hence there is a risk of harmful effects, but the sensitive features are currently considered to be in favourable condition on the site*'. Therefore, the current elevated nitrogen deposition rates and ammonia concentrations at the SAC do not appear to be having a negative effect on the key features of the site. That said, one of the targets within the Conservation Objectives Supplementary Advice⁶³ is to "*Restore concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).*"
- 6.50 Key factors to consider in interpreting the air quality modelling results are how much of the SAC would be affected by the forecast impacts, how important is traffic as an overall source of nitrogen at the SAC and what is the current and likely trend for these pollutants from various sources. All of these factors will influence which sources of nitrogen are most important to control and reduce in order to ensure the SAC achieves the above-mentioned conservation objective target of restoring air quality to below critical loads/levels.
- 6.51 The critical level for ammonia is exceeded by approximately 16% under all scenarios, irrespective of traffic growth, due to existing agricultural sources of ammonia (livestock and fertiliser). Moreover, ammonia concentrations fluctuate greatly due to meteorological factors. Scrutiny of ammonia data from the UKEAP national ammonia monitoring network for a range of sites covering 2010-2019 shows that at rural sites like this one background ammonia concentrations generally fluctuate by more than 1 µg/m³ (100% of the critical level) throughout the year. As such, small modelled incremental changes in average ammonia such as the 0.02 µg/m³ modelled here at 10m from the roadside may not be statistically significant due to the large variance in ammonia concentrations. Therefore, care should be taken not to read too much into small forecast changes in average ammonia concentration.
- 6.52 Nonetheless, an ammonia impact marginally exceeding 1% of the critical level is forecast 'in combination' up to c. 20m from the roadside does conflict with the air quality target for the SAC given it represents a slowing in the rate of improvement, albeit a small and localised one affecting approximately 2% of the SAC. Modelling identified that when during the Local Plan period 'in combination' traffic growth is expected to breach the 1% of the critical level threshold. The timing of any forecast impact is dependent on build-out rates and delivery

⁶¹ <http://publications.naturalengland.org.uk/file/6144692196474880> [Accessed 1/12/2022]

⁶² <http://publications.naturalengland.org.uk/file/5113429933424640> [Accessed 1/12/2022]

⁶³ Available at <http://publications.naturalengland.org.uk/file/5113429933424640> [accessed 25/11/2022]

trajectories, but any such impact would be expected to arise later in the plan period once a substantial proportion of the planned growth has been delivered.

- 6.53 In combination atmospheric ammonia will marginally exceed 1% of the critical level for sites supporting lichens and bryophytes, being 0.02 µg/m³ (2% of the critical level) at 10m from the roadside, falling to 1% of the critical level by c. 15-20m from the roadside. Therefore, approximately 2% of The Mens SAC is forecast to be affected by 'in combination' ammonia to a greater than imperceptible degree. This does conflict with the air quality target for the SAC representing as it does a slowing of the rate of improvement, albeit a small and localised one affecting approximately 2% of the SAC. Any impact is temporary (though not necessarily short-term) as it will cease entirely once the number of electric vehicles using the A272 is equivalent to the number of additional vehicles on the A272 arising from development. The timing of any forecast impact is dependent on build-out rates and delivery trajectories but would be expected to occur later in the plan period.
- 6.54 Taking these factors into consideration it is concluded that the most appropriate approach to dealing with the forecast increase in ammonia concentrations in order to support a conclusion of no adverse effect on integrity (proportionate to the small scale of forecast in combination effect both in terms of physical extent, amount of ammonia involved and temporary nature of the impact) is to introduce a programme of measures to encourage a further shift from petrol cars and vans to ultra-low emission vehicles (ULEVs) over the period to 2040, beyond that modelled to arise purely from implementation of national policies. Automated Number Plate Recognition (ANPR) data for the A272 collected for Horsham District Council indicates that the local area already has a greater proportion of electric vehicles than the average fleet. This provides evidence that local existing and future car and van owners would be more responsive to a package of such measures than the average motorist. This approach was agreed with Natural England and Chichester District Council in 2024 and is reflected in the adopted Horsham and Chichester Local Plans Outline Air Quality Mitigation Strategy.
- 6.55 It is not possible to predict how much future ammonia concentrations would be reduced by such measures, since it would be dependent on uptake. However, it is possible to identify what further percentage conversion of petrol cars to ULEVs would be required in order to reduce the 'in combination' ammonia impact to 1% of the critical level.
- 6.56 Since any forecast impact would only be expected to arise later in the plan period there is no short-term requirement for mitigation and required percentage conversion of petrol/diesel cars and vans to electric vehicles could be used as a performance target in future Local Plan Reviews to confirm whether the measures were on target to achieve their objective, and if not either introduce further measures or amend Local Plan growth in the south of the plan area to introduce further phasing. A similar approach was used for the adopted Epping Forest Local Plan and its HRA and was agreed with Natural England as a way to address forecast ammonia emissions from traffic growth. Subject to that, it is considered that an adverse effect on the integrity of the SAC will not arise even 'in combination' with other plans or projects.
- 6.57 Performance metrics for the effectiveness of the mitigation strategy (essentially a target percentage conversion of petrol vehicles to electric vehicles by 2039, now 2040) were set out in Section 3 of the adopted Air Quality Mitigation Strategy.

The monitoring requirement is reflected in Main Modifications policy wording *“The Council will monitor emissions on the A272 at the Mens SAC. Should it become evident through monitoring that emissions arising from vehicle movements from proposed developments, individually or in combination, are likely without mitigation to affect the integrity of the SAC, the Council will seek mitigation measures through conditions and/or planning obligations attached to planning permissions.”*

6.58 The details of the mitigation strategy are not reproduced in this HRA. However, a sensitivity test was undertaken to determine whether the new housing in the Horsham Main Modifications would affect the mitigation strategy. The modelling indicates that with the additional 50% reduction in petrol vehicles on the A272 by 2040, there would be an NH₃ “in combination” impact (DS – FB) of 0.01 µg/m³, which is equal to the 1% of the Critical Level threshold for concluding no adverse effect on integrity, and thus identical to the outcome of the adopted mitigation strategy.

6.59 It is therefore concluded that there will be no adverse effect on the integrity of The Mens SAC either alone, or in combination with other plans or projects.

7. Conclusions and a Summary of Recommendations and Considerations

Conclusions

7.1 HRA was undertaken of the Regulation 19 Draft Local Plan. Screening was undertaken of all policies and site allocations in relation to the following internationally designated sites and impact pathways illustrated in **Table 6**:

Table 6: International Designated Sites and Potential Impact Pathways Subject to a Screening for Likely Significant Effects

Internationally Designated Site	Potential Linking Impact Pathways
Arun Valley SAC, SPA and Ramsar site	- Recreational pressure - Water quality - Water quantity, level and flow - Loss of functionally linked habitat
The Mens SAC	- Loss of functionally linked habitat - Atmospheric pollution
Duncton to Bignor Escarpment SAC	- Recreational pressure
Ebernoe Common SAC	- Loss of functionally linked habitat

7.2 Following the Screening Assessment, Appropriate Assessment was undertaken of potential linking impact pathways that could not be screened out and were identified to potentially result in an adverse effect on the integrity of an international site. Appropriate Assessment was undertaken of the impact pathways relating to the following international designated sites as identified in **Table 7**.

Table 7: International Designated Sites and Potential Impact Pathways Subject to Appropriate Assessment

Internationally Designated Site	Linking Impact Pathway Subject to Appropriate Assessment
Arun Valley SAC, SPA and Ramsar site	- Water quantity, level and flow - Loss of functionally linked habitat
The Mens SAC	- Loss of functionally linked habitat - Atmospheric pollution
Ebernoe Common SAC	- Loss of functionally linked habitat

7.3 The Appropriate Assessment concludes that, with the implementation of the Local Plan policies and the application of established development management processes, no adverse effect on the integrity of a Habitats site will arise in relation to the following pathways:

- Water quantity, level and flow (Arun Valley SAC, SPA Ramsar site), taking into account the regulatory framework governing water resource management and abstraction,
- Loss of functionally linked habitat for the Arun Valley SPA/Ramsar site, where detailed assessment confirms that the majority of allocations and proposed sites do not provide suitable supporting habitat and any residual uncertainty is addressed through policy safeguards and project-level assessment,
- Loss of functionally linked habitat for The Mens SAC and Ebernoe Common SAC, where all allocation and proposed sites within recognised zones of influence have been considered on a precautionary basis and potential effects are appropriately managed through the retention of linear features, maintenance of habitat connectivity and control of lighting through development management processes.
- Atmospheric pollution at The Mens SAC, where air quality modelling identified a marginal in-combination ammonia effect exceeding 1% of the relevant critical level within a limited area of the SAC. Taking account of the adopted Air Quality Mitigation Strategy, associated monitoring framework and policy safeguards, it can be concluded that no adverse effect on the integrity of The Mens SAC will arise, either alone or in combination with other plans and projects.

Air quality

The Mens SAC

7.4 There is an adopted Air Quality Mitigation Strategy for The Mens SAC, agreed with Natural England and a joint initiative with Horsham and Chichester District Councils. The details of the mitigation strategy are not reproduced in this HRA. However, a sensitivity test was undertaken to determine whether the new housing in the Horsham Main Modifications would affect the mitigation strategy. The modelling indicates that with the additional 50% reduction in petrol vehicles on the A272 by 2040, there would be an NH₃ “in combination” impact (DS – FB) of 0.01 µg/m³, which is equal to the 1% of the Critical Level threshold for concluding no adverse effect on integrity, and thus identical to the outcome of the adopted mitigation strategy.

7.5 It is therefore concluded that there will be no adverse effect on the integrity of The Mens SAC either alone, or in combination with other plans or projects.

Loss of Functionally Linked Land

Arun valley SPA/ Ramsar site

7.6 The screening table (**Appendix C**) and table 3 in the Appropriate Assessment, identified that several site allocations had the potential to support a significant population of Bewick’s swan and thus could provide functionally linked land to the SPA/ Ramsar site for this feature. The Appropriate Assessment confirms that:

- The majority of proposed and allocated sites within the zone of influence do not provide large, open and continuous habitat suitable for Bewick's swan or other qualifying waterfowl species,
- The STO1 allocation area and STO3 (site SA732) represent the only location with limited or borderline potential to support functionally linked habitat,
- Any residual uncertainty can be appropriately addressed through site-specific survey requirements and mitigation secured at the project level.

The Mens SAC and Ebernoe Common SAC

7.7 In relation to The Mens SAC and Ebernoe Common SAC, the Appropriate Assessment demonstrates that:

- Barbastelle bats rely on a wide network of functionally linked habitat extending beyond the designated site boundaries,
- All allocation and proposed sites within 6.5km and 12km of the SACs have been considered in accordance with a precautionary approach,
- Potential impacts relate to the cumulative loss or fragmentation of commuting and foraging habitat networks rather than the suitability of any individual site in isolation,
- Adverse effects can be avoided through established mitigation measures, including the retention and reinforcement of hedgerows and treelines, maintenance of habitat connectivity, and the implementation of sensitive lighting design to maintain dark corridors.

7.8 The Local Plan provides robust and effective policy framework, including Strategic Policy 17 (Green Infrastructure and Biodiversity), which ensures that development proposals:

- Are subject to project-level Habitats Regulations Assessment where required,
- Assess impacts on functionally linked habitat,
- Avoid or mitigate impacts through appropriate design and mitigation measures.

7.9 The Habitats Regulations Assessment process operates on a tiered basis, with increasing levels of detail applied at the plan-making and development management stages. The Local Plan establishes an appropriate framework to ensure that any residual uncertainty identified at the plan level is addressed through detailed, site-specific assessment and mitigation at the planning application stage.

7.10 Therefore, taking into account:

- The findings of the Appropriate Assessment,
- The precautionary consideration of all relevant sites within the zones of influence,
- The nature of potential impacts, which relate primarily to the loss or fragmentation of habitat networks,

- The statutory requirement for project-level Habitats Regulations Assessment,
- The availability and proven effectiveness of mitigation measures.

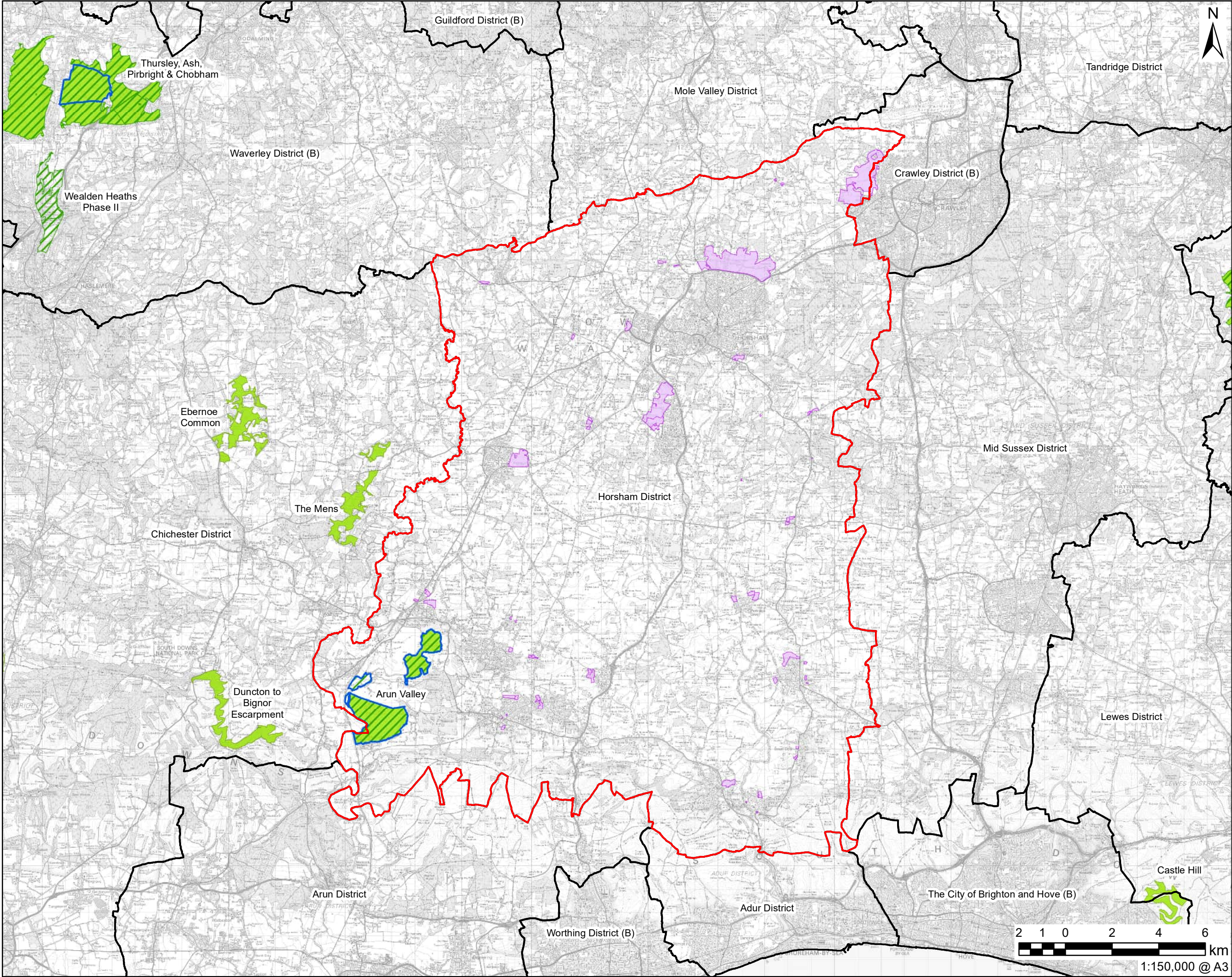
7.11 The Local Plan provides a sufficient policy framework to ensure that allocated sites can be delivered without an adverse effect on the integrity of Habitats sites.

7.12 The Schedule of Proposed Main Modifications to the Horsham District Local Plan 2023-2040 has been reviewed in relation to the conclusions of this HRA. Whilst the Main Modifications increase housing provision and introduce additional site allocations, they do not introduce any new impact pathways beyond those assessed in this report. The conclusions of the screening assessment and Appropriate Assessment therefore remain unchanged.

7.13 It can be concluded that the Horsham Local Plan will not result in adverse effects on the integrity of the Arun Valley SAC, SPA and Ramsar site, The Mens SAC or Ebernoe Common SAC in relation to the impact pathways assessed above, either alone or in combination with other plans and projects.

Appendix A Habitats Sites Relevant to the Local Plan

Figure: A1. Location of Internationally Designated Sites



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LEGEND

Horsham District

Other Districts

Site Allocation

Ramsar

Special Protection Area

Special Area of Conservation

NOTES
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ISSUE PURPOSE
HRA

PROJECT NUMBER
60640455

SHEET TITLE
SITE ALLOCATIONS

SHEET NUMBER
Figure 1

The Mens SAC

Introduction

7.14 The Mens is one of the largest ancient woodlands in West Sussex and supports a significant population of barbastelle *Barbastella barbastellus*. This site is located 7.9km south-east of Chiddingfold Parish Boundary. Most of the SAC 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. The site also supports outstanding invertebrate, fungi, lichen and bryophyte assemblages.

7.15 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 countryside⁶⁴.

Reason for Designation⁶⁵

7.16 Annex I habitats that are a primary reason for site selection include:

- Atlantic acidophilous beech forests with Ilex and sometimes also *Taxus* in the shrub layer (*Quercion roburi-petraeae* or *Ilici-Fagenion*); Beech forests on acid soils. The Mens is an extensive area of mature beech *Fagus sylvatica* woodland rich in lichens, bryophytes, fungi and saproxylic invertebrates, and is one of the largest tracts of Atlantic acidophilous beech forests in the south-eastern part of the habitat's UK range.
 - This Annex I type comprises beech *Fagus sylvatica* forests with holly, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak *Quercus* spp. was common. This is known to prolong the life of these trees.

7.17 Annex II species that are supported by the site that are primary reason for site selection include:

- Barbastelle *Barbastella barbastellus*
 - The Mens SAC has been selected for classification as an example of a maternity colony of barbastelles *Barbastella barbastellus* which utilise a range of tree roost's in The Mens; usually in dead tree stumps.

⁶⁴ 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].

⁶⁵ JNCC (2019) *The Mens SAC*. Available online at: <https://sac.jncc.gov.uk/site/UK0012716> [Accessed: 14/01/20].

However, the species appears to be present throughout the year; but it is not clear how many bats hibernate at the site.

Current Threats and Pressures⁶⁶

7.18 The Mens is an extensive and structurally diverse woodland site. Like Ebernoe Common, the woodland site adjacent to it, it is ancient woodland, having been under continuous woodland cover for the last 500 years. Its diversity supports a range of species including lichen, fungi and invertebrates. Barbastelle bats *Barbastella barbastellus* - who favour ancient woodland - breed in the site because it provides the nesting and feeding habitats they require. Barbastelles commute into the surrounding countryside using the woodland corridors which branch out from the site. Current threats and pressures experienced by the site include:

- Forestry and woodland management;
- Habitat connectivity;
- Invasive species;
- Change in land management;
- Air pollution; and
- Public access and disturbance.

Conservation Objectives⁶⁷

7.19 '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.'

Arun Valley SPA / Ramsar

Introduction

7.20 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

⁶⁶ Natural England (2015). *Site improvement plan The Mens*. Available online at: <http://publications.naturalengland.org.uk/publication/5548316158853120> [Accessed: 14/01/20].

⁶⁷ Natural England (2018). *European Site Conservation Objectives for The Mens Special Area of Conservation*. Available online at: <http://publications.naturalengland.org.uk/publication/5642356338458624> [Accessed: 14/01/20].

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*.

- 7.21 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.
- 7.22 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 Features⁶⁸

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

- Bewick's swan *Cygnus columbianus bewickii*

- 7.24 Qualifying assemblages of species (Article 4.2)

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 Features⁶⁹

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

Criterion 2

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

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.

⁶⁸ <http://publications.naturalengland.org.uk/publication/4567444756627456> [Accessed on the 02/03/2020]

⁶⁹ <https://jncc.gov.uk/jncc-assets/RIS/UK11004.pdf> [Accessed on the 02/03/2020]

Criterion 5

Assemblages of international importance

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.

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 Objectives⁷⁰

7.26 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;

7.27 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 Integrity⁷¹

7.28 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

Arun Valley SAC

Introduction

7.29 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 little whirlpool ram's-horn snail

⁷⁰ <http://publications.naturalengland.org.uk/publication/4567444756627456> [Accessed on the 02/03/2020]

⁷¹ <http://publications.naturalengland.org.uk/publication/5353882309885952> [Accessed on the 02/03/2020]

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 little whirlpool ram's-horn snail lie in the wash lands of the Arun floodplain: the Pulborough Brooks and Amberley Wild Brooks SSSIs.

Qualifying Features⁷²

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

- Little whirlpool ram's-horn snail *Anisus vorticulus*

Conservation Objectives⁷³

7.31 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;

7.32 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 Integrity⁷⁴

7.33 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

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

Ashdown Forest SAC

Introduction

7.35 The Ashdown Forest SAC is a 2,715.88ha site comprising heath / scrub (60%) and mixed woodland (40%) in south England. It is an area of tranquil open heathland straddling the highest sandy ridge-top of the High Weald Area of Outstanding Natural Beauty. It is situated approx. 30 miles south of London. Its

⁷² <https://sac.jncc.gov.uk/site/UK0030366> [Accessed on the 02/03/2020]

⁷³ <http://publications.naturalengland.org.uk/publication/4924283725807616> [Accessed on the 02/03/2020]

⁷⁴ <http://publications.naturalengland.org.uk/publication/5353882309885952> [Accessed on the 02/03/2020]

underlying sandstone geology combines with a local wetter and cooler climate to produce acidic and nutrient-poor soils that produce fertile ground for heathland, valley mires and damp woodland.

7.36 Notably, the Ashdown Forest SAC contains the largest single continuous block of lowland heathland in south-east England, including dry heaths and a large proportion of wet heaths. It is particularly important in the context of the recent loss of heathland, which has shrunk by 50% in East Sussex over the past 200 years. The site supports important assemblages of beetles, dragonflies, damselflies and butterflies. Bird species of European importance are European nightjar, Dartford warbler and Eurasian hobby.

7.37 Atmospheric pollution in the SAC particularly from traffic associated with Local Plans has become a significant issue in the past years. The SAC is permeated by a network of roads, many of which form major routes-to-work for local residents. A joint Air Quality Impact Assessment (AQIA) has been undertaken by Wealden District Council, Lewes District Council and other adjoining authorities. This has shown that the additional urban development will result in marginal retardation of the drop in atmospheric nitrogen deposition, but this will not affect / reduce plant species richness. Notwithstanding this, air quality remains a strategic issue in the wider geographic area around Ashdown Forest.

Qualifying Features⁷⁵

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

- Northern Atlantic wet heaths with *Erica tetralix*
- European dry heaths

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

- Great-crested newt *Triturus cristatus*

Conservation Objectives⁷⁶

7.40 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;

7.41 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

⁷⁵ Available at: <https://sac.jncc.gov.uk/site/UK0030080> [Accessed on the 03/09/2020]

⁷⁶ Available at: <http://publications.naturalengland.org.uk/publication/6183967367626752> [Accessed on the 03/09/2020]

- 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 on Site Integrity⁷⁷

7.42 Natural England's Site Improvement Plan lists the following threats / pressure on the site integrity of the Ashdown Forest SAC:

- Change in land management
- Air pollution: Impact of atmospheric nitrogen deposition
- Public access / disturbance
- Hydrological changes

Duncton to Bignor Escarpment SAC

Introduction

7.43 Duncton to Bignor Escarpment covers 214.47ha. Within the SAC *Asperulo-Fagetum* beech forests occur on steep scarp slopes and on more gently-sloping hillsides in mosaic with ash *Fraxinus excelsior* woodland, scrub and grassland. Much of the beech woodland is high forest but with some old pollards. Rare plants present include the white helleborine *Cephalanthera damasonium*, yellow bird's nest *Monotropa hypopitys* and green hellebore *Helleborus viridis*. The woods also have a rich mollusc fauna.

Reasons for Designation

7.44 Duncton to Bignor Escarpment qualifies as a SAC for the Habitats Directive Annex I habitat of:

- Beech forests on acid soils.

Conservation Objectives

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

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

⁷⁷ Available at: <http://publications.naturalengland.org.uk/publication/5793096570765312> [Accessed on the 03/09/2020]

Historic Trends and Current Pressures

- 7.46 Historically this site has relatively few threats. The JNCC Natura 2000 Data Sheet documents ‘The escarpment woodland hosts a number of pheasant shoots which, in general, pose no threat to the woodland. Expansion of these shoots from current levels is undesirable. Plantations of non-native conifers are targeted for complete or partial removal. A large resident deer population is controlled by deer stalkers’.
- 7.47 In the most recent Natural England condition assessment process, 92.33% of the component SSSI of the SAC was considered to be in favourable condition.
- 7.48 The key environmental conditions that support the features of European interest have been defined as appropriate woodland management. According to the Site Improvement Plan ‘*No current issues affecting the Natura 2000 feature(s) have been identified on this site*’.

Ebernoe Common SAC

Introduction

- 7.49 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

- 7.50 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 robur-petraeae* or *Illici-Fagenion*)
- 7.51 Secondly, the site contains the Habitats Directive Annex II species:
- Barbastelle bat; and
 - Bechstein’s bat

Conservation Objectives⁷⁸

“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*

⁷⁸ <http://publications.naturalengland.org.uk/file/5942973099671552> [accessed 16/12/2020]

- *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

7.52 Ebernoe Common SAC is owned and managed by Sussex Wildlife Trust (SWT). There is evidence that the Common has contained a mixture of open pasture and high forest for centuries. Ebernoe Nature Reserve is an Open Access site and is fairly well used (SWT estimate up to 3,000 visitors per annum)⁷⁹.

7.53 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

7.54 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

7.55 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 roosts⁸⁰. 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 735.7m⁸¹.

7.56 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.

7.57 The key vulnerabilities to the SAC are:

⁷⁹ Monk-Terry, M and Lyons, G. Sussex Wildlife Trust Ebernoe Nature Reserve Management Plan 2010-2015.

⁸⁰ Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust

⁸¹ 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

- 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.

Appendix B LSEs Screening Table of The Plan Policies, as updated to include Main Modifications

The HRA Update has been prepared to support the Schedule of Proposed Main Modifications to the Horsham District Local Plan 2023-2040. The policy screening table below is based on the previous HRA and has been reviewed in light of the Main Modifications. The principal changes relevant to the HRA comprise revised housing provision, additional site allocations, changes relating to water efficiency, updated air quality evidence and associated policy amendments. These changes do not alter the screening conclusions or Appropriate Assessment findings of this HRA.

Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the allocation and an international site and the site will be subject to further discussions and appropriate assessment.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
Strategic Policy 1: Sustainable Development	This is a development management policy relating to sustainable development within the District	No Likely Significant Effect Sustainable development, by definition, must exclude any development that would have an adverse effect on Habitats sites as these could not be described as 'sustainable'.
Strategic Policy 2: Development Hierarchy and Settlement Expansion	This is development management policy relating to development hierarchy and the expansion of settlements.	No Likely Significant Effect This policy simply sets out the development hierarchy and does not specifically identify a quantum or location of growth.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
Strategic Policy 3: Settlement Expansion	A development management policy relating to settlement expansion.	No Likely Significant Effect This policy simply sets out the development hierarchy and does not specifically identify a quantum or location of growth.
Strategic Policy 4 - Horsham Town	This policy provides the development strategy for Horsham Town. It promotes the delivery of housing, employments and leisure development.	Likely Significant Effects (LSEs) of this policy cannot be excluded. This policy provides the development strategy for Horsham Town. It does not specify a quantum of development but does clearly promote and seek to deliver housing, employment and leisure development. The following impact pathways on Habitat sites are linked to this policy: • Recreational Pressure • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Strategic Policy 5: Broadbridge Heath Quadrant	This policy provides the development strategy for the Broadbridge Heath Quadrant. It does not specify a quantum of development but does clearly	Likely Significant Effects (LSEs) of this policy cannot be excluded.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
	promote and seek to deliver housing, employment and leisure development.	The following impact pathways on Habitat sites are linked to this policy: • Recreational Pressure • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Chapter 5: Climate Change & Water		
Strategic Policy 6 - Climate Change	A strategic policy relating to climate change within the District. It supports the provision of renewable and low carbon development.	No Likely Significant Effect Sustainable development, by definition, must exclude any development that would have an adverse effect on Habitats sites as these could not be described as 'sustainable'.
Strategic Policy 7 - Appropriate Energy Use	A strategic policy supporting clean and efficient energy use within the District.	No Likely Significant Effect Sustainable development, by definition, must exclude any development that would have an adverse effect on Habitats sites as these could not be described as 'sustainable'.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
Strategic Policy 8 - Sustainable Design and Construction	A strategic policy providing for improved sustainability of development.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 9: Water Efficiency	A strategic policy relating to water efficiency within the District. It requires residential development to achieve the optional Building Regulations standard of 110 litres per person per day and establishes water efficiency standards for non-residential development.	No Likely Significant Effect This policy does not allocate development or identify a location for growth. Instead, it seeks to reduce water consumption associated with future development and therefore acts as a protective policy in respect of Habitats sites.
Strategic Policy 10 - Flooding	A strategic policy relating to flooding.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Chapter 6: Conserving & Enhancing the Natural Environment.		
Strategic Policy 11: Environmental Protection	A strategic policy relating to environmental protection. It seeks to maintain and improve environmental quality including water resources, air quality, lighting and pollution impacts.	No Likely Significant Effect This policy does not promote development and instead seeks to avoid unacceptable impacts on water quality, air quality and the natural environment. The policy contains safeguards that are protective of Habitats sites and therefore cannot result in likely significant effects.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
Strategic Policy 12: Air Quality	This strategic policy provides for air quality management.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 13: The Natural Environment and Landscape Character	A strategic policy providing for the protection of the natural environment and landscape character.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 14: Countryside Protection	A strategic policy providing for the protection of the countryside	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 15: Settlement Coalescence	A strategic policy protecting settlements from coalescence.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 16: Protected Landscapes	A strategic development management policy relating to the protection of landscapes such as the High Weald AONB And the South Downs National Park.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 17: Green and Blue Infrastructure and Biodiversity	A strategic policy relating to green and blue infrastructure, biodiversity and nature recovery. It requires the protection and enhancement of ecological networks, habitats and biodiversity.	No Likely Significant Effect The policy does not promote additional development but instead seeks to protect and enhance biodiversity, ecological

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		connectivity, habitats and green and blue infrastructure. The policy supports the conservation and enhancement of ecological resources and therefore is protective of Habitats sites.
Policy 18: Local Green Space	A strategic policy relating to the protection and creation of local green space.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Chapter 7: Development Quality, Design and Heritage		
Strategic Policy 19 - Development Quality	A strategic policy providing for the quality of development.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 20: Development Principles	A strategic policy providing development management regarding Development Principles.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 21 - Heritage Assets and Managing change in the Historic Environment	A development management policy relating to heritage assets and the historic environment.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 22 - Shop Fronts and Advertisements	A development management policy relating to shop fronts and advertisements.	No Likely Significant Effect

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		This policy does not promote development or identify a quantum of development.
Chapter 8: Infrastructure, Transport and Healthy Communities		
Strategic Policy 23 - Infrastructure Provision	A strategic policy relating to infrastructure provision and delivery. It requires development to be supported by sufficient infrastructure capacity and where necessary infrastructure upgrades and phasing arrangements.	No Likely Significant Effect This policy does not allocate development or identify locations for growth. It ensures that development is appropriately phased and supported by infrastructure, including wastewater infrastructure where required. The policy acts as a safeguard and cannot itself result in likely significant effects on Habitats sites.
Strategic Policy 24 - Sustainable Transport	This is a positive strategic policy relating to sustainable transport. This has the potential to reduce atmospheric pollution contributions.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 25 - Parking	A development management policy relating to parking	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 26 - Gatwick Airport Safeguarded Land	A development management policy relating to the safeguarding of land for Gatwick Airport and the aerodrome.	No Likely Significant Effect This policy does not promote development or identify a quantum of development. A safeguarding policy simply ensures that

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		potential future uses are not sterilized by inappropriate conflicting development. It carries no presumption that the development for which safeguarding is occurring will be permitted.
Strategic Policy 27- Inclusive Communities, Health and Wellbeing	A strategic policy relating to inclusive communities, health and wellbeing.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 28 - Community Facilities, Leisure and Recreation	A development management policy relating to community facilities and uses.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Chapter 9: Economic Development		
Strategic Policy 29: New Employment	This policy provides the development strategy for new employment growth and makes provision for employment land across the District through strategic allocations and employment site allocations.	Likely Significant Effects (LSEs) of this policy cannot be excluded. The following impact pathways on Habitats sites are linked to this policy: • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		This policy is screened in for Appropriate Assessment.
Strategic Policy 30: Enhancing Existing Employment	This policy provides the development strategy for existing employment areas within the District and supports the retention, enhancement and intensification of employment uses in appropriate locations.	Likely Significant Effects (LSEs) of this policy cannot be excluded. The following impact pathways on Habitats sites are linked to this policy: • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Policy 31 - Rural Economic Development	A development management policy relating to rural economic development. No location type or quantum are identified.	No Likely Significant Effect Sustainable development, by definition, must exclude any development that would have an adverse effect on Habitats sites as these could not be described as 'sustainable'.
Policy 32: Conversion of Agricultural and Rural Buildings to Commercial, Community or Residential Uses	A development management policy providing for the conversion of agricultural and rural buildings to commercial, community or residential use. No location or quantum of development is provided.	No Likely Significant Effect Conversion of agricultural buildings to residential use would be associated with an increase in housing. However, any

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		housing will be part of the overall housing strategy in the district. This policy simply sets out the parameters that would determine conversion to be acceptable.
Policy 33 - Equestrian Development	Policy provides for equestrian development. It does not identify any explicit quantum, location or type of development.	Likely Significant Effects (LSEs) of this policy cannot be excluded. This policy provides the development strategy for equestrian activities. It does not specify a quantum of development but does clearly promote and seek to deliver employment and leisure development. The following impact pathways on Habitats sites are linked to this policy: • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Strategic Policy 34 - Tourism Facilities and Visitor Accommodation	This policy provides the development strategy for tourism. It does not specify a quantum of development but does clearly promote and seek to deliver housing, employment and leisure development.	Likely Significant Effects (LSEs) of this policy cannot be excluded. The following impact pathways on Habitats sites are linked to this policy:

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		• Recreational Pressure • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Strategic Policy 35: Town Centre Hierarchy	A strategic development management policy setting out the retail hierarchy. It does not provide for any development.	No Likely Significant Effect This policy simply sets out the retail hierarchy and does not promote development or identify a quantum of development.
Strategic Policy 36 - Town Centre Uses	A strategic development management policy relating to the use of town centres. No quantum location or type of development is provided for.	No Likely Significant Effect This policy simply describes acceptable town centre uses and does not promote development or identify a quantum of development.
Chapter 10: Housing		
Strategic Policy 37: Housing Provision	Provision is made for the development of at least 18,712 homes and associated infrastructure within the period 2023-2040, together with additional housing supply to provide flexibility and ensure delivery of the housing requirement. Housing delivery will be achieved through existing commitments, strategic site allocations, smaller-scale allocations, neighbourhood plan allocations and windfall development.	Likely Significant Effects (LSEs) of this policy cannot be excluded. This policy provides the development strategy for housing. This policy establishes the overall quantum and

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		spatial strategy for housing delivery within the District. The following impact pathways on Habitats sites are linked to this policy: • Recreational Pressure • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.
Strategic Policy 38 - Meeting Local Housing Needs	A development management policy supporting residential development where it provides housing to meet the needs of the District's communities as evidenced by the SHMA.	No Likely Significant Effect This policy simply sets out the principles underlying acceptable Strategic Sites and does not promote development or identify a quantum of development.
Strategic Policy 39 - Affordable Housing	A development management policy relating to the provision of affordable housing.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 40 - Improving Housing Standards in the District	<u>A development management policy relating to housing standards within the District.</u>	No Likely Significant Effect This policy does not promote development or identify a quantum of development.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
Policy 41: Rural Exception Homes	A development management policy providing for, in exceptional circumstances, limited amounts of land that would not otherwise be released for general market housing may be released for the development of affordable homes	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 42: Retirement Housing and Specialist Care	A development management policy relating to the provision of retirement housing and specialist care.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Strategic Policy 43 - Gypsy, Traveller and Travelling Showpeople Accommodation	A strategic policy providing accommodation for Gypsies, Travellers and Travelling Showpeople. The policy makes provision for a total requirement of 79 Gypsy and Traveller pitches between 2023–2040 and identifies a range of allocations, intensifications and regularisations of existing sites and strategic site allocations.	Likely Significant Effects (LSEs) of this policy cannot be excluded. This policy provides the development strategy for travellers. It clearly promotes and seeks to deliver residential development. The following impact pathways on Habitats sites are linked to this policy: • Recreational Pressure • Water Quality • Water Level and Flow • Atmospheric Pollution • Loss of Functionally Linked Habitat This policy is screened in for Appropriate Assessment.

Policy number/ name	Policy detail	Likely Significant Effects Screening Assessment
Chapter 4: Policies for Growth & Change		
		Site Allocations are subject to a Test of Likely Significant Effects in Appendix C, Table C4
Policy 44 - Rural Workers' Accommodation	A development management policy relating to rural workers accommodation. This policy does not promote development or identify a quantum of development	No Likely Significant Effect This policy does not promote development or identify a quantum of development.
Policy 45 - Replacement Dwellings and House Extensions in the Countryside	A development management policy relating to replacement dwellings and house extensions in the countryside. This policy does not promote development or identify a quantum of development	No Likely Significant Effect This policy does not promote development or identify a quantum of development. Moreover, this policy would not be associated with a net increase in housing.
Policy 46- Ancillary Accommodation	A development management policy relating to ancillary development. This policy does not promote development or identify a quantum of development	No Likely Significant Effect This policy does not promote development or identify a quantum of development. Moreover, this policy would not be associated with a net increase in housing
Strategic Policy HA1: Strategic Site Development Principles	This is a development management policy providing Development Principles for Strategic Sites.	No Likely Significant Effect This policy does not promote development or identify a quantum of development.

Appendix C LSEs Screening Table of Site Allocations

Table C1: Strategic Site Allocation Screening

Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the allocation and an international site and the site will be subject to further discussions and appropriate assessment.

Appendix C presents the screening of Local Plan allocations. A wider set of allocation and proposed sites (including SA sites) has subsequently been considered within the Appropriate Assessment in relation to functionally linked habitat (see Table X).

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
Strategic Policy HA4: Land East of Billingshurst (GIS Reference: SA118)	Likely to use Billingshurst STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.
Strategic Policy HA3: Land North West of Southwater (GIS Reference: SA119a)	Likely to use Horsham STW which discharges into the River Arun catchment. Thus, potential	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	in combination linking impact pathways.		land. There are no linking impact pathways present.		
Strategic Policy HA2 Land West of Ifield (GIS Reference: SA289)	Likely to use London (Crawley) WwTW which discharges into the River Thames catchment. There are no linking impact pathways present.	Only an in- combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Table C2: Residential Site Allocation Screening

Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the allocation and an international site and the site will be subject to further discussions and appropriate assessment.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
HA5: Ashington					
ASN1: Land east of Mousdell Close (GIS Reference: SA866)	Likely to use Ashington, London Road STW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	2.24ha in size, it is located within 6.5km of the Arun Valley SPA/ Ramsar site and larger than 2ha in site. From review of online imagery, the site includes woodland, caravan storage and approximately 3.4ha of arable land which could potentially be suitable to provide functionally linked land. However, this arable land is surrounded by mature woodland and mature hedgerows, thus limiting sight lines into the site. It is not considered suitable to act as functionally linked land for	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat netwo	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
			Bewick's Swan or other SPA birds		
Ashington North Cluster (SA790 / SA520 / SA539 / SA524 / SA085)	Likely to use Ashington, London Road STW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within the wider zone around the Arun Valley SPA/Ramsar and considered within the Appropriate Assessment. The site comprises a fragmented group of fields and is not considered suitable functionally linked habitat for Bewick's swan or other SPA bird species.	Yes – located within 12km of The Mens SAC and comprises greenfield land. In line with a precautionary approach, potential linking impact pathways are present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA6: Barns Green Housing Allocations					
BGR1: Land South of Smugglers Lane (GIS Reference: SA006)	Likely to use Barns Green WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
BGR2: Land South of Muntham Drive (GIS Reference: SA510)	Likely to use Barns Green WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
BGR3: Land at the Old School Site, Itchingfield, (GIS Reference: SA522)	Likely to use Barns Green / Billingshurst or Horsham WwTW which all discharge into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
SA442 – Barns Green	Likely to use Barns Green WwTW which discharges into the River Arun	Only an in-combination pathway is identified. The	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site and is therefore not	Yes – located within 12km of The Mens SAC and comprising land surrounded by woodland	No, located more than 12km from Ebernoe Common SAC. There are no realistic linking

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	catchment. Thus, potential in-combination linking impact pathways.	site itself is screened out for likely significant effects in isolation.	considered suitable to provide functionally linked habitat for qualifying SPA bird species.	corridors, hedgerows and small agricultural fields. In line with a precautionary approach, potential linking impact pathways are present.	impact pathways present.
HA7: Broadbridge Heath					
BRH1: South of Lower Broadbridge Farm (GIS Reference: SA386)	Likely to use Horsham STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA8: Cowfold					
CW1: Land at Brook Hill & Cowfold Glebe	Likely to use Cowfold WwTW which discharges into the River Arun catchment. Thus, potential in	Only an in-combination pathway is identified. The allocation itself is screened out for	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	combination linking impact pathways.	likely significant effects in isolation.	provide functionally linked land. There are no linking impact pathways present.		
CW2: Field West of Cowfold, North of A272	Likely to use Cowfold WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
CW3: Fields West of Cowfold, South of A272/Field W of Cowfold, S of A272, W of Little Potters	Likely to use Cowfold WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA9: Henfield					

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
HNF1: Land at Sandgate Nurseries	Likely to use Henfield STW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA10: Horsham Housing Allocations					
HOR1: Land at Hornbrook Farm (corresponding to GIS reference SA296)	Likely to use Horsham STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HOR2: Land at Mercer Road,	Likely to use Warnham WwTW which discharges into the River Arun catchment. Thus,	Only an in-combination potential linking impact pathway is present. the	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	potential in combination linking impact pathways.	allocation itself is screened out in isolation.	site to be considered to provide functionally linked land. There are no linking impact pathways present.		
HA11: Lower Beeding					
LWB1: Land at Glayde Farm, West of Church Lane	Likely to use Lower Beeding WwTW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
LWB3: Land at Trinity Cottage	Likely to use Lower Beeding WwTW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
LWB4: Land At Cyder Farm, Crabtree	Likely to use Cowfold WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA12: Partridge Green					
PG1: Land North of the Rosary (West of Church Road),	Likely to use Partridge Green WwTW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
PG2: Land north of the Rise	Likely to use Partridge Green WwTW which discharges into the River Adur	Only an in-combination pathway is identified. The allocation itself is	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	catchment. There are no linking impact pathways present.	screened out for likely significant effects in isolation.	site to be considered to provide functionally linked land. There are no linking impact pathways present.		
PG3: Land at Dunstons Farm	Likely to use Partridge Green WwTW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
SA597 (Land at Adversane, West Chilmington)	Likely to use Pulborough or Billingshurst wastewater infrastructure which ultimately drains to the River Arun catchment. Thus, potential in-combination linking	Only an in-combination pathway is identified. The site itself is screened out for likely significant effects in isolation.	Located within the relevant zone around the Arun Valley SPA/Ramsar site and comprises a large greenfield site. However, the site consists of a fragmented network of fields separated by hedgerows and other landscape features and lacks the large, open and	Yes – located within 6.5km of The Mens SAC and comprises extensive greenfield land with habitat features that may contribute to the wider functionally linked habitat network. In line with a precautionary approach, potential linking impact pathways are present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, the site is considered to have potential to contribute to the wider functionally linked habitat network.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	impact pathways are present.		continuous habitat considered suitable for significant populations of Bewick's swan or other qualifying SPA bird species. It is therefore not considered suitable functionally linked habitat.		
HA13: Pulborough					
PLB1: Land at Highfields, Codmore Hill (corresponding to GIS reference SA556)	Likely to use Pulborough STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site but less than 2ha in size (1.0ha). As such it is not considered suitable to act as functionally linked land for Bewick's swan or other SPA birds. As such there is no realistic linking impact pathway present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	Yes, located within 12km of the SAC and located within a greenfield site. Potential linking impact pathways present
HA14: Rudgwick and Bucks Green Housing Allocations					
RD1: Land North of Guildford Road, Bucks Green	Likely to use Rudgwick STW which discharges	Only an in-combination pathway is	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site,	No, located more than 12km from the SAC. There are no realistic	Yes – located within 12km of the SAC and comprises greenfield

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
(corresponding to GIS reference SA574)	into the River Arun catchment. Thus, potential in combination linking impact pathways.	identified. The allocation itself is screened out for likely significant effects in isolation.	and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	linking impact pathways present	land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.
RD2: The former Pig Farm, Bucks Green (corresponding to GIS reference SA794)	Likely to use Rudgwick STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.
HA15: Rusper					
RS2: Land North of East Street, Rusper	Likely to use Rusper WwTW which discharges into the River Thames	Only an in-combination pathway is identified. The	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located	No, located more than 12km from the SAC. There are no realistic	No, located more than 12km from the SAC. There are no realistic

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	catchment. There are no linking impact pathways present.	allocation itself is screened out for likely significant effects in isolation.	too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	linking impact pathways present	linking impact pathways present
HA16: Small Dole Housing Allocations					
SMD1: Land West of Shoreham Road, Small Dole (corresponding to GIS reference SA538 and SA505)	Likely to use Small Dole WwTW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA17: Steyning					
STE1: Land at Glebe Farm, Steyning	Likely to use Steyning STW which discharges into the River Adur catchment. There are no linking impact pathways present.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
		effects in isolation.	land. There are no linking impact pathways present.		
HA18: Storrington & Sullington					
STO1 Land to the North of Melton Drive, Storrington	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site and larger than 2ha in size (5.4ha). From review of freely available online imagery, this site has residential development along its southern boundary (thus within a semi disturbed area) and it appears to be cropped by cereal. The field is surrounded by well-established hedgerows, thus limiting sight lines to the wider countryside. The smallest field is c. 1.5ha in size. It borders industrial land to the east, with a residential property to the north. The smaller field is well enclosed by	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
			hedgerows and woodland, thus limiting sight lines, making it unsuitable to support a significant population of Bewick's swan or other SPA birds. The larger field is also surrounded by well-established hedgerows, thus limiting sight lines to the wider countryside. From review of aerial imagery, both fields contain many tracks. That link up to a public right of way, Northlands Lane and Downsview Avenue and as such it is possible that this site is subject to high levels of disturbance. However, it is not possible to conclude that this site could not potentially providing functionally linked land for Bewick's swan or other SPA birds		

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
STO2: Land at Rock Road (Thakeham Parish)	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site and larger than 2ha in size (3.6ha). From review of freely available online imagery, this site is split into 2 smaller fields (each less than 2ha in size). It also appears to be subject to disturbance as it appears to be grazed by horses. In addition, the site has residential development to the east and west, and residential and industrial development to the south. The site appears to be enclosed by dense hedgerows, thus offering limited to no sight lines into the wider countryside. This site is considered unsuitable to support a significant population of Bewick's swan or other	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
			SPA birds. It is not considered suitable to act as functionally linked land for Bewick's Swan.		
STO3: Land South of Northlands Lane	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/Ramsar site and larger than 2ha in size (2.8ha). This site appears likely to overlap with, or form part of, the wider Northlands Lane allocation area that includes STO1 and has therefore been considered alongside that assessment.	Yes – located within 12km of The Mens SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from Ebernoe Common SAC. There are no realistic linking impact pathways present.
STO4: Land at Fryern Road (GIS Reference: SA639)	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/Ramsar site and larger than 2ha in size (9.1ha). The site forms part of a wider field system on the edge of Storrington. Whilst relatively large in total area, the site does not	Yes – located within 12km of The Mens SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider	No, located more than 12km from Ebernoe Common SAC. There are no realistic linking impact pathways present.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
			comprise a single open field and is considered alongside adjacent Storrington sites in the assessment of functionally linked habitat. The site is not considered likely to support a significant population of Bewick's swan or other SPA birds.	functionally linked habitat network.	
STO5: Land at Bax Close (GIS Reference: SA485)	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/Ramsar site and larger than 2ha in size (2.4ha). The site comprises enclosed fields adjacent to existing residential development and was assessed as fragmented, enclosed and disturbed. It is not considered suitable to support a significant population of Bewick's swan or other SPA bird species.	Yes – located within 12km of The Mens SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from Ebernoe Common SAC. There are no realistic linking impact pathways present.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
HA19: Thakeham (The Street and High Bar Lane)					
TH1: Land North of High Bar Lane	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site but less than 2ha in size (1.0ha). As such it is not considered suitable to act as functionally linked land for Bewick's swan or other SPA birds.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
TH2: Land West of Stream House	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site but less than 2ha in size (1.9ha). As such it is not considered suitable to act as functionally linked land for Bewick's swan or other SPA birds.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA20: Warnham Housing Allocation					

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
WRN1: Land south of Bell Road	Likely to use Warnham WwTW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site, and as such it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
HA21: West Chiltington and West Chiltington Common Housing Allocations					
WCH1: Land at Hatches Estate	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site but less than 2ha in size (0.9ha). As such it is not considered suitable to act as functionally linked land for Bewick's swan or other SPA birds.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
WCH2: Land West of Smock Alley, S of Little Haglands	Likely to use Storrington STW which discharges into the River Arun	Only an in-combination pathway is identified. The	Located within 6.5km of the Arun Valley SPA/ Ramsar site and larger than 2ha in size (2.5ha).	Yes – located within 12km of the SAC and comprises greenfield land. In line with a	No, located more than 12km from the SAC. There are no realistic

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	catchment. Thus, potential in combination linking impact pathways.	allocation itself is screened out for likely significant effects in isolation.	From review of freely available online imagery, this site is split into 2 smaller fields (each less than 1ha in size). To the east and the south the site neighbours residential properties with woodland to the west and additional residential development and an arable field to the north. Due to the small field size, enclosed nature with a lack of sight lines and being located in a semi disturbed area (due to the residential development), this site is considered unsuitable to support a significant population of Bewick's swan or other SPA birds. It is not considered suitable to act as functionally linked land for Bewick's Swan or other SPA birds.	precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	linking impact pathways present

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
WCH3: Land East of Hatches House	Likely to use Storrington STW which discharges into the River Arun catchment. Thus, potential in combination linking impact pathways.	Only an in-combination pathway is identified. The allocation itself is screened out for likely significant effects in isolation.	Located within 6.5km of the Arun Valley SPA/ Ramsar site but less than 2ha in size (0.5ha). As such it is not considered suitable to act as functionally linked land for Bewick's swan or other SPA birds.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present
Additional Proposed Sites Considered Through the Appropriate Assessment					
SA757 – Land at Rosier Park, East of Billingshurst	Likely to use Billingshurst wastewater infrastructure which ultimately drains to the River Arun catchment. Potential in-combination	Only an in-combination pathway is identified. The site itself is screened out for likely significant	This site is located more than 6.5km from the Arun Valley SPA/Ramsar site and is not considered likely to provide functionally linked habitat for qualifying SPA bird species.	Yes – located within 6.5km of The Mens SAC and contains linear features and watercourses. In line with a precautionary approach, potential	Yes – located within 12km of the SAC and comprises greenfield land with habitat features contributing to the wider ecological network.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	linking impact pathways are present.	effects in isolation.		linking impact pathways are present.	
SA698 - Billingshurst	Likely to use Billingshurst wastewater infrastructure which ultimately drains to the River Arun catchment. Thus, potential in-combination linking impact pathways are present.	Only an in-combination pathway is identified. The site itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site and is therefore not considered likely to provide functionally linked habitat for qualifying SPA bird species.	Yes – located within 6.5km of The Mens SAC and comprising greenfield land with boundary hedgerows and connectivity to the wider habitat network. In line with a precautionary approach, potential linking impact pathways are present.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, the site is considered to have potential to contribute to the wider functionally linked habitat network.
SA725	Likely to use Horsham STW which discharges into the River Arun catchment. Thus, potential in-combination linking impact pathways.	Only an in-combination pathway is identified. The site itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site and is therefore not considered suitable to provide functionally linked habitat for qualifying SPA bird species.	Yes – located within 12km of The Mens SAC and comprising agricultural land adjoining woodland blocks and a well-developed hedgerow network. In line with a precautionary approach, potential linking impact pathways are present.	No, located more than 12km from Ebernoe Common SAC. There are no realistic linking impact pathways present.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
SA344	Likely to use Barns Green WwTW which discharges into the River Arun catchment. Thus, potential in-combination linking impact pathways.	Only an in-combination pathway is identified. The site itself is screened out for likely significant effects in isolation.	This site is located more than 6.5km from the Arun Valley SPA / Ramsar site and, as such, it is located too far from the designated site to be considered to provide functionally linked land. There are no linking impact pathways present.	Yes – located within 12km of the SAC and comprising agricultural land connected to woodland blocks and a hedgerow network. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	No, located more than 12km from the SAC. There are no realistic linking impact pathways present.

Table C3: Employment Site Allocation Screening

Where a column is identified in green, this impact pathway does not contain any potential linking impact pathways to an international site. Where a column is identified in Orange, potential linking impact pathways exist between the allocation and an international site and the site will be subject to further discussions and appropriate assessment.

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
Site EM1 - Land South of Star Road Industrial Estate, Partridge Green	Not Applicable as does not provide for overnight accommodation. There are no linking impact pathways present.	Not Applicable	Located more than 6.5km from the Arun Valley SPA / Ramsar site, as such this land parcel is not considered suitable to support functionally linked land for the designated Bewick's Swan. There are no linking impact pathways present.	No, located more than 12km from the SAC	No, located more than 12km from the SAC
Site EM2 - Land to the West of Graylands Estate, Langhurstwood Road, Horsham	Not Applicable as does not provide for overnight accommodation. There are no linking impact pathways present.	Not Applicable	Located more than 6.5km from the Arun Valley SPA / Ramsar site, as such this land parcel is not considered suitable to support functionally linked land for the designated Bewick's Swan. There are no linking impact pathways present.	No, located more than 12km from the SAC	No, located more than 12km from the SAC

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
Site EM3 - Land at Broomers Hill Business Park, Pulborough	Not Applicable as does not provide for overnight accommodation. There are no linking impact pathways present.	Not Applicable	Located within 6.5km of the Arun Valley SPA/ Ramsar site and larger than 2ha in size (4.7ha). From review of freely available online imagery, this site appears that about half of this site comprises buildings, car park and woodland. The site is split into 4 additional grassland fields separated by hedgerows. As such this site is considered to have poor sight lines, and the small grassland fields are considered unsuitable to support a significant population of Bewick's swan. It is not considered suitable to act as functionally linked land for Bewick's Swan.	Yes – located within 12km of the SAC and comprises greenfield land. In line with a precautionary approach, this site is considered to have potential to contribute to the wider functionally linked habitat network.	Yes, located within 12km of the SAC and located within a greenfield site. Potential linking impact pathways present
Site EM4 - Land South West of Hop Oast Roundabout	Not Applicable as does not provide for overnight accommodation.	Not Applicable	Located more than 6.5km from the Arun Valley SPA / Ramsar site, as such this land parcel is not considered suitable to support functionally	No, located more than 12km from the SAC	No, located more than 12km from the SAC

Site Allocation	HRA Screening Implications				
	Water Quality (Arun Valley SPA / Ramsar)	Water Quantity, Level and Flow (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (Arun Valley SPA / Ramsar)	Loss of Functionally Linked Land (The Mens SAC)	Loss of Functionally Linked Land (Ebernoe Common SAC)
	There are no linking impact pathways present.		linked land for the designated Bewick's Swan. There are no linking impact pathways present.		

Appendix D 2026 Air Quality Modelling Sensitivity Test

Project name:
Horsham Local Plan**Project ref:**
Horsham Local Plan**From:**
Julian Mann**Date:**
July 2026**To:**
James Riley**CC:** Anna Savage

Memo

Subject: Horsham Local Plan Air Quality Modelling – Sensitivity Test

1. Introduction

- 1.1 This technical note presents details of a sensitivity test looking at how the application of additional reductions in the number of petrol vehicles (cars) in the future could impact the modelled nitrogen and acid deposition rates, annual mean nitrogen oxides (NO_x) and ammonia (NH₃) concentrations at The Mens Special Area of Conservation (SAC) in Horsham District.
- 1.2 The overall modelling methodology is discussed in detail in the air quality modelling methodology report to the Horsham LP Habitat Regulations Assessment (HRA) Air Quality Addendum 2025 and will therefore not be repeated in this technical note. A sensitivity test has been conducted following the same general modelling methodology as previous, with just the vehicle fleet breakdowns being modified (as input into the Emissions Factor Toolkit (EFT) v12.0.1).
- 1.3 The purpose of the sensitivity test is to identify how much the currently forecast shift from combustion engines to ultra-low emission vehicles in 2040 would need to increase to reduce the forecast in combination impact of traffic growth on NH₃ concentrations at The Mens SAC to 1% of the critical level (the threshold of imperceptibility). This can then be used as a target to assess the effectiveness of proposed measures to bring about the necessary further conversion to conclude no adverse effect on integrity. The note supplements the modelling conducted to assess the impacts from additional traffic due to the Horsham District Local Plan (LP) as submitted in July 2024 and focuses on the results at the worst-case non-roadside receptor location along the transect (E1_10m, 10m from the road edge).

2. Overview of LP AQ Modelling

- 2.1 This section provides a brief summary of the modelled nitrogen and acid deposition, annual mean NO_x and NH₃ concentrations at the worst-case non-roadside receptor (E1_10m; 10m from the road edge). The following four scenarios were modelled:
 - Baseline scenario using 2025 traffic data (Base) - this is existing measured traffic flow, which has been updated since the previous modelling that used 2019 data, and is now based on traffic counts conducted in 2024 (and factored up to 2025) from Wisborough Green, near to the A272 at the Mens SAC;
 - 2040 future baseline (FB) using 2025 baseline traffic data with a 2040 projected fleet - this is a hypothetical scenario which projects measured baseline traffic forward to 2040 but applies the improvements in emissions technology one would expect to see over that period. This shows the improvement that would occur in the absence of any traffic growth;

- 2040 Do-Minimum (DM) scenario without Local Plan traffic but with overall traffic growth - this allows for traffic growth on the network from sources other than Horsham Local Plan, including that from Chichester District; and
- 2040 Do-Something (DS) scenario with Local Plan traffic and overall traffic growth included - this allows for the traffic growth on the network from all sources, including Horsham Local Plan.

2.2 The results are presented in Table 1. This shows the modelled results at receptor E1_10m, including the predicted change from DS minus DM (LP impact alone) (DS – DM) and from DS minus FB (in-combination impacts) DS – FB), for annual mean NO_x and NH₃ concentrations, nitrogen and acid deposition rates.

Table 1 Modelled Results at E1_10m receptor

Pollutant	2025 Base	2040 FB	2040 DM	2040 DS	DS – DM Impact	DS – FB Impact
Annual Mean NO _x (µg/m ³)	8.66	6.89	6.95	6.96	0.01	0.07
Annual Mean NH ₃ (µg/m ³)	1.17	1.09	1.11	1.11	<0.01	0.02
Annual Mean N Dep (kgN/ha/yr)	20.54	18.69	18.82	18.85	0.03	0.17
Annual Mean N Acid Dep (keq/ha/yr)	1.47	1.33	1.34	1.35	<0.01	0.01

2.3 At the worst-case non-roadside receptor along the transect (E1_10m; 10m back from the road edge), the updated modelling for the HRA showed the following:

- Ambient NO_x concentrations: both the impact alone (DS - DM), and impact in combination (DS-FB) were predicted to be below the 1% threshold of the annual mean NO_x Critical Level (30 µg/m³) in 2040.
- Ambient NH₃ concentrations: the impact alone (DS-DM) was predicted to be below the 1% threshold in 2040, however, the impact in combination (DS – FB) was predicted to be greater than the 1% threshold of the NH₃ Critical Level (1 µg/m³) for habitats containing lichens and bryophytes.
- Nitrogen deposition rates: both the impact alone (DS – DM, and impact in combination (DS – FB) were predicted to be below the 1% threshold of the annual mean nitrogen deposition Critical Load (20 kgN/ha/yr) in 2040.
- Nitrogen-based acid deposition rates: both the impact alone (DS – DM), and impact in combination (DS-FB) were predicted to be below the 1% threshold of the annual mean nitrogen deposition Critical Load (1.493 keq/ha/yr) in 2040.

3. Sensitivity Test

Method

3.1 An additional sensitivity test was run for each future year scenario (i.e. FB, DM and DS), where the proportion of petrol (and petrol hybrid) vehicles in the 2040 modelled vehicle fleet was reduced further, to roughly simulate what could be the result of targeted measures to increase the rate of switching from petrol vehicles to electric vehicles. These targeted measures are intended to be representative of the types of interventions identified within the adopted Air Quality Mitigation Strategy and Local Plan monitoring framework that are designed to accelerate the transition from petrol vehicles to ultra-low emission vehicles. Petrol vehicles are targeted here due to the disproportionately large impact of petrol vehicles on emissions of NH₃ when compared to diesel vehicles. For each petrol-based vehicle category (cars and light goods vehicles (LGVs), internal combustion engine (ICE) and hybrid) in the EFT v12.0.1, the proportion was halved, and the difference added to the electric car and electric LGV categories (as appropriate).

- 3.2 Table 2 summarises the vehicle fleet breakdown used for the FB, DM and DS scenarios for in the LP modelling and for the sensitivity test showing the 50% reduction in petrol vehicles. The 50% reduction was applied based on past experience of similar exercises for Epping Forest Local Plan, where a 50% further reduction was found to be necessary to bring the in combination increase in NH₃ concentrations due to traffic growth below 1% of the critical level. This is based on the calculated number of movements that would need to either be completed by electric vehicles in place of petrol vehicles or be removed from the road link entirely in order for the in combination effect to be below 1% in 2040.

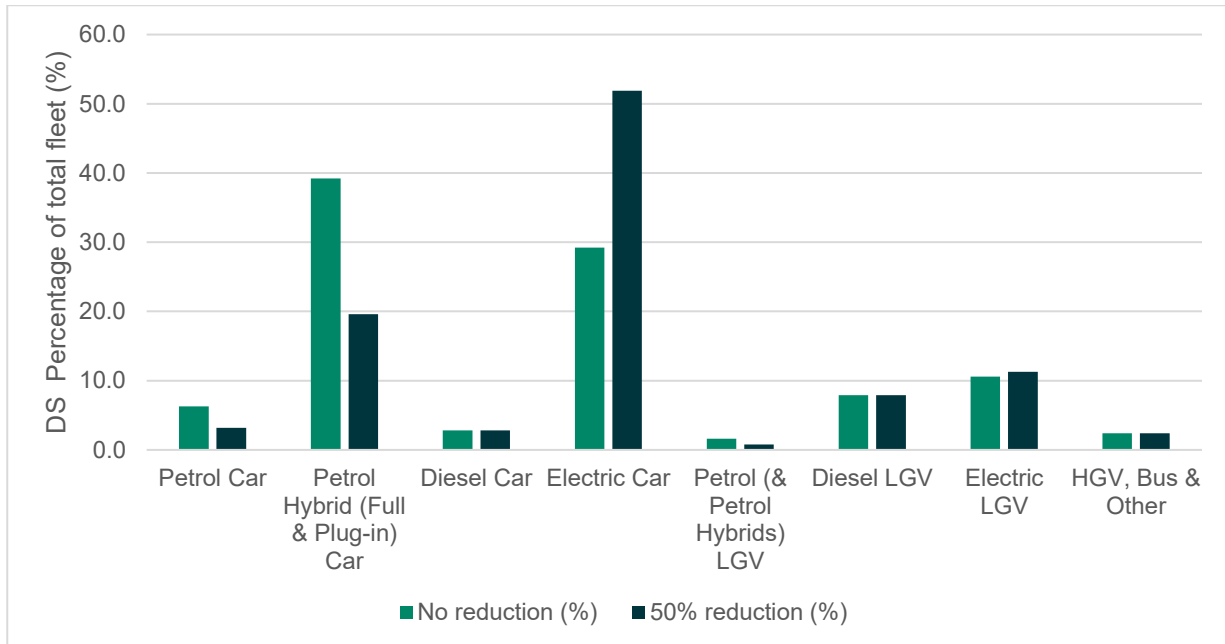
Table 2 Vehicle fleet breakdown by type for the no additional reduction case and 50% additional reduction in petrol vehicles, 2040

	Car				LGV			HGV, Bus, Other	Total AADT A272 The Mens
	Petrol		Diesel	Electric	Petrol	Diesel	Electric		
	ICE	Full Hybrid & Plug-in Hybrid	ICE		ICE, Full Hybrid & Plug-in Hybrid	ICE			
FB Scenario									
No Reduction, % of total (number)	6% (314)	39% (1945)	3% (141)	29% (1449)	2% (79)	8% (392)	10% (524)	4% (185)	5,029
50% reduction in petrol vehicles, % of total (number)	3% (157)	19% (973)	3% (141)	51% (2578)	1% (39)	8% (392)	11% (563)	4% (185)	
Change, % of total (number)	-3% (-157)	-19% (-972)	0% (0)	23% (1129)	-1% (-40)	0% (0)	1% (39)	0% (0)	
DM Scenario									
No Reduction, % of total (number)	6% (440)	39% (2727)	3% (198)	29% (2031)	2% (110)	8% (550)	11% (735)	3% (204)	6,995
50% reduction in petrol vehicles, % of total (number)	3% (220)	20% (1364)	3% (198)	52% (3615)	1% (55)	8% (550)	11% (790)	3% (204)	
Change, % of total (number)	-3% (-220)	-20% (-1363)	0% (0)	23% (1584)	-1% (-55)	0% (0)	1% (55)	0% (0)	
DS Scenario									
No Reduction, % of total (number)	6% (478)	39% (2963)	3% (215)	29% (2207)	2% (120)	8% (597)	11% (798)	2% (184)	7,562
50% reduction in petrol vehicles, % of total (number)	3% (239)	20% (1482)	3% (215)	52% (3927)	1% (60)	8% (597)	11% (858)	2% (184)	
Change, % of total (number)	-3% (-239)	-20% (-1481)	0% (0)	23% (1720)	-1% (-60)	0% (0)	1% (60)	0% (0)	

Table 2 shows that for the 2040 FB, DM and DS scenarios, petrol ICE and hybrid cars are predicted to comprise approximately 45% of the total vehicle fleet, with petrol LGVs a further 2%. Battery electric cars & LGVs are forecast to comprise a similar, but slightly lower proportion (~39-40%) of the combined total vehicle fleet. Therefore, targeting a further reduction of 50% (i.e. halving) of the total forecast petrol-based vehicles in the fleet at 2040 would leave pure petrol and petrol hybrid cars comprising ~22-23% of the total vehicle fleet, and 1% for petrol LGVs. This shift away from petrol-based vehicles and to electric vehicles would increase the proportion of electric cars from ~29% to ~51-52% of the total fleet, and increase the number of electric LGVs by 1% to 11% of the total. This amounts to an increase in electric vehicle uptake compared to the “no reduction” 2040 modelled fleet projection of approx. 23% in electric cars as a proportion of total vehicle fleet (1,129 vehicles per day in the future base, 1,584 in the Do-Minimum and 1,720 in the Do-Scenario) on the A272. While this appears to be a fairly substantial increase in the number of electric vehicles relative to the “no reduction” case, given the inherent uncertainty in projections of the vehicle fleet, relatively subtle changes in the year to year growth rate of electric vehicles could greatly change the actual 2040 vehicle fleet breakdown, potentially leaving fewer petrol vehicles in the overall fleet and therefore fewer additional vehicles to convert to electric in the “50% reduction” case.

- 3.3 Figure 1 shows the proportion of the total modelled vehicle fleet for 2040 by vehicle type for the DS scenario modelled with no additional reductions in petrol vehicles, and when an additional 50% reduction in petrol vehicles is applied to the fleet.

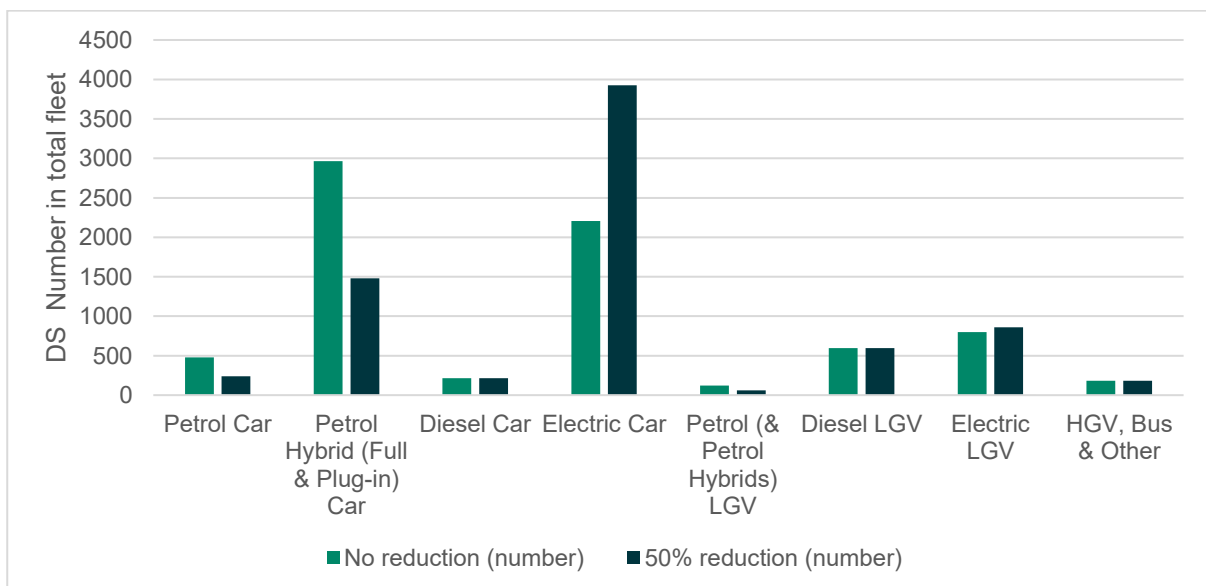
Figure 1 Vehicle fleet breakdown (% of total) for no additional reduction and 50% additional reduction for DS 2040 forecast



- 3.4 Although the proportion of petrol hybrids and plug-in hybrids in the overall vehicle fleet is predicted to be greater than in the previous modelling, the proportion of pure petrol vehicles is very small, and the high predicted proportion of hybrid vehicles signifies the intent for greater fleet electrification. Given the inherent uncertainties in projecting the vehicle fleet to 2040, although the 50% reduction in petrol vehicles shown here requires a substantial additional shift in proportion from hybrids (in particular) to electric, the actual shift required could be much lower in 2040. As petrol (and associated hybrid) LGVs and pure petrol (ICE) cars comprise a small proportion of the overall fleet, most of the change from the 50% reduction occurs due to the shift in petrol hybrid cars to battery electric cars.

- 3.5 Figure 2 presents the same as Figure 1 above but for the total number of vehicles.

Figure 2 Vehicle fleet breakdown (number) for no additional reduction and 50% additional reduction for DS 2040 forecast



Results

- 3.6 Table 3 gives the modelled results for the 50% reduction in petrol vehicles sensitivity test at receptor E1_10m, including the DS – DM and DS – FB impacts, for annual mean NO_x, NH₃ concentrations; and nitrogen and acid deposition rates.

Table 3 Modelled Results for the 50% reduction in petrol vehicles sensitivity test at E1_10m receptor

Pollutant	2025 Base	2040 FB	2040 DM	2040 DS	DS – DM Impact	DS – FB Impact
Annual Mean NO _x (µg/m ³)	8.66	6.86	6.90	6.91	0.01	0.05
Annual Mean NH ₃ (µg/m ³)	1.17	1.07	1.08	1.09	<0.01	0.01
Annual Mean N Dep (kgN/ha/yr)	20.54	18.57	18.65	18.67	0.02	0.10
Annual Mean N Acid Dep (keq/ha/yr)	1.47	1.33	1.33	1.33	<0.01	0.01

- 3.7 Table 3 shows that with the additional reduction in petrol vehicles, the sensitivity test generates an NH₃ “in combination” impact (DS – FB) of 0.01 µg/m³, which is equal to the 1% threshold of the Critical Level of 1 µg/m³. All other impacts continue to be below the respective 1% thresholds of Critical Levels and Critical Loads, as is the case in the modelling exercise undertaken for the HRA as set out in the air quality modelling methodology report to the Horsham LP HRA.

Assumptions and Limitations

- 3.8 The assumptions and limitations are unchanged from those set out in the air quality modelling methodology report to the Horsham LP HRA.

4. Summary and Conclusions

- 4.1 Building on the air quality modelling already undertaken to support the Horsham LP HRA, an additional sensitivity test was carried out looking at how the application of additional reductions in petrol vehicles (cars) to the projected fleet in 2040 could impact modelled nitrogen and acid deposition rates, annual mean NO_x and NH₃ concentrations along the E1 transect on The Mens SAC adjacent to the A272 road.
- 4.2 An additional 50% reduction in petrol vehicles in the projected 2040 fleet was modelled, giving a decrease in petrol cars and LGVs (ICE and hybrid) from approx. 45% of the original vehicle fleet to 22-23% of the modified fleet, and an associated increase in electric cars and LGVs from approx. 39% of the original vehicle fleet to 62% of the modified fleet. This represents an increase in the electric vehicle proportion of the total fleet of approx. 23%.
- 4.3 At the worst-case receptor (except roadside) along the transect (E1_10m), the predicted NH₃ “in combination” impact (DS – FB) when taking account of the Air Quality Mitigation Strategy decreased from 0.02 µg/m³ in the original modelling, which is above the 1% threshold of the Critical Level of 1 µg/m³, to 0.01 µg/m³ in the sensitivity test, equal to the 1% threshold. All other impacts “in combination” (DS – FB) and impacts “alone” (DS – DM) were found to be below the 1% Critical Level / Critical Load thresholds for annual mean NO_x and NH₃, and nitrogen and acid deposition in the original modelling, and again for the sensitivity test. The sensitivity test therefore demonstrates that the forecast in-combination effect can be reduced to the recognised 1% assessment threshold through a further shift from petrol vehicles to electric vehicles. Monitoring remains an important component of the adopted mitigation strategy to assess whether this transition is occurring and whether any additional measures may be required.