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South Downs National Park Authority Local Plan Pre-Submission (September 2017) Habitats Regulations Assessment

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1 Introduction

1.1 Background to the project

1.1.1 In 2015 AECOM undertook HRA of the South Downs National Park Authority's Preferred Options Local Plan. Since that time the Council has been working towards the preparation of their Pre-Submission Local Plan. AECOM has been appointed by South Downs National Park Authority ("the Authority") to assist in undertaking a Habitats Regulations Assessment (HRA) of the potential effects of the South Downs National Park Local Plan Pre-Submission (September 2017), on the Natura 2000 network and Ramsar sites. This is referred to as the 'Local Plan' within this document**.**

1.1.2 The objective of this assessment is to:

- identify any aspects of the Local Plan that would cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites[1]), either in isolation or in combination with other plans and projects; and
- to advise on appropriate policy mechanisms for delivering mitigation where such effects are identified.

1.2 Joint Core Strategies

1.2.1 The South Downs National Park overlaps with a number of other local authorities. These are listed below. The emerging SDNPA LP will supersede those areas that overlap.

Overlapping Local Authorities with Joint Core Strategies

- East Hampshire District Council: The East Hampshire District Local Plan: Joint Core Strategy was adopted by the East Hampshire District Council on 8 May 2014 and by the South Downs National Park Authority (SDNPA) on 26 June 2014. The SDNPA covers 57% of the district of East Hampshire. The Joint Core Strategy does not outline any strategic housing sites (i.e... specific development sites) with the exception of 2,725 new homes at Whitehill – Bordon (Policy CSWB1) over the Plan period and phased delivery of up to 4,000 new homes. The Whitehill – Bordon development is located outside of the SDNPA boundary. An HRA was undertaken for the Joint Core Strategy and was considered to be robust at Examination in Public. In April 2016 the Council adopted Local Plan Part II: Housing and Employment Allocations. This was subject to HRA which enabled the Plan to be screened out. Provided that the SDNP Local Plan does not propose housing levels beyond those identified in the East Hampshire Strategic Planning Document the conclusions of that HRA will therefore still apply to those parts of the SDNP in East Hampshire district.
- Lewes District Council: The Lewes District Joint Core Strategy: Local Plan Part 1 identified new housing within the SDNPA area, as will the SDNPA Local Plan Part 2 (currently preparing a Pre –Submission version). The housing numbers mentioned in both plans will not be cumulative but will be essentially the same provision for housing. A legal challenge made by Wealden District, and a subsequent High Court ruling resulted in the quashing of policies SP1 and SP2 of the Joint Core Strategy. Policy SP1 sets the overall development requirements for the district and SP2 sets the housing requirement of 220 net additional units in Lewes Town. The judicial review centred on the methodology by which a particular threshold for traffic movements through Ashdown Forest SAC/SPA was used to rule out any further work by the Council/Authority. Once it is adopted the South Downs National Park Local Plan will supercede the Joint Core Strategy as it relates to the National Park.

[1] Wetlands of International Importance designated under the Ramsar Convention 1979

- Wealden District Council: Wealden District Core Strategy (Incorporating Part of the South Downs National Park). This Strategy did not identify any housing allocations within the National Park. This document was considered for adoption and approved by Wealden District Full Council on 28 November 2012 and the South Downs National Park Authority on 19 February 2013. Wealden Draft Proposed Submission Local Plan is currently in preparation.
- Winchester District Council: Winchester District Local Plan Part 1. This is a Joint Local Plan. Adopted March 2013. This does not outline any strategic housing allocations within the National Park.

Local Authorities Overlapping with the SDNPA Area but without Joint Core Strategies:

- Adur District Council: Adur District Local Plan was adopted in 1996. This sets out the spatial strategy for Adur District as a whole. Adur Local Plan 2016 is the emerging Local Plan and will cover the area of Adur which falls outside of the National Park. It was submitted to the SoS in October 2016. The Council are currently responding to matters raised. At the time of writing, this Plan proposes to deliver up to 3,609 new dwellings within the Plan period.
- Arun District Council: Local Plan 2011-2031. In March 2017 the Council approved the Main Modifications to the Local Plan and are preparing for consultation. This aims to delivery approximately 20,000 dwellings throughout the Plan period.
- The City of Brighton and Hove: The City Plan: Part 1 was adopted in March 2016. This includes for 13,200 new homes to 2030
- Chichester District Council: Chichester Local Plan: Key Policies 2014-2029 was adopted in July 2015.
- Eastbourne District Council: Eastbourne Core Strategy Local Plan was adopted in February 2013.
- Horsham District Council: On 27 November 2015 Horsham District Council adopted the Horsham District Planning Framework. This sets out the spatial strategy for Horsham including housing (16,000 homes over the Plan period); relevant in that it provides detail of development plans.
- Mid-Sussex Council: The Submission District Plan is currently under examination (June 2017). At the time of writing the District Plan sets a housing figure of 11,050 homes in the period 2014 – 2031 (650 per annum). The Council are currently responding to matters raised.
- Worthing Borough Council: Worthing Core Strategy (adopted 2011). Between May and June 2016 the Council consulted on the Issue and Options for a new Local Plan to 2033.

1.3 Current legislation

1.3.1 Within the UK, Protected Areas for nature conservation include, those established under National legislation (e.g. Sites of Special Scientific Interest (SSSI)), areas established under European Union Directives/European initiatives (including the Natura 2000 network of sites), and protected areas established under Global Agreements (e.g. Ramsar sites).

1.3.2 With relevance to this report, Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Birds Directive 1979. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species. Special Areas of Conservation (SAC) are strictly protected sites designated under Article 3 of the EC Habitats Directive, which requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended)[2]. The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds). Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

[2] http://jncc.defra.gov.uk/

1.3.3 The Conservation of Habitats and Species Regulations 2010 require that land use plans are subject to Appropriate Assessment (AA) where they are likely to have a significant effect on a Natura 2000 site.

1.3.4 The Habitats Directive applies the precautionary principle to protected areas; plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. In the case of the Habitats Directive, potentially damaging plans and projects 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 will be necessary to ensure the overall integrity of the site network is maintained.

1.4 Report structure

1.4.1 Section 2 of this report summarises the methodology for the assessment.

1.4.2 Section 3 identifies the possible pathways by which adverse effects on European protected sites could arise.

1.4.3 Sections 4-9 consider each possible pathway in turn on the European sites that may be vulnerable, and a screening exercise to determine Likely Significant Effects of the Local Plan is performed, based on key environmental conditions required to maintain the integrity of these sites. The screening exercise for each site concludes by either screening out any possible impacts or by determining that mitigation or avoidance measures are required.

1.4.4 Where mitigation strategies are deemed necessary, potential approaches are discussed. In combination effects with other plans on each European site are considered within Section 10.

1.4.5 The recommendations are summarised in section 11.

1.4.6 Background information on all the European sites discussed in this report is presented within Appendix A. Figure 1 in the Appendices (Appendix A) presents a map showing all internationally important wildlife sites discussed, while Figure 2 of the Appendices (also Appendix A) shows the locations of all site allocations. The full initial policy screening table and settlement screening table are presented in Appendix B. Appendix C provides the detailed air quality assessment calculations including (on Figure 3 of the Appendices) the locations of the modelled air quality transects.

1.5 About the Local Plan

1.5.1 The Local Plan sets out how the National Park Authority will manage development over the next 15 years. It provision for the delivery of a quantum of new residential development (with provision made up of housing allocations, Gypsy and Traveller sites, windfall and Neighbourhood Development Plans), employment and park wide policies.

1.5.2 The SDNP Local Plan makes overall provision for 4,750 homes over the Plan period (2014-2033). 511 of these have already been completed in the first two years of the Plan period. 2,787 of the new proposed housing is either allocated in the Local Plan, allocated in a made Neighbourhood Plan, or will be allocated in a Neighbourhood Plan currently in production. A further 965 have planning permission and are therefore counted as commitments. Finally, 714 homes are expected to come forward as windfall development (i.e. unallocated sites) over the Plan period. The supply of homes is currently anticipated therefore to be in the region of 4,977 homes over the Plan period, on a best case scenario. However, the lower figure of 4,750 allows for future uncertainties in respect of emerging Neighbourhood Plans identifying enough suitable sites, and fluctuations in the market which may affect small site delivery in particular.

2 Methodology

2.1 Introduction

2.1.1 This section sets out our approach and methodology for undertaking the HRA. Habitats Regulations Assessment itself operates independently from the Planning Policy system, being a legal requirement of a discrete Statutory Instrument.

2.2 A Proportionate Assessment

2.2.1 Project-related HRA often requires bespoke survey work and novel data generation in order to accurately determine the significance of adverse effects. In other words, to look beyond the risk of an effect to a justified prediction of the actual likely effect and to the development of avoidance or mitigation measures.

2.2.2 However, the draft CLG guidance[3] makes it clear that when implementing HRA of land-use plans, the AA should be undertaken at a level of detail that is appropriate and proportional to the level of detail provided within the plan itself:

2.2.3 '*The comprehensiveness of the [Appropriate] assessment work undertaken should be proportionate to the geographical scope of the option and the nature and extent of any effects identified. An AA need not be done in any more detail, or using more resources, than is useful for its purpose. It would be inappropriate and impracticable to assess the effects [of a strategic land use plan] in the degree of detail that would normally be required for the Environmental Impact Assessment (EIA) of a project.'*

2.2.4 In other words, there is a tacit acceptance that appropriate assessment can be tiered and that all impacts are not necessarily appropriate for consideration to the same degree of detail at all tiers (**Figure 1**).

2.2.5 For a Local Plan the level of detail concerning the developments that will be delivered is usually insufficient to make a highly detailed assessment of significance of effects. For example, precise and full determination of the impacts and significant effects of a new settlement will require extensive details concerning the design of the town, including layout of greenspace and type of development to be delivered in particular locations, yet these data will not be decided until subsequent stages.

2.2.6 The most robust and defensible approach to the absence of fine grain detail at this level is to make use of the precautionary principle. In other words, the plan is never given the benefit of the doubt; it must be assumed that a policy/measure is likely to have an impact leading to a significant adverse effect upon a European site unless it can be clearly established otherwise.

[3] CLG (2006) Planning for the Protection of European Sites, Consultation Paper

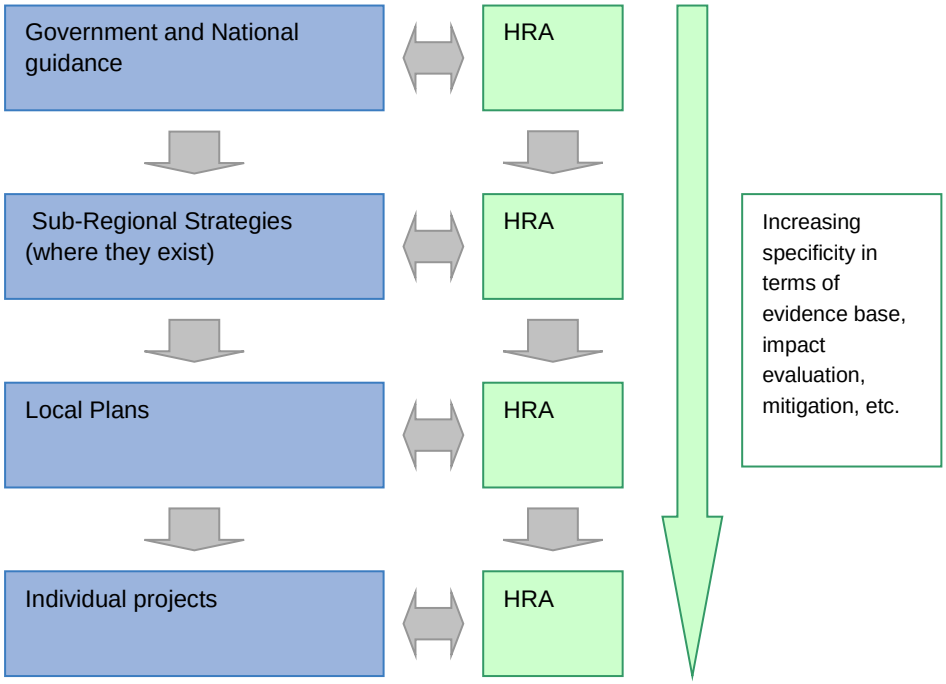


Figure 1: Tiering in HRA of Land Use Plans

2.3 The Process of HRA

2.3.1 The HRA has been carried out in the continuing absence of formal Government guidance. CLG released a consultation paper on AA of Plans in 2006[4]. As yet, no further formal guidance has emerged.

2.3.2 **Figure 2** below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

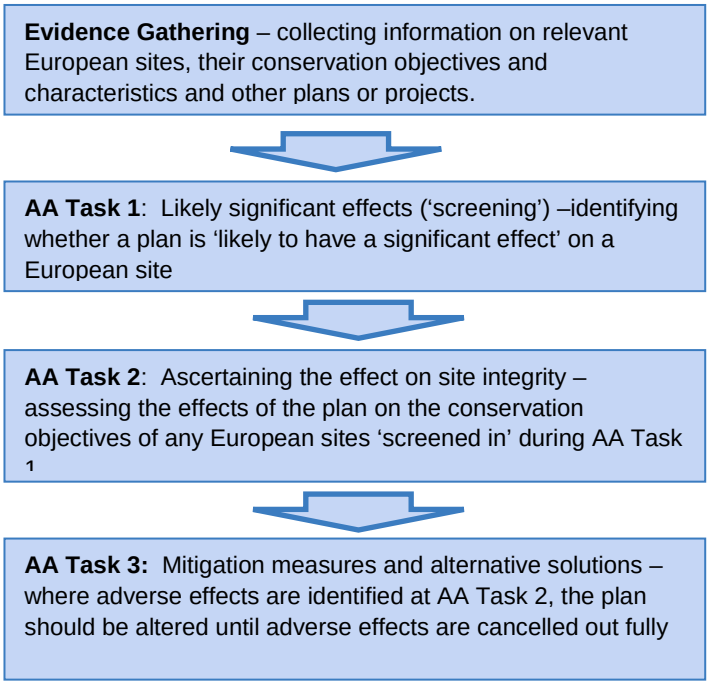


Figure 2: Four-Stage Approach to Habitats Regulations Assessment

[4] Ibid

2.3.3 In practice, this broad outline requires some amendment in order to feed into a developing land use plan such as a Local Plan. The following process has been adopted for carrying out the HRA.

2.4 Stage One: Likely Significant Effect Test (Screening)

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

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

2.4.2 The objective is to 'screen out' those plans and projects (or site allocations/policies) that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism or pathway for an adverse interaction with European sites.

2.4.3 Where the screening stage is unable to determine no likely significant effect, it is often possible to suggest amendments to emerging policy that will act as sufficient avoidance or mitigation. The understanding in such cases is that if the Authority is able to incorporate and deliver on such wording, then once the revisions are made, a conclusion of no likely significant effects will be possible.

2.4.4 Nonetheless, there remains the possibility that even with policy modification, in some cases there will be an inability to conclude no likely significant effects of an element of the Local Plan on a given European site. This may arise through, for example, a quantum of development at a location where impacts on a European site are unavoidable, through 'in combination' effects not fully within the Authority's power to influence, or simply through a lack of information on which to be able to form a valid conclusion of no likely significant effect. In these cases, there is the possibility of needing to obtain bespoke survey or other relevant information. This report documents the LSE Test.

2.4.5 The approach to screening in this HRA report is to first subject each policy or site allocation to an initial high-level screening based upon potential pathways of impact. That is documented in Tables 1 and 2 of Appendix B. The results of that initial screening are then used to inform a more detailed screening exercise set out in Sections 4-9 of the main report text. Therefore, it should be noted that Appendix B does not present a summary of the whole assessment process. The conclusions of the screening process and its recommendations are summarised in Section 11 of the report.

Technical Scope

2.4.6 In evaluating significance, AECOM have relied on professional judgment regarding development impacts on the European sites.

2.4.7 Where Local Plans (LP) have already been adopted within Authorities that overlap with the SDNPA LP area, and with Policies that match those within the SDNPA Local Plan, these are not re-assessed having effectively already been assessed as part of the relevant Joint Core Strategy, but will be referred to within this document e.g. where relevant housing allocations within the SDNPA Local Plan.

Physical Scope

2.4.8 The physical scope of the assessment i.e. the range of European sites to be considered will be based upon a combination of tracing impact pathways and using distances derived from various studies.

2.4.9 The internationally important wildlife sites (also known as European sites) of relevance to HRA are shown in Table 1: 1. Full details of reasons for designation, conservation objectives and key vulnerabilities are presented in Appendix A. These internationally important wildlife sites are identified in **Appendix A, Figure 1.** These sites lie wholly or partly within the South Downs National Park or within the surrounding sphere of influence:

Table 1: Physical scope of the HRA

European sites
Calcareous grassland sites:
• Lewes Downs SAC
• Castle Hill SAC
• Butser Hill SAC
Woodland sites:
• Duncton to Bignor Escarpment SAC
• Kingley Vale SAC
• East Hampshire Hangers SAC
• Rook Clift SAC
Heathland/bog sites:
• Shortheath Common SAC
• Woolmer Forest SAC
• Ashdown Forest SAC
• Thursley, Ash, Pirbright and Chobham SAC
Bat sites:
• Singleton & Cocking Tunnels SAC
• Ebernoe Common SAC[5]
• The Mens SAC[6]
Heathland bird sites:
• Wealden Heaths Phase II SPA
• Ashdown Forest SPA
• Thursley, Hankley and Frensham Commons SPA
Riverine sites:
• River Itchen SAC
• Arun Valley SAC/SPA/Ramsar site
Estuarine sites:
• Chichester & Langstone Harbours Ramsar/ SPA
• Solent Maritime SAC
• Dorset and Solent potential SPA
Wetland sites:
• Pevensey Levels SAC/ Ramsar site

2.4.10 Emer Bog SAC is located 6.7km from the SDNPA boundary. By nature of the bog habitats present, it is sensitive to changes in hydrology. The River Itchen separates the SDNPA area from the catchment area of Emer Bog SAC. As such, Emer Bog SAC is not discussed further.

2.4.11 The Solent and Isle of Wight Lagoons SAC is located at its closest 7.8km in a straight line from the SDNPA boundary. Realistically this distance is further. The site is vulnerable to changes in salinity.

[5] Also contain beech forests on acid soils as a designated feature
[6] Also contains beech forests on acid soils as a designated feature

The SDNPA LP does not contain any impact pathways that could result in changes in salinity to this SAC. As such, this site is not discussed further.

2.5 The 'In-combination' Scope - other projects and plans

2.5.1 It is a requirement of the Regulations that the impacts and effects of any plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

2.5.2 In practice, 'in-combination assessment' is of greatest importance when the Local Plan would otherwise be screened out because the individual contribution is inconsequential. It is neither practical nor necessary to assess the 'in-combination' effects of the Local Plan within the context of all other plans and projects within the region. The principal other plans and projects that have been considered for in-combination effects are:

Table 2: Other projects and plans

Other projects and plans
Plans
• **Lewes*** - Joint Core Strategy: Local Plan Part 1, Adopted June 2016
• **Adur** District Council, Submission Adur Local Plan 2016.
• **Worthing** Borough Council, 2011. Core Strategy.
• **Chichester** District Council, Local Plan Key Policies: 2014-2029 (adopted July 2015), and relevant Neighbourhood Plans (e.g. Selsey Neighbourhood Plan)
• **East Hampshire***, The East Hampshire District Local Plan: Joint Core Strategy (adopted 2014), Local Plan Part 2: Housing and Employment Allocations (adopted April 2017).
• **Havant** Borough Council, 2011. Local Plan (Core Strategy). Adopted March 2011 and Local Plan (Allocations) adopted 2014
• **Horsham** District Local Development Framework (adopted November 2015), the Core Strategy (2007) and replacement Horsham District Planning Framework and associated Neighbourhood Plans.
• **Mid-Sussex** District Council, March 2015. Mid-Sussex– Pre-Submission Draft District Plan .
• **Winchester*** City Council, 2013. Local Plan – Joint Core Strategy. (Adopted) and Local plan Part 2: Development Management & Allocations document. (adopted April 2017)
• **Arun** Local Plan 2011-2031 Main Modifications (March 2017)
• **Brighton and Hove** Submission City Plan Part One. February 2013, Further Proposed Modifications (2015) and associated Neighbourhood Plans.
• **Eastbourne** Borough Council, 2013. Core Strategy Local Plan and Employment Land Local Plan (2014).
• **Wealden*** District Council (Incorporating Part of the South Downs National Park), 2013. Core Strategy Local Plan.
• West Sussex Transport Plan 3 (2011-2026); East Sussex Local Transport Plan 3 (2011-2026); Hampshire Local Transport Plan (2011-2031); and Surrey Local Transport Plan LTP3 (2011-2026); South East River Basin Management Plan 2015 - 2021; Lower Tidal River Arun Strategy Environmental Report (2014).
Projects
• **A27 Corridor** Feasibility Study (report 2015)[7]

*Joint Core Strategies have been devised for the following Council areas (see section 1.2 for further details):

[7]Parsons Brinckerhoff (February 2015) A27 Feasibility Study. Report 2 or 3: Option Assessment Report

- Lewes District
- East Hampshire District
- Winchester City
- Wealden District

2.5.3 Where the overlapping of National Park boundaries and existing local authority boundaries mean that a joint approach has already been taken, 'in-combination' effects between development within (for example) East Hampshire and that within the National Park will have already been effectively addressed in the existing HRA and the analysis will therefore adopt the conclusions of that analysis and focus on whether the Local Plan would operate in-combination with the joint plan.

2.6 Stage 2: Appropriate Assessment (Air Quality Impact Assessment)

2.6.1 To support this document an Air Quality Impact Assessment was undertaken comparing the predicted change in vehicle flows on roads within 200m of Butser Hill SAC, Duncton to Bignor Escarpment SAC Kingley Vale SAC, Woolmer Forest SAC, Wealden Heaths Phase II SPA, Ebernoe Common SAC, The Mens SAC, Thursley, Ash Pirbright and Chobham SAC, Thursley, Hankley and Frensham Commons SPA, Lewes Downs SAC, Ashdown Forest SAC/SPA (undertaken jointly with Lewes District Council and presented in a separate Addendum) and the River Itchen SAC, due to the Local Plan, with that which would be expected to occur over time due to population, jobs, housing and employment growth in other authorities that would affect the same roads over the same timescale. This assessment is included in the Appropriate Assessment section of the report, as it was the only issue that required more detailed analysis beyond that presented in previous iterations of this HRA.

2.6.2 Vehicle exhaust emissions only have a local effect within a narrow band along the roadside, within 200m of the centreline of the road. Beyond 200m emissions are considered to have dispersed sufficiently that atmospheric concentrations are essentially background levels. The rate of decline is steeply curved rather than linear. In other words concentrations will decline rapidly as one begins to move away from the roadside, slackening to a more gradual decline over the rest of the distance up to 200m.

2.6.3 There are two measures of relevance regarding air quality impacts from vehicle exhausts. The first is the concentration of oxides of nitrogen (known as NOx) in the atmosphere. In extreme cases NOx can be directly toxic to vegetation but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats. The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (μgm^{-3}), known as the Critical Level, as this concentration relates to the growth effects of nitrogen derived from NOx on vegetation.

2.6.4 The second important metric is a measure of the rate of the resulting nitrogen deposition. The addition of nitrogen is a form of fertilization, which can have a negative effect on heathland and other habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic. Unlike NOx in atmosphere, the nitrogen deposition rate below which we are confident effects would not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System (APIS) website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year ($kgNha^{-1}yr^{-1}$).

2.6.5 For completeness, rates of acid deposition have also been calculated. Acid deposition derives from both sulphur and nitrogen. It is expressed in terms of kiloequivalents (keq) per hectare per year. The thresholds against which acid deposition is assessed are referred to as the Critical Load Function. The principle is similar to that for a nitrogen deposition Critical Load but it is calculated very differently.

2.6.6 A series of road links within 200m of the European designated site listed in paragraph 2.6.1 and Table 3 below were identified by for investigation. As discussed, several links around Ashdown Forest SPA/SAC in East Sussex were also modelled as a separate joint exercise with Lewes District Council examining the combined effects of the South Downs Local Plan and Lewes Joint Core Strategy.

Table 3: Location of Link Roads analysed within 200m of the European Designated Sites (other than Ashdown Forest)

Link	Road	Ecological Site	Grid reference	
			X	y
1	B3335	River Itchen SAC	447500	122500
2	A3	Butser Hill SAC	472500	119500
3	B2141	Kingley Vale SAC	471500	119500
4	A287	Thursley, Ash, Pirbright and Chobham SAC / Thursley, Hankley and Frensham Commons SPA	484500	140500
5	A3	Thursley, Ash, Pirbright and Chobham SAC / Thursley, Hankley and Frensham Commons SPA	492500	140500
6	A325	Woolmer Forest SAC/ Wealden Heaths Phase II SPA	478500	131500
7	A3	Woolmer Forest SAC/ Wealden Heaths Phase II SPA	480500	131500
8	A283	Ebernoe Common SAC	496500	126500
9	A272	The Mens SAC	502500	124500
10	A285	Ducton to Bignor Escarpment SAC	495500	116500

2.6.7 Traffic data were generated for each of these links. The traffic data present three scenarios:

- Base case
- Do Nothing (DN)
- Do Something (DS)

2.6.8 The base case is the measured flows on the roads in question as of 2017. For all sites except Ashdown Forest these flows were recorded specifically for the purpose of this project through traffic counts. Since the Local Plan is backdated to 2014, this means that housing and employment development that has been delivered and occupied between 2014 and 2017 is allowed for in the measured baseline flows. is allowed for in the measured baseline flows. However, this is also true for all other local authorities, so there is no disparity in treatment of local authorities in the modelling. Development that has been consented but not actually completed/occupied does not appear in the baseline flows.

2.6.9 The Do Nothing scenario shows future flows on the same roads at the end of the South Downs Local Plan period (2033), without consideration of the role of the South Downs Local Plan. This therefore presents the expected contribution of other plans and projects to flows by 2033. The end of the Local Plan period has been selected for the future scenario as this is the point at which the total emissions due to South Downs Local Plan traffic will be at their greatest. It does this by using the National Trip End Model Presentation Program (TEMPRO), which is an industry standard database tool used to inform traffic modelling. TEMPRO produces a growth factor that is applied to the measured flows. It is based on data for each local authority district in England (broken down to statistical Middle-Layer Super Output Area) regarding future changes in population, households, workforce and employment (in addition to data such as car ownership). Growth factors are utilised for the statistical Middle Layer Super Output Areas (MSOAs) within which the modelled links are located (in this case Winchester, East Hampshire and Chichester for most of the European sites included in the model).

2.6.10 The Do Something scenario reflects the role of the Local Plan (and subsidiary Neighbourhood Plans). Detailed modelling of Local Plan/Neighbourhood Plan growth locations undertaken by the AECOM transport planning team was added to TEMPRO growth for all other authorities. To build the Local Plan model, housing and employment sites in the National Park (allocations in the Local Plan, allocations in Neighbourhood Plans, unimplemented planning permissions and windfall) were geographically assigned to 10 ‘distribution groups’ across the National Park using GIS software. These distribution groups were sets of MSOAs that were selected in order to capture development flows travelling across the study links. The distribution of each of these 10 groups was calculated using Census 2011 journey to work data, and the trips associated with each distribution group then manually assigned across the network (both internally and externally to the National Park).

2.6.11 The ‘in combination’ growth scenario is therefore the Do Something flows, as these include existing traffic, all future journeys arising from within the South Downs National Park due to the Local Plan or Neighbourhood Plan proposals (from AECOM’s model), and future traffic arising from all other authorities (from TEMPRO). The difference between the Do Something scenario and the Do Nothing scenario illustrates the role of the Local Plan (and Neighbourhood Plans) in changing future flows compared to what would be expected without the Local Plan proposals. Some links

see increases compared to Do Nothing (where trips are concentrated due to the scale and location of development in the Local Plan) and some see slight decreases[8].

2.6.12 Using these scenarios, and information on average vehicle speeds and percentage heavy duty vehicles (both of which influence the emissions profile), AECOM air quality specialists calculated expected NOx concentrations, nitrogen deposition rates and acid deposition rates for all ten road links. The predictions are based on the assessment methodology presented in Annex F of the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1 (HA207/07)[9] for the assessment of impacts on sensitive designated ecosystems due to highways works. Background data were sourced from the Department of Environment, Food and Rural Affairs (Defra) background maps[10] [11].

2.6.13 Given that the assessment year (2033) is a considerable distance into the future, it is important for the air quality calculations to take account of improvements in background air quality and vehicle emissions that are expected nationally over the plan period. Making an allowance for a realistic improvement in background concentrations and deposition rates is in line with the Institute of Air Quality Management (IAQM) position[12] as well as that of central government. Background nitrogen deposition rates were sourced from the Air Pollution Information System (APIS) website[13]. Although in recent years improvements have not kept pace with predictions, the general long-term trend for NOx has been one of improvement (particularly since 1990) despite an increase in vehicles on the roads[14]. The current DMRB guidance for ecological assessment suggests reducing nitrogen deposition rates by 2% each year between the base year and assessment year.

2.6.14 However, due to some uncertainty as to the rate with which projected future vehicle emission rates and background pollution concentrations are improving, the precautionary assumption has been made in this assessment that not all improvements projected by Defra will occur. Therefore, the air quality calculations assume that conditions in 2023 (an approximate midpoint between the base year and the year of assessment) are representative of conditions in 2033 (the year of assessment). This approach is accepted within the professional air quality community and accounts for known recent improvements in vehicle technologies (new standard Euro 6/VI vehicles), whilst excluding the more distant and therefore more uncertain projections on the evolution of the vehicle fleet. No discussion is made in this analysis of the UK Government's recent decision to ban the sale of new petrol and diesel vehicles from 2040 since it would not affect the time period under consideration, but that announcement illustrates the general long-term direction of travel for roadside air quality in the UK and underlines that allowing for improvements in both vehicle emissions factors and background rates of deposition over long timescales is both appropriate and realistic.

2.6.15 Annual mean concentrations of NOx were calculated at varied intervals back from each Road Link location, with the closest distance being the closest point of the designated site to the road. Predictions were made using the latest version of ADMS-Roads using emission rates derived from the Defra Emission Factor Toolkit (version 6.0.2) which utilises traffic data in the form of 24-hour Annual Average Daily Traffic (AADT), detailed vehicle fleet composition and average speed. The end of the Local Plan period has been selected for the future scenario as this is the point at which the total emissions due to Local Plan traffic will be at their greatest.

2.6.16 The tables in Appendix C present the calculated changes in NOx concentration, nitrogen deposition and acid deposition 'in combination' (i.e. the difference between Do Something and the 2017 Base case) and the role played by Local Plan/Neighbourhood Plan development in South Downs National Park compared to that which would occur in any case over the plan period (i.e. the difference between Do Something and Do Nothing)..

[8] Note that these 'decreases' simply indicate lower flows than the Do Nothing forecasts and are essentially a modelling artefact due to the slightly different ways that TEMPRO and the AECOM model assign journeys to the network; compared to measured 2017 base flows there is still a net increase

[9] Design Manual for Roads and Bridges, HA207/07, Highways Agency

[10] Air Quality Archive Background Maps. Available from: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

[11] It is understood that measured data exists for Ashdown Forest but they were not available at the time this analysis was undertaken. The use of any measurement data for Ashdown Forest would likely change the absolute concentrations and deposition rates presented in this analysis but not the overall trends or conclusions with regard to the South Downs Local Plan/Lewes Joint Core Strategy

[12] http://www.iaqm.co.uk/text/position_statements/vehicle_NOx_emission_factors.pdf

[13] Air Pollution Information System (APIS) www.apis.ac.uk

[14] Emissions of nitrogen oxides fell by 69% between 1970 and 2015. Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/579200/Emissions_airpollutants_statisticalrelease_2016_final.pdf [accessed 08/06/17]

2.6.17 Target habitats identified within 200m of the ten modelled Road Links and there Critical Loads are shown in **Table 4.**

Table 4: The Critical Load for the Target Habitats of the European Designated Sites Investigated.

European Designated Site	Target habitat/ feature	Nitrogen Critical Load (kg/N/ha/yr)	Acidity Critical Load (keq)
River Itchen SAC[15]	Dwarf shrub heath	10 (10-20)	MinCLminN: 0.499 MaxCLminN: 1.350 MinCLMaxS: 0.267 MaxCLMaxS: 4.170 MinCLMaxN: 0.922 MaxCLMaxN: 5.620
	Rivers and streams	No comparable habitat with established critical load estimate available. No Critical Load has been assigned to the EUNIS classes for meso/eutrophic systems. These systems are often P limited. No acidity Critical Loads available for this habitat.	
Butser Hill SAC	Coniferous woodland	10 (5-15)[16]	MinCLminN: 0.142 MaxCLminN: 0.142 MinCLMaxS: 1.978 MaxCLMaxS: 11.344 MinCLMaxN: 2.113 MaxCLMaxN: 11.486
	Sub-atlantic semi-dry calcareous grassland	15 (15-25)	MinCLminN: 0.856 MaxCLminN: 0.856 MinCLMaxS: 4.000 MaxCLMaxS: 4.000 MinCLMaxN: 4.856 MaxCLMaxN: 4.856
Kingley Vale SAC	Coniferous woodland	10 (5-15)[17]	MinCLminN: 0.142 MaxCLminN: 0.142 MinCLMaxS: 11.240 MaxCLMaxS: 11.280 MinCLMaxN: 11.166 MaxCLMaxN: 11.350
	Sub-atlantic semi-dry calcareous grassland	15 (15 – 25)	MinCLminN: 0.856 MaxCLminN: 0.856 MinCLMaxS: 4.000 MaxCLMaxS: 4.000 MinCLMaxN: 4.856 MaxCLMaxN: 4.856
Thursley, Ash, Pirbright and Chobham Commons SAC	Valley mires, poor fens and transition mires	10 (10 – 15)	MinCLminN: 0.321 MaxCLminN: 0.321 MinCLMaxS: 0.211 MaxCLMaxS: 0.355 MinCLMaxN: 0.532 MaxCLMaxN: 0.676
	Northern wet heath: *Erica tetralix* dominated wet heath	10 (10 – 20)	MinCLminN: 0.642 MaxCLminN: 1.350 MinCLMaxS: 0.213 MaxCLMaxS: 1.690 MinCLMaxN: 0.872 MaxCLMaxN: 2.440
	Dry heaths	10 (10 – 20)	MinCLminN: 0.642 MaxCLminN: 1.350 MinCLMaxS: 0.213 MaxCLMaxS: 1.690 MinCLMaxN: 0.872 MaxCLMaxN: 2.440
Thursley, Hankley and Frensham Commons SPA	Coniferous woodland	10 (5-15)[18]	MinCLminN: 0.142 MaxCLminN: 0.357 MinCLMaxS: 1.114 MaxCLMaxS: 3.120 MinCLMaxN: 1.296 MaxCLMaxN: 3.477
	Dwarf shrub heath	10 (10-20)	MinCLminN: 0.642 MaxCLminN: 1.350 MinCLMaxS: 0.290 MaxCLMaxS: 1.690 MinCLMaxN: 0.932 MaxCLMaxN: 2.440
Wealden Heaths Phase II SPA	Coniferous woodland	10 (5-15)[19]	MinCLminN: 0.142 MaxCLminN: 0.357 MinCLMaxS: 1.179 MaxCLMaxS: 2.999 MinCLMaxN: 1.354 MaxCLMaxN: 3.356
	Dwarf shrub heath	10 (10-20)	MinCLminN: 0.714 MaxCLminN: 1.350 MinCLMaxS: 0.310 MaxCLMaxS: 1.720 MinCLMaxN: 1.222 MaxCLMaxN: 2.434
Woolmer Forest SAC	Permanent dystrophic lakes, ponds and pools	3 (3 – 10)	N/A
	Valley mires, poor fens and transition mires	10 (10 – 15)	MinCLminN: 0.321 MaxCLminN: 0.321 MinCLMaxS: 0.362 MaxCLMaxS: 0.379 MinCLMaxN: 0.683 MaxCLMaxN: 0.720
	Northern wet heath: *Erica tetralix* dominated	10 (10 – 20)	MinCLminN: 1.350 MaxCLminN: 1.350 MinCLMaxS: 0.320 MaxCLMaxS: 0.330 MinCLMaxN: 1.355 MaxCLMaxN: 1.365

[15] Southern damselfly is generally found in wet heathland. However, in the River Itchen SAC it is found in flood meadows and river margins. These do not have a critical load on APIS so the critical load for heathland is used. This is almost certainly precautionary
[16] For the purpose of this assessment the minimum Critical Load for coniferous woodland has been taken as 10 kg/N/ha/yr. Whilst APIS provides a minimum figure of 5 kg/N/ha/yr, this figure is based on botanical quality. For the purpose of this study it is not the botanical quality that is under consideration but the structure that supports the designated features.
[17] Ibid
[18] Ibid
[19] Ibid

	wet heath		
	Dry heaths	10 (10 – 20)	
Ebernoe Common SAC	Fagus woodland	10 (10 – 20)	MinCLminN: 0.357 MaxCLminN: 0.357 MinCLMaxS: 2.138 MaxCLMaxS: 3.380 MinCLMaxN: 2.495 MaxCLMaxN: 3.368
	Broadleaved deciduous woodland	10 (10 – 20)	
The Mens SAC	Fagus woodland	10 (10 – 20)	MinCLminN: 0.285 MaxCLminN: 0.357 MinCLMaxS: 1.277 MaxCLMaxS: 2.843 MinCLMaxN: 1.493 MaxCLMaxN: 3.200
	Broadleaved deciduous woodland	10 (10 – 20)	
Ducton to Bignor Escarpment SAC	Fagus woodland	10 (10 – 20)	MinCLminN: 0.142 MaxCLminN: 0.142 MinCLMaxS: 1.971 MaxCLMaxS: 11.375 MinCLMaxN: 2.112 MaxCLMaxN: 11.517

3 Pathways of Impact

3.1.1 In carrying out a HRA it is important to determine the various ways in which a Local Plan can impact on internationally designated sites by following the pathways along which policy can be connected with these internationally designated sites, in some cases many kilometres distant. Briefly defined, pathways are routes by which a change in activity associated with a policy can lead to an effect upon an internationally designated site.

3.1.2 The following impact pathways have been identified as being relevant to this assessment (i.e. having potential to have a likely significant effect upon an internationally designated site as a result of policies within the Local Plan):

- Recreational pressure;
- Air quality;
- Water quantity and changes in hydrological cycles (e.g. maintenance of flow velocity)
- Water quality (e.g. sedimentation, nutrient enrichment) ;
- Loss of supporting habitat (e.g. for barbastelle bats, bechstein bats and Bewick's swan);
- Urbanisation (e.g. fires and invasive species).

3.1.3 An initial screening of each settlement due to receiving housing, and each policy in the Local Plan is presented in Appendix B, Tables 1 and 2. Sections 4 to 9 of the main report then scrutinise relevant policies and housing allocations in more detail within the context of each relevant pathway of impact. Section 10 assesses the in-combination effects of the South Downs Local Plan upon internationally designated sites.

4 Recreational Pressure

4.1 Introduction

4.1.1 Recreational use of a European site has the potential to:

- Prevent appropriate management or exacerbate existing management difficulties;
- Cause damage through erosion and fragmentation;
- Cause nutrient enrichment as a result of dog fouling;
- Hinder grazing management;
- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl; and,
- Increase the risk of colonization by invasive non-native species, for example via seed transfer.

4.1.2 Different types of European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. Generally, policies that lead to increases in housing or tourism have potential to result in increases in recreational pressure upon a site. The SDNPA Local Plan outlines provision for 4,750 net additional dwellings during the lifetime of the plan (2014-2033). Whilst 2,787 of the new proposed housing is allocated to a settlement within in Policy SD26 (Supply of Housing), 714 of the new houses will be provided at windfall (i.e. unallocated) sites and through unimplemented or part implemented planning permissions[20].

4.2 Likely Significant Effects

4.2.1 The South Downs National Park Authority commissioned a study into the visitor impacts on the Park[21]. The first survey was with land managers, the second survey focused on specific nature conservation or cultural heritage sites that were selected to cover the main landscape character areas with a good geographical spread across the Downs. Both studies were conducted via questionnaires with limited response returns.

4.2.2 One of the resultant documents looked at the environmental effects specifically and found the following:

- 'Walking and wildlife watching and photography were the most popular outdoor activities, with picnicking, cycling and horse riding and other land based activities occurring at more than 20% of sites.
- The impact of these visitor activities usually creates a combination of environmental and social issues.
- Pollution due to litter and dog fouling occurred most frequently.
- Trampling, soil erosion and the loss of wildlife habitats or species were the environmental only impacts'.

4.2.3 The impact of visitor activities was assessed for each of the local habitats: woodland, chalk downland/ grassland, other grassland habitats, heathland, arable, wetland and marshland, rivers and streams, coast and sea and formal gardens and parkland (it should be noted this includes large areas that are not internationally designated).

- 'Overall the impact of most visitor activities on local habitats was considered to be neutral. All habitats, except arable and coastal sites, recorded the positive impacts generated by guided walks, wildlife watching and photography.
- In terms of negative impacts, walking and cycling caused the majority of problems, particularly where visitors walked with dogs and cycled off marked tracks.
- Chalk downland was more sensitive to path erosion from walkers and horse riders than woodland. It also experienced more activities such as grass boarding, zorbing, and kite flying that could cause damage to plant life and aerial activities that could disturb wildlife.

[20] The fact that 2,018 residential dwellings will be provided as windfall identifies the need for robust policies to ensure no likely significant effects arise.
[21] Acorn Tourism Consulting Limited, 2012. South Downs National Park Visitor Survey 2012: Environment Element.

- Woodlands were less susceptible than other habitats to path erosion caused by walkers and horse riding but suffered disturbance to wildlife from most activities.
- Heathland was sensitive to erosion and wildlife disturbance from walkers, cyclists and horse riding.
- Disturbance to wildlife was the main problem reported for wetlands.
- Formal gardens experienced path erosion and sheep worrying from walkers with dogs.
- Issues specific to arable land were crop damage and erosion caused by motorised off-road activities.
- There was no negative impact reported on species by three quarters of sites (71%/52 sites), however where there was an impact it was most likely to affect plants (35%/12 sites) through trampling, birds (32%/11 sites) through general habitat disturbance or invertebrates such as butterflies (15%/5 sites). Where they occurred these impacts were spread across the Park and not related to any specific type of habitat. It is also important to note that alongside visitor presence, a range of variables can affect the presence of species including natural population changes, climate change and habitat management regimes'.

4.2.4 The consideration of potential recreational pressure effects on each internationally designated site relevant to this assessment is provided below. Background information regarding each internationally designated site is contained within Appendix A. The potential for adverse effects due to recreational pressure is primarily associated with the delivery of new residential development (especially in large quantities) in proximity to sensitive internationally designated sites.

4.2.5 Sites that have been identified as being particularly vulnerable to impacts from increases in recreational pressure are as follows:

- Chichester and Langstone Harbours SPA/ Ramsar;
- Pagham Harbour SPA/Ramsar site;
- Bat sites: The Mens SAC, Singleton and Cocking Tunnels SAC and Ebernoe Common SAC;
- Wealden Heaths Phase II SPA; and
- Ashdown Forest SPA/ SAC

4.2.6 Policies promoting new residential development and tourism could lead to likely significant effects if they were not delivered sensitively.

4.2.7 The following policies within the Local Plan have the potential to increase recreational pressure on the European sites:

- Strategic Policy SD25: Development Strategy sets a broad development strategy for settlements within the National Park (in as much as it identifies that development will be supported within these settlements in principle). This policy is expanded upon by Strategic Policy SD26: Supply of Homes which identifies a quantum of residential development within various settlements (Those settlements omitted from the list do not trigger impact pathways relating to recreational pressure due to their distance from sensitive European sites):
- Amblerley
- Binstead
- Buriton
- Bury
- Chawton
- Cheriton
- Cocking
- Coldwaltham
- Compton
- East Meon
- Fittleworth
- Funtington
- Graffham
- Greatham (Hampshire)

- Hambledon
- Kingston near Lewes
- Lavant (including East Lavant and Mid Lavant)
- Lewes
- Liss
- Lodsworth
- Lower and Upper Farringdon
- Midhurst
- Milland
- Northchapel
- Petersfield
- Petworth
- Rodmell
- Rogate
- Selbourne
- Singleton
- Sheet
- Slindon
- South Harting
- Stedham
- Steep
- Stroud
- Washington
- Watersfield
- West Ashling
- West Meon
- Strategic Policy SD20: Walking, Cycling and Equestrian Routes
- Strategic Policy SD23: Sustainable Tourism
- Strategic Policy SD33: Gypsies and Travellers and Travelling Showpeople
- Strategic Policy SD34: Sustaining the Local Economy

4.2.8 The following sections discuss how this pathway relates to each internationally designated site, based on current knowledge.

4.3 Ashdown Forest SPA and SAC

4.3.1 Ashdown Forest is located more than 12km from the SDNPA. Following visitor surveys and discussions between Natural England and relevant authorities in 2016 a zonal approach was discussed for new Local Plans. This established an inner zone of 400m to 7km where new residential development would be required to provide Suitable Alternative Natural Greenspace (SANG) and Strategic Access Management and Monitoring (SAMM) contributions and a 7km to broadly 9km outer zone where SAMM only would be required. As the SDNPA is located far beyond 9km, this impact pathway does not require further consideration within this HRA either alone or in combination with other projects or plans.

4.4 Solent European sites: Chichester and Langstone Harbours SPA/ Ramsar and Pagham Harbour SPA/ Ramsar site

4.4.1 The settlements of Lavant, Funtington and West Ashling are all located within 5.6km of this SPA/Ramsar site. In addition, policies that have potential to increase numbers of recreational visitors to this internationally designated site (such as those that encourage residential development and tourism) have the potential to have a likely significant effect upon it. These policies are:

- Strategic Policy SD23: Sustainable Tourism
- Strategic Policy SD25: Development Strategy
- Strategic Policy SD26: Supply of Homes
- Strategic Policy SD33: Gypsies and Travellers and Travelling Showpeople
- Strategic Policy SD34: Sustaining the Local Economy

4.4.2 Features for which the Solent European bird sites (meaning Chichester and Langstone Harbours SPA and Ramsar site and Portsmouth Harbour SPA and Ramsar site and Solent & Southampton Water SPA and Ramsar site) are designated have potential to be affected by increased recreational pressure.

4.4.3 Due to proximity, Chichester and Langstone Harbours SPA and Ramsar site and Solent Maritime SAC are the only Solent European sites that have potential for likely significant effects as a result of this Local Plan. As such, these are the only sites discussed further.

4.4.4 Chichester & Langstone Harbours have interest features (principally the wintering bird interest) that are likely to be vulnerable to recreational disturbance. Although recreational activity arising from the Local Plan alone would be unlikely to prove significant, it is likely to be significant when considered 'in combination' with that arising from the rest of the South Hampshire sub-region.

4.4.5 The Solent Recreation Mitigation Strategy (SRMS) established that disturbance levels within Chichester & Langstone Harbours SPA are generally high (particularly in Chichester Harbour). Water-based recreation causes disturbance in parts of the Harbour and encourages birds to move to the heads of the channels and smaller creeks where water depths are too shallow to allow boat movement. These are often areas favoured by the birds for other reasons: they are the areas where the intertidal mudflats are exposed for the longest periods, they provide shelter in times of storm, and they provide freshwater areas of importance for the birds. In these areas, disturbance is related more to walkers and their dogs passing along the shoreline. In some places, the footpaths along the channels are on the tops of flood defences, enhancing the potential for disturbance as the walker is silhouetted against the sky; elsewhere, the paths are partially concealed behind tall hedges. This has potential to cause disturbance to bird species for which the site is designated.

4.4.6 The Solent Forum project undertook a project to investigate recreational pressure issues and their mitigation[22] as a result of development within all the Solent authorities. Phase 1 of this project:

- Collated existing data on the distribution of housing and human activities around the Solent;
- Assessed stakeholder opinion of the importance of recreational disturbance on birds through a series of workshops and interviews;
- Collated data on bird distribution and abundance around the Solent; and
- Outlined the range of mitigation measures that could potentially minimise the impacts of increased recreational disturbance caused by increased housing in the Solent area.

4.4.7 Phase 2 of the project assessed the impact of current visitor numbers and activities on the survival rates of shorebirds throughout the Solent[23.] Visitor surveys were undertaken during 2009/10 at a number of locations around the harbours. In contrast to the previous study[56] most visitors were local in origin, with median distances travelled to points around the harbours ranging from 2.3-9.1km. A core catchment area for the Solent European sites has been identified at 5.6km.

4.4.8 At a strategic level it has been agreed that any development within 5.6km of the Solent European sites can address the effects of increased recreational pressure upon the European designated

[22] Stillman, R. A., Cox, J., Liley, D., Ravenscroft, N., Sharp, J. & Wells, M. (2009) Solent disturbance and mitigation project: Phase I report. Report to the Solent Forum

[23] Fearnley, H., Clarke, R. T. & Liley, D. (2010). The Solent Disturbance & Mitigation Project. Phase II - On-site visitor survey results from the Solent region. ©Solent Forum /Footprint Ecology.

sites via financial contributions per dwelling towards the Solent Recreation Mitigation Scheme and/ or by providing measures associated with development designated to avoid or mitigate any LSE.[24]

4.4.9 Medmerry Managed Realignment scheme is located in close proximity to the Solent European sites. Once habitats have become fully established, it is expected that the site will support features for which the site can be designated. As such the Medmerry extension will be subject to the same strategic level mitigation as afforded to the other Solent European sites.

4.4.10 The Local Plan includes Policy SD10: International Sites. The 5th point of this policy includes the text: *'Development proposals resulting in a net increase in residential units, within the Solent Coast Special Protection Area's (SPA) (Chichester & Langstone Harbours SPA, Portsmouth Harbour SPA and Solent & Southampton Water SPA) zone of influence shown on the Policies Map, defined as 5.6km from the boundary of these sites, may be permitted where 'in combination' effects of recreation on the Solent Coastal Special Protection Areas are satisfactorily mitigated through the provision of an appropriate financial contribution to the delivery of strategic mitigation. In the absence of a financial contribution toward mitigation, an appropriate assessment may be required to demonstrate that any 'in combination' negative effects can be avoided or can be satisfactorily mitigated through a developer-provided package of measures.'*

4.4.11 In 2010 work was completed by Arun District Council regarding visitor surveys for Pagham Harbour SPA. This helped inform the strategic approach to recreational management of the SPA as a result of new residential development within Arun. The strategic approach adopted by Arun Council as per Local Plan Policy ENV DM2 (Pagham Harbour). This requires all new residential development between 400m and 5km of the SPA to provide strategic access management measures and to provide or contribute to easily accessible new green spaces for recreation.

4.4.12 In summary, this work has identified that 8.7% of the visitors to the Arun sections of the SPA/Ramsar site come from within 500m, 49.7% come from within 5km, 52.9% come from within 6km and 57.4 % come from within 10km. Beyond 10km the visitors origins are very dispersed. This indicates that the largest single contribution to visits to the SPA comes from the 5-6km zone.

4.4.13 Chichester District Council commissioned Footprint Ecology to undertake a similar visitor survey on those parts of the SPA/Ramsar site that fell within The Local Plan area[25]. According to Table 14 on page 26 of that report approximately 53% of winter visitors and 76% of summer visitors to the western (Chichester district) parts of Pagham Harbour come from within the District (Selsey, Chichester City, Sidlesham, Lodsworth, Bosham, Mundham, Hunston, Emsworth/Southbourne and Midhurst). Three settlements (Selsey, Chichester and Sidlesham) make by far the greatest contribution to visitors to Pagham Harbour, contributing 48% of all winter visitors and 66% of all summer visitors. Of these three settlements, Selsey is responsible for the majority. Moreover, approximately 96% of 'visitors with dogs' (who are likely to have the greatest potential disturbance effect on SPA birds) live 'south of Chichester', emphasising the local catchment of the site. Policy 51 (Development and Disturbance of Birds in Pagham Harbour Special Protection Area) of the Chichester Local Plan identifies the core recreational catchment on the Chichester side of the harbour as 3.5km and states that net increases in residential development within that zone will be required to provide mitigation for the SPA/Ramsar site.

4.4.14 Table 14 of Cruickshanks & Lily (2012) lists three settlements that are identified to support new housing within the SDNPA area and from which people visit Pagham Harbour. These were Lewes, Coldwalthamand Midhurst. Lewes has been identified to provide 875 new houses within the SDNPA Local Plan, Coldwaltham is to provide 30 dwellings and Midhurst is to provide 175 dwellings. Cruickshanks & Lily (2012) identifies that 1% of summer visitors to Pagham Harbour SPA/Ramsar site came from Lewes, 1% of winter visitors came from Coldwaltham and that 3% of winter visitors came from Midhurst. However, Lewes is located more than 50km from the SPA/ Ramsar site while Coldwaltham and Midhurst are both located over 20km distant.

4.4.15 However, at its closest, Pagham Harbour SPA/ Ramsar site is located more than 8km from the SDNPA area, and more than that to the nearest settlement (i.e. far beyond the 3.5km catchment for Chichester Council and 5km form Arun Council). As such, due to the distances involved, recreational pressure resulting from the Local Plan can be screened out. In addition, Policy SD9: Biodiversity and Geodiversity states:

[24] If site specific mitigation is provided (i.e. not a contribution towards the SDMP), evidence of the effectiveness of the mitigation will need to be provided as will a separate provision for monitoring.
[25] Cruickshanks, K. & Liley, D. (2012). Pagham Harbour Visitor Surveys. Unpublished report by Footprint Ecology. Commissioned by Chichester District Council.

'1… a) International Sites, as shown on the Policies Map (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar Sites, or candidate and formally proposed versions of these designations):

i. Where development proposals are considered likely to have a significant effect on one or more international site(s), a Habitats Regulations Assessment (HRA) will be required.

ii. Development proposals that will result in any adverse effect on the integrity of any international site will be refused unless it can be demonstrated that: there are no alternatives to the proposal; there are imperative reasons of overriding public interest why the proposal should nonetheless proceed; and adequate compensatory provision is secured.'

4.4.16 SD9 and SD10 act as 'hook' policies within the Plan that provide protection both broadly and specifically for the Solent designated sites. As such this impact pathway can be screened out.

4.4.17 At the time of writing (September 2017) Bird Aware Solent (the initiative that is managing the strategic approach to managing increased recreational pressure upon the Solent designated sites) was in the process of preparing the final Solent Recreation Mitigation Strategy to replace the existing Interim Solent Recreation Mitigation Strategy. Similar to the Interim strategy, it is anticipated that this Final Strategy will be updated according to the results of site monitoring. As the South Downs National Park Authority is currently participating in the Interim Strategy, it is anticipated that the Authority will also participate in Final Strategy, thus ensuring that this impact pathway can be screened out in the future as the Solent Recreation Mitigation Strategy progresses.

4.5 Bat sites: The Mens SAC, Singleton and Cocking Tunnels SAC, and Ebernoe Common SAC

4.5.1 The majority of those visitors to the South Downs National Park who visit Ebernoe Common and The Mens do so during daylight hours. Therefore there is limited potential for conflicts between Park users and bats, although increased levels of off-road cyclists using high-powered headlamps at night to cycle in the National Park have been noted. Given the relatively low recreational use of the National Park at times when bats will be foraging, it is possible to conclude that the Local Plan is unlikely to lead to significant adverse effects on the bat interest of Ebernoe Common SAC or The Mens SAC through direct disturbance. Any individual proposals that are at risk of causing disturbance would be captured by the HRA requirement of Policy SD9: Biodiversity and Geodiversity and under the requirements of the first point of Policy SD10: International Sites.

4.5.2 Both Ebernoe Common SAC and The Mens SAC are also designated for their woodland. An increase in recreational pressure as a result of those Local Plan policies that encourage tourism or facilitate increased residential development could contribute to the degradation of sensitive woodland through trampling and nutrient enrichment and in extreme cases also result in disturbance of bat populations. It is noted that Strategic Policy SD23: Sustainable Tourism does not as much encourage tourism but ensures that tourism is sustainable (which by definition would not result in any likely significant effects). Additionally the Natural England Site Improvement Plans[26] for The Mens SAC and Ebernoe Common SAC do not identify recreational pressure as a particular concern. Lighting from human sources is identified as a potential issue that at least requires further investigation. A study was undertaken during 2015-16 to clarify existing light levels and whether these are likely to be affecting the bat populations. There are no specific proposals in the Local Plan that would result in increased lighting of these sites and any proposals that did come forward would be captured by the HRA requirement of Policy SD10: International Sites. As such, this impact pathway upon The Mens SAC and Ebernoe Common SAC can be screened out.

4.5.3 Policy SD20: Walking, Cycling and Equestrian Routes includes the development of the Chichester –Midhurst disused railway line as a proposal. As identified during the HRA of the National Park Management Plan this proposal has theoretical potential to impact adversely upon the barbastelle and Bechstein bat features of Singleton & Cocking Tunnels SAC. The inclusion of the tunnels in the route could affect its use by the bats that hibernate there and therefore could lead to an adverse effect. At present Singleton and Cocking Tunnels SAC are grilled to control human access. However paragraphs 6.17 and 6.18 of the supporting text to Policy SD20: Walking, Cycling and Equestrian Routes state that:

'6.17 In instances where the line passes in or close to designated wildlife sites or where a survey reveals protected species, regard must be had to relevant policies in the development plan

[26] Site Improvement Plans for the South East are available at the following link: http://publications.naturalengland.org.uk/category/6149691318206464 (accessed 23/06/15)

particularly policy SD9: Biodiversity and Geodiversity. A diversionary route may prove to be more appropriate.'

'6.18 Development of a recreational transport route within the Singleton and Cocking Tunnels SAC will not be permitted and this section is left out of the safeguarding of the Chichester to Midhurst railway line route.'

4.5.4 This text provides for explicit protection to the bat features of Singleton & Cocking Tunnels SAC from the development of the Chichester to Midhurst disused railway route, and thus that the Local Plan is unlikely to lead to significant adverse effects on Singleton and Cocking Tunnels SAC. The constraint imposed by the SAC will have to be a major factor in any feasibility study. If a proposal is developed that does affect these tunnels it will be captured by the project-level HRA requirement of Policy SD9 (Biodiversity and Geodiversity). It is therefore possible to conclude that the Local Plan itself will not result in an adverse effect on this SAC.

4.6 Heathland bird sites: Wealden Heaths Phase II SPA and Woolmer Forest SAC

4.6.1 There is a known potential for likely significant effects of housing development in particular on these sites, depending on the scale of development proposed. There has been multiple years of visitor survey to inform the Whitehill-Bordon project in East Hampshire district and these have identified that the SAC/SPA has a 'core catchment' of 5km (in that this is the zone within which the majority of visitors, particularly dog-walkers, to the SPA derive[27]).

4.6.2 These two sites are discussed together as Woolmer Forest SAC is entirely overlapped by the SPA. Although their interest features are not identical the heathlands of the SAC support the SPA bird interest. Measures to protect the SPA will therefore also protect the SAC.

4.6.3 The adverse effects of recreational pressure on the Wealden Heaths Phase II SPA were investigated and discussed in detail at the time the East Hampshire/South Downs National Park Local Plan Joint Core Strategy was prepared and is documented in its various iterations of HRA, with which Natural England concurred. It is therefore not repeated in this document. The Joint Core Strategy HRA concluded that, based on the levels of development expected within 5km of the SPA over the Strategy period (including that expected within Waverley district), no strategic mitigation solution was required provided that Whitehill-Bordon (responsible for the vast majority of new development within the 5km zone) mitigated for its own impacts at the project level. Joint Core Strategy policy (developed in agreement with Natural England and considered sound by the planning inspector at Examination) treats other new housing developments within 5km on a case-by-case basis in determining whether mitigation is required, with the decision as to the need for mitigation being based upon consideration of the scale of development and its proximity to the SPA.

4.6.4 Since the issue was already analysed and discussed in detail as part of the Joint Local Plan Examination, the same conclusions can apply to the National Park Local Plan provided the housing identified in the Local Plan falls within the quanta on which the Joint Core Strategy HRA is based.

4.6.5 The following South Downs National Park Local Plan policies all have potential to increase recreational pressure upon the SPA via an increase in residential development within 5km of the SPA and a general increase in tourism:

- Allocation Policy SD60: Land at Clements Close, Binsted (up to 12 dwellings)
- Allocation Policy SD61: New Barn Stables, The Street, Binsted (up to 1 pitch)
- Allocation Policy SD73: Land at Petersfield Road, Greatham (35 to 40 dwellings)
- Allocation Policy SD74: Land at Fern Farm, Greatham (4 permanent pitches)
- Allocation Policy SD75 Half Acre, Hawkley (3 permanent pitches)
- Allocation Policy SD88: Land at Ketchers Field, Selborne (5 to 6 dwellings)
- Strategic Policy SD20: Walking, Cycling and Equestrian Routes
- Strategic Policy SD23: Sustainable Tourism
- Strategic Policy SD25: Development Strategy
- Strategic Policy SD26: Supply of Homes

[27] For no part of the SPA do more than 30% of surveyed dog walkers live more than 5km away, and for some parts of the SPA such as Broxhead Common, over 90% of dog walkers lived within 4km. Non-dog walkers come from a more widespread area but the majority of visitors still live within 5km of the SPA.

- Strategic Policy SD33: Gypsies and Travellers and Travelling Showpeople
- Strategic Policy SD34: Sustaining the Local Economy

4.6.6 Policies SD26: Supply of Homes, SD25: Development Strategy, all define the approximate location of new housing within 5km of the SPA. Allocation Policies SD60, SD61, SD73, SD74, SD75 and SD88, are all specific housing allocations within 5km of the SPA. The following table summarises those settlements that are located within 5km of the Wealden Heaths Phase II SPA and which have been identified to provide new housing in the Local Plan.

Table 5: Settlements located within 5km of the Wealden Heaths Phase II SPA identified to provide residential development (see Strategic Policy SD26: Supply of Homes). .

Settlement	Closest Distance from SPA	Number of new dwellings outlined in Strategic Policy SD26: Supply of Homes
Binsted	3km	11
Greatham	Adjacent at its closest, 800m at its most distant	38
Liss and Liss Forest	Adjacent at its closest, 2.6km at its most distant	150
Milland	3.7km	Un-defined
Selborne	4km	6
Sheet	4.7km	31
Steep	4.6km	10

4.6.7 This is a total of at least 246[28] dwellings expected over the Local Plan period in settlements that lie within the 5km zone and within the South Downs National Park. However, from review of specific site allocations that are to provide the level of residential development within Binsted, Greatham, Liss, Milland, Selborne, Sheet and Steep, not all of these are located within the 5km zone. Policy SD89: Land at Pulens Lane, Sheet is identified to provide 30 to 32 dwellings, This site allocation is located 5.5km from the Wealden Heaths Phase II SPA, and Allocation Policy SD93: Land South of Church Road, Steep (allocating between 8 and 12 dwellings) is located at its closest 5.6km from the SPA. As such these two site allocations are located outside of the 5km core catchment zone for the SPA. The Plan will thus provide for 199 dwellings within the 5km core catchment zone. This is a reduction of 19 dwellings compared to that within the Preferred Options Local Plan. The presence of the 150 uncommitted dwellings in Liss was known and specifically identified and discussed at the time the East Hampshire District Local Plan: Joint Core Strategy HRA was undertaken and its impacts taken fully into account in forming the conclusions of that HRA. As such the delivery of the houses at Liss can be screened out on the basis that the National Park Local Plan is not making a new allocation but reflecting what has already been confirmed in the Joint Local Plan.

4.6.8 The latest analysis of expected net housing within 5km of Wealden Heaths Phase 2[29] is set out in the Waverley Local Plan HRA submitted to the Planning Inspectorate in 2016. This identified an expectation of c. 1,500 unmitigated dwellings to be delivered across the 5km catchment over the period 2013 to 2033; an increase in total housing stock that is less than 5% (and a net change in visitor pressure that is expected to be significantly less than 5%). This calculation allowed for the 150 dwellings at Liss and 88 new dwellings elsewhere within the 5km catchment of the National Park i.e. 238 dwellings. The scale of housing set out in the South Downs National Park Local Plan (including the 88 windfalls between 2014 and 2033) totals 287 dwellings (i.e. an extra 49 dwellings beyond that assumed in analyses up to this point). However, this does not materially change the conclusions expressed in the Waverley Local Plan HRA as the increase in housing stock remains below 5%. Therefore, the position agreed with Natural England on the back of this small expected change in housing stock and the low pressure to which the SPA is currently subjected remains valid: namely that a strategic 'Thames Basin Heaths-style' mitigation strategy, in which all net new dwellings must be mitigated as a matter of course, is not required for Wealden Heaths Phase 2.

[28] The previous iteration of the Plan provided for 218 new dwellings within 5km of the SPA.
[29] Excluding those which are already known to be mitigated due to their size and/or proximity to the SPA, such as those covered by the Hindhead Avoidance Strategy, Whitehill-Bordon and Lowsley Farm in East Hampshire

Rather a case-by-case assessment (and mitigation if required) of the larger, closer, development sites is considered to enable protection of the SPA[30].

4.6.9 To reflect this agreed position Policy SD10: International Sites of the SDNPA Local Plan Point 4 states that:

'… Development proposals resulting in a net increase in residential units within 5km of the boundary of the Wealden Heaths Phase II SPA will be required to submit a screening opinion to the Authority for a project-specific Habitat Regulations Assessment (HRA) which, in consultation with Natural England, will determine whether a likely significant effect on the integrity of the site will result. Likely significant effects will be assessed through the HRA and any requirement for mitigation identified'.

4.6.10 This will ensure that no adverse effect on the SPA from increased recreational pressures from increased housing will arise.

4.7 Calcareous grassland sites: Lewes Downs SAC, Castle Hill SAC and Butser Hill SAC

4.7.1 There is theoretical potential for likely significant effects on these sites by trampling, which in turn causes soil compaction and erosion. Walkers with dogs contribute to pressure on sites through nutrient enrichment via dog fouling and also have potential to cause greater disturbance to fauna as dogs are less likely to keep to marked footpaths and move more erratically. Cycling, motorcycle scrambling and off-road vehicle use can cause serious erosion, as well as disturbance to sensitive species. Whether these issues are matters of concern for species European sites depends on the circumstances on that site, including existing pressure, presence of antisocial behaviour, existing site management and factors such as topography and suitability of footpaths.

4.7.2 There have been several papers published that empirically demonstrate that damage to vegetation in a range of habitats can be caused by vehicles, walkers, horses and cyclists:

- Wilson & Seney (1994)[31] examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.
- Cole et al (1995a, b)[32] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks, but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.
- Cole (1995c)[33] conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trample weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier tramples caused a greater reduction in vegetation height than lighter tramples, but there was no difference in effect on cover.

[30] As a result of the Examination in Public of the Waverley Local Plan in summer 2017, that Council is currently looking at options for achieving a greater level of housing delivery than was set out in the submitted Local Plan. This includes options for additional growth within 5km of Wealden Heaths Phase 2 SPA. They will be discussing the implications of any additional growth with Natural England shortly, but if the increase does trigger the need for any further mitigation that will be a matter for Waverley Council to address and would not affect the conclusions of this report as it pertains to South Downs National Park.

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

[32] Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. Journal of Applied Ecology 32: 203-214

Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. Journal of Applied Ecology 32: 215-224

[33] Cole, D.N. 1995c. Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.

- Cole & Spildie (1998)[34] experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb[35] understorey and one with a low shrub understorey). Horse traffic was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance, but recovered rapidly. Higher trampling intensities caused more disturbance.

4.7.3 Recreational pressure could contribute to degradation of sensitive grassland habitats within the SACs, by fragmentation, trampling, or through nutrient enrichment. Dogs, rather than people, tend to be the cause of many management difficulties, notably by worrying grazing animals, and can cause eutrophication near paths. Nutrient-poor habitats such as heathland are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces[36.]

4.7.4 Part of Butser Hill SAC lies within the Queen Elizabeth Country Park, and is managed by Hampshire County Council. Butser Hill does have footpaths and public rights of way crossing it and has been subject to organised recreational events numerous times in the past (such as 'Butserfest' and various country fairs). This implies that while calcareous grassland can be damaged by repeated excessive recreational trampling over long periods of time, the grasslands of Butser Hill SAC are not considered to be particularly vulnerable to well-managed recreational pressure and activity, even when relatively large events are held. This was the conclusion of the HRA of the East Hampshire Local Plan; Joint Core Strategy HRA, with which Natural England concurred.

4.7.5 Castle Hill SAC is not noted to be vulnerable to increase in recreational pressure. The Brighton & Hove City Plan HRA confirmed that recreational pressure on this site was not a particular concern and that '*Castle Hill is managed as a National Nature Reserve and therefore increased recreation, if it did become an issue, could be managed accordingly*'[37]. This is reflected in the Natural England Site Improvement Plan which does not identify recreational pressure as being a concern or an issue targeted for further action. The main concerns noted on this site are not development related but are management issues: under-grazing and use of fertilisers.

4.7.6 As with Castle Hill SAC, the Lewes District Core Strategy HRA report[38] concluded that impacts upon Lewes Downs SAC as a result of increased recreational pressure resulting from new residential development could be screened out as the SAC is not currently vulnerable to recreational pressures. This issue was not queried at Examination. As such, this impact pathway can be screened out. The Site Improvement Plan for the SAC does not identify development-related increases in general recreational activity as a concern, but rather targets some instances of antisocial behaviour and identifies a commitment to '*Introduce measures to discourage public gatherings on sensitive grassland areas'*. The steep topography of much of the SAC is likely to naturally limit the scale and extent of recreational activity over much of the site.

4.7.7 It can be concluded that no likely significant effects will result upon the calcareous grassland European sites as a result of increased recreational pressure resulting from the SDNPA Local Plan.

4.8 Woodland sites: Duncton to Bignor Escarpment SAC, Kingley Vale SAC, East Hampshire Hangers SAC and Rook Cliff SAC

4.8.1 There is potential for likely significant effects on these sites. Escarpment woodlands are generally much less vulnerable to recreational activity (on foot or bicycle) than some other habitats such as heathland or chalk grassland since the physical topography generally minimizes the risk of 'off track' recreation as well as inherently limiting the number of people who use the site. There is some risk posed by nutrient enrichment through dog excrement if not collected. The total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard[39] estimated the total amounts of urine and faeces from dogs as 30,000 litres and 60 tonnes respectively. Nutrient-poor habitats such as heathland

[34] Cole, D.N., Spildie, D.R. 1998. Hiker, horse and llama trampling effects on native vegetation in Montana, USA. Journal of Environmental Management 53: 61-71
[35] A herbaceous flowering plant
[36] Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. The London Naturalist, 74, 77-82.
[37] HRA of the Proposed Modifications to the Brighton & Hove City Plan Part One (July 2014)
[38] http://www.lewes.gov.uk/Files/plan_2013_HRA.pdf?bcsi_scan_E956BCBE8ADBC89F=0&bcsi_scan_filename=plan_2013_HRA.pdf
[39] Barnard, A. (2003) Getting the Facts - Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. Countryside Recreation, 11, 16 - 19

are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces[40].

4.8.2 Visitor surveys undertaken by UE Associates for the East Hampshire Hangers SAC to support the Whitehill-Bordon development in East Hampshire indicated that it the access points surveyed for East Hampshire Hangers SAC were among the least frequented by visitors (compared to the other European sites surveyed such as Wealden Heaths SPA). Only 3% of the people included in the Whitehill & Bordon visitor survey visited East Hampshire Hangers SAC over the survey period. While parts of the Hangers are used by visitors, the steepness of the scarps provides an inherent limit on human activity while the absence of car parks limits the number of people (except from the immediate local area) present at any time. Sunken lanes also physically limit the extent of off-track activity. Levels of recreational use are relatively low on that SAC, such that there remains a '*sense of tranquillity, remoteness and space that results from the overall low incidence of human activity and absence of development*'[41].

4.8.3 Gradual track erosion is a potential issue within portions of these SACs. In East Hampshire Hangers, where erosion has been greatest on the track and lane sides the chalk and greensand is exposed in places with overhanging tree roots. This erosion appears to stem from a combination of vehicles, surface water and people. However, it is localised and gradual and there is no indication that it is leading to or likely to lead to an adverse effect on the integrity of the SAC within the foreseeable future. As such, this impact pathway is screened out upon these SACs. This is in line with the conclusion of the East Hampshire Local Plan Joint Core Strategy HRA which considered housing at Liss, Alton, Petersfield and other settlements within the catchment of the East Hampshire Hangers SAC but identified that due to a combination of low visitor numbers and the inherent nature of the SAC an adverse effect would not arise. Since the housing numbers proposed in the National Park Local Plan are in line with those considered in the Joint Core Strategy HRA this conclusion still stands.

4.8.4 Whist the Views About Management[42] document for Duncton to Bignor Escarpment SSSI identifies that '*Access to this site, and any recreational activities within, may also need to be managed.*' the Site Improvement Plan for Duncton to Bignor Escarpment SAC[43] does not identify any specific current requirement for access management improvements. The SAC is located in a rural area in isolation from any large settlement. Thirty new houses have been proposed at Coldwaltham located 3.8km from the SAC. In the previous iteration of the Plan this was set at 20 new dwellings. The next largest settlement within the SDNP is at Petworth, but this is 5km from the site. Moreover, Petworth is located in an area with many other alternative naturalistic areas that can be used for recreation, thus drawing people away from the SAC. Given the low population density around the SAC and the large amount of alternative locations available for recreational activity, it can be considered that the new housing identified within the SDNPA Local Plan will not result in likely significant effects upon the SAC.

4.8.5 Rook Clift SAC is also located in isolation from any large settlements. Two settlements within 5km of the SAC have been identified to provide housing at South Harting (13 dwellings) and Rogate (11 dwellings), but this only amounts to a total of 24 new houses[44]. Such a small number of dwellings will not result in a material change in recreational activity at the site. The Site Natural England Improvement Plan for Rook Clift SAC does not identify recreational pressure as a site vulnerability. No likely significant effects would result from increased recreational pressure as a result of the SDNPA Local Plan.

4.8.6 The HRA for the Chichester Local Plan: Key Policies Submission 2014-2029 screened out the presence of any impact pathways between the proposed 7,388 new dwellings identified within the Chichester Local Plan and Kingley Vale SAC, with the agreement of Natural England. The SDNPA Local Plan proposes approximately 20 new houses (Lavant) within 5km of Kingley Vale SAC; the closest is 2.8km from the site at Lavant (including Mid and East Lavant). The Site Natural England Improvement Plan for Kingley Vale does not identify recreational pressure as a site vulnerability. In addition the site is located in relative isolation from surrounding settlements. In addition, 20 new houses within 5km is considered to be a small number of dwellings that will not result in a material

[40] Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. The London Naturalist, 74, 77-82.
[41] East Hampshire District Council Landscape Character Assessment
[42] Natural England (2005) http://www.sssi.naturalengland.org.uk/Special/sssi/vam/VAM%201004050.pdf
[43] Natural England. (2014) Site Improvement Plan Duncton to Bignor Escarpment SAC http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&cad=rja&uact=8&ved=0CCoQFjAB&url=http%3A%2F%2Fpublications.naturalengland.org.uk%2Ffile%2F5912499729727488&ei=FBmMVYDtIc6N7AaLkZ2QCg&usg=AFQjCNEvg0fDhprTI95gH7Ofi8gAAIDsdA&bvm=bv.96782255,d.ZGU
[44] The previous iteration of the Plan 25 dwellings were provided within 5 km of the SAC.

change in recreational activity at the site. As such, recreational pressure as an impact pathway to this site resulting from the SDNPA Local Plan can be screened out.

4.8.7 None of the Natural England Site Improvement Plans for these four SACs identify recreational pressure as a concern.

4.9 Heathland/ bog sites: Woolmer Forest SAC and Shortheath Common SAC

4.9.1 Woolmer Forest is discussed above in the Heathland Bird Sites section (4.6) and does not need further discussion. There is potential for a likely significant effect on Shortheath Common SAC. The latest condition assessment of the site clearly indicates that recreation can and does have an effect on the habitats present and this is reflected in the Natural England Site Improvement Plan for the SAC. Off-road vehicle use of the Common already causes problems for the conservation of this SAC. Visitor surveys of Shortheath Common SAC undertaken by UE Associates for the Whitehill-Bordon development in East Hampshire (the largest nearby settlement) indicated that the recreational catchment for the Common is relatively restricted, with the median travel distance being less than 5km. The visitor survey data indicated that the majority of visitors to the European sites covered by the survey were dog walkers (58%), most of whom (68.8%) travelled by car and generally travelled less than 5km to reach the sites (67.8% of car users travelled less than 5km). Most of the remaining dog walkers travelled on foot and generally travelled less than 3km (87.9% of dog walkers travelling by foot travelled less than 3km).

4.9.2 Within the East Hampshire Joint Core Strategy, other than Whitehill & Bordon there are no settlements identified to provide significant new residential development within 5km of Shortheath Common SAC.

4.9.3 Within the SDNPA Local Plan the following settlements are identified to provide small amounts of new housing within 5km of the SAC: Policy SD23: Housing, Allocation Policy SD88: Land at Ketchers Field, Selborne Allocation Policy SD73: Land at Petersfield Road, Greatham and Strategic Policy SD22: Development Strategy provides for new residential dwelling within 5km of the SAC as follows: .

- Greatham (35 to 40 new dwellings), located 1.4km from the SAC
- Selbourne (6 new dwellings), located 3.6km from the SAC
- Binsted (12 new dwellings), located 3.7km from the SAC

4.9.4 This equates to a total of only 58[45] new dwellings within 5km of Shortheath Common SAC. The only other strategic provision for new residential dwellings within 5 km of the SAC is Whitehill & Bordon which is providing 2,725 dwellings and located outside of the National Park. This allocation will provide full avoidance measures for its contribution to increased recreational pressure and this was screened out in the East Hampshire Joint Core Strategy HRA as 'consuming its own smoke'. Notwithstanding that the SAC has theoretical potential to be vulnerable to increased recreational pressure, the provision of 58 new dwellings within 5 km of the SAC (the closest of which is more than 1km distant) is not a significant quantum of development and it is considered that this level of residential growth will have an imperceptible impact upon the SAC. As such this impact pathway can be screened out.

4.10 River Itchen SAC

4.10.1 Recreational pressure is not considered a pathway of particular concern for the River Itchen SAC as indicated by the Site Improvement Plan. This is confirmed by the HRAs for Local Plans surrounding the SAC which focus on water quality/nutrients, preservation of headwaters and in-river noise/vibration. It does not therefore require further discussion in this chapter.

4.11 Arun Valley SAC/SPA/Ramsar site

4.11.1 There is the potential for a likely significant effect on this SPA/Ramsar site via disturbance of wintering waterfowl. The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users, whereas the winter is the peak period for wildfowl use of the site. In addition, the consequences of disturbance at a population level may be reduced because birds are not breeding. However, winter activity can still cause important disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages, such that disturbance which results in abandonment of suitable feeding areas can have

[45] In the previous iteration of the Plan this was 48 new dwellings within 5km of the SAC.

severe consequences. Several empirical studies have, through correlative analysis, demonstrated that out-of-season (October-March) recreational activity can result in quantifiable disturbance:

- Tuite et al[46] found that during periods of high recreational activity, bird numbers at Llangorse Lake decreased by 30% over a time period correlating with an increase in recreational activity. During periods of low recreational activity, however, no such correlation was observed. In addition, all species were found to spend less time in their 'preferred zones' (the areas of the lake used most in the absence of recreational activity) as recreational intensity increased.
- Underhill et al[47] counted waterfowl and all disturbance events on 54 water bodies within the South West London Water bodies SPA and clearly correlated disturbance with a decrease in bird numbers at weekends in smaller sites and with the movement of birds within larger sites from disturbed to less disturbed areas.
- Evans & Warrington[48] found that on Sunday's total water bird numbers (including shoveler *Anas clypeata* and gadwall *Anas strepera*) were 19% higher on Stocker's Lake LNR in Hertfordshire, and attributed this to displacement of birds resulting from greater recreational activity on surrounding water bodies at weekends relative to week days. However, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.
- Tuite et al[49] used a large (379 site), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They found that shoveler was one of the most sensitive species to disturbance. The greatest impact on winter wildfowl numbers was associated with sailing/windsurfing and rowing.
- Pease et al[50] investigated the responses of seven species of dabbling ducks to a range of potential causes of disturbance, ranging from pedestrians to vehicle movements. They determined that walking and biking created greater disturbance than vehicles and that gadwall were among the most sensitive of the species studied.
- In a three-year study of wetland birds at the Stour and Orwell SPA, Ravenscroft[51] found that walkers, boats and dogs were the most regular source of disturbance. Despite this, the greatest responses came from relatively infrequent events, such as gunshots and aircraft noise. Birds seemed to habituate to frequent 'benign' events such as vehicles, sailing and horses, but there was evidence that apparent habituation to more disruptive events related to reduced bird numbers – i.e. birds were avoiding the most frequently disturbed areas. Disturbance was greatest at high tide and on the Orwell, but birds on the Stour showed greatest sensitivity.

4.11.2 However the outcomes of many of these studies need to be treated with care. For instance, the effect of disturbance is not necessarily correlated with the impact of disturbance, i.e. the most easily disturbed species are not necessarily those that will suffer the greatest impacts. It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain (possibly due to an absence of alternative sites) and thus suffer greater impacts on their population[52]. A literature review undertaken for the RSPB[53] also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts of future recreational pressure on European sites.

4.11.3 Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent,

[46] Tuite, C. H., Owen, M. & Paynter, D. 1983. Interaction between wildfowl and recreation at Llangorse Lake and Talybont Reservoir, South Wales. *Wildfowl* 34: 48-63

[47] Underhill, M.C. *et al.* 1993. *Use of Waterbodies in South West London by Waterfowl. An Investigation of the Factors Affecting Distribution, Abundance and Community Structure.* Report to Thames Water Utilities Ltd. and English Nature. Wetlands Advisory Service, Slimbridge

[48] 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

[49] 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

[50] Pease, M.L., Rose, R.K. & Butler, M.J. 2005. Effects of human disturbances on the behaviour of wintering ducks. *Wildlife Society Bulletin* 33 (1): 103-112.

[51] Ravenscroft, N. (2005) Pilot study into disturbance of waders and wildfowl on the Stour-Orwell SPA: analysis of 2004/05 data. Era report 44, Report to Suffolk Coast & Heaths Unit.

[52] Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation,* **97**, 265-268

[53] Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.

4.11.4 The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.

4.11.5 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 partly because one of the most potentially sensitive parts of the SPA (Amberley Wild Brooks SSSI) is managed by the RSPB but unlike many other RSPB reserves, recreational visitors are not encouraged 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.

4.11.6 The following settlements that have been identified to provide new residential development within the SDNPA Local Plan within close proximity (5km) to the Arun Valley site are as follows:

- Amberley (6 new dwellings proposed), located adjacent to the site
- Coldwaltham (30[54] new dwellings proposed), located adjacent to the site
- Watersfield (no specific number of dwellings but it is reasonable to assume small scale windfall of low single figures), located 480m from the site
- Bury (6 new dwellings proposed), located 1km from the site
- Fittleworth (6 new dwellings proposed), located 4km from the site
- Washington (no specific number of dwellings mentioned but it is reasonable to assume single figures), located 7km from the site

4.11.7 This equates to a total of c. 48 new dwellings proposed within the Local Plan[55]. Given that recreational pressure is not identified as a specific issue in the Site Improvement Plan, such a small number of dwellings will not result in a material change in recreational activity at the site. The Local Plan for Arun (a district located within 1.5km of the SPA) does not identify any new housing within 5km of Arun Valley SAC, SPA and Ramsar site; the emerging Horsham District Planning Framework (the SPA being situated in Horsham district) does not identify any specific locations for housing within 5km of the designated site. As such, this impact pathway upon this site can be screened out, both alone and in combination.

4.12 Discussion

4.12.1 In addition to the points already discussed, the SDNP Partnership Management Plan (PMP) contains policies that provide for the protection of internationally designated sites. These policies indicate the importance of recreational impacts and their management in the future direction of the Park. The HRA of the PMP identified that future monitoring and collaboration with local authorities will ensure that effects of the PMP will be regulated in the future. The policies that could potentially result in an effect are balanced by both an emphasis on appropriate and sustainable tourism and an overall commitment throughout the PMP to conserve and enhance habitats. There are also a series of policies within the PMP that would serve to ensure that such access and tourism opportunities would be delivered in such a way that no likely significant effects will arise as a result of these broad aspirations. For example:

- Policy 4 seeks to create more, bigger, better-managed and connected areas of habitat in and around the National Park, which deliver multiple benefits for people and wildlife.
- Policy 5 aims to conserve and enhance populations of priority species in and around the National Park, delivering targeted action where required.
- Policy 16 promotes engagement with dog walkers to encourage responsible behaviour, especially around livestock and ground nesting birds.
- Policy 41 sets out a commitment to influence visitor behaviour in order to reduce impacts on the special qualities in and around the National Park.
- Policy 44 sets out a commitment to support tourism providers in developing sustainable business practices.

[54] In the previous iteration of the Plan this was 20 new dwellings within 5km of the SAC, as such there is an increase of 10 dwellings to be provided within 5 km of the SAC
[55] Compared to 45-50 dwellings in the preferred options plan

4.12.2 Moreover, the background wording in the PMP indicates that protection and enhancement of the semi-natural habitats of the South Downs will be undertaken via close working relationships with surrounding authorities: '*It is clear that in order to create more resilient ecosystems, habitats will need to be better managed, increased in size and joined up'*. Joined up thinking is taking place through a number of partnership initiatives for example:

'*South Downs Forestry and Woodland Partnership:*

The South Downs Forestry and Woodland Partnership project aims to bring more woodland into active management, improving its' biodiversity and ensuring its' future contribution to the National Park's landscapes. The project will give particular emphasis to the sustainable management of ancient woodland and restoring the ecological value of Planted Ancient Woodland (PAWS).

This partnership brings together landowners, land managers and contractors to develop and respond to markets and business opportunities from wood- fuel to sustainable construction. It pools the collective effort of the key partners; the Forestry Commission, Woodland Trust, Local Authorities, Wildlife Trusts and the South Downs National Park Authority'.

5 Air Quality

5.1 Introduction

5.1.1 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 not significant*"[56]. This is shown in Figure 3 below. This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected Local Plan policies. European sites not discussed in the following section do not lie within 200m of any significant roads or (in the case of Singleton and Cocking Tunnels SAC) are not vulnerable to air quality/atmospheric nitrogen deposition.

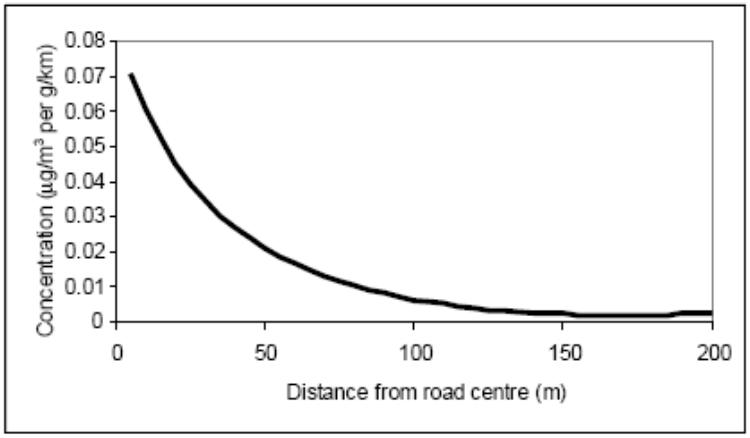


Figure 3 Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT)

5.1.2 The consideration of potential adverse effects on each European site from degradation in air quality relevant to this assessment is provided below. Background information regarding each European site is contained within **Appendix A**.

5.2 Likely Significant Effects

5.2.1 Singleton and Cocking Tunnels SAC, Arun Valley SAC/SPA/Ramsar site and Pevensey Levels SAC/Ramsar site are not considered to be air quality sensitive due to the nature of their interest features and the factors that influence the ability of those sites to support those interest features. Rook Clift SAC, Emer Bog SAC and Castle Hill SAC are remote sites that do not lie within 200m of any roads that would constitute journey to work routes for residents of the National Park. The Solent Maritime SAC and Chichester & Langstone Harbours SPA/Ramsar site are relatively remote from the main population centres of the National Park and the vast majority of both sites are more than 200m from significant roads. Where the sites do lie within 200m of a significant road (i.e. briefly adjacent to the A259 south-west of Chichester) the only SAC habitats present are intertidal mudflat and small amounts of saltmarsh. There is no nitrogen critical load for intertidal mudflat and the critical load for saltmarsh is derived from studies that were not particularly realistic[57]; ultimately, APIS itself states that '*Overall, N deposition* [from the atmosphere] *is likely to be of low importance for these systems as the inputs are probably significantly below the large nutrient loadings from river and tidal inputs*'[58]. In other words, the key to protecting saltmarshes, particularly in an area like the Solent, is to focus on controlling the vastly larger nitrogen inputs from wastewater treatment works and agricultural runoff. Inputs from rivers (sewage treatment works etc.) are discussed in Chapter 6. It is considered for all the reasons set out above that there will be no likely significant effect on the Solent Maritime SAC or Chichester & Langstone Harbours SPA from atmospheric nitrogen deposition.

5.2.2 Previous iterations of the Local Plan HRA in 2015 and spring 2017 had identified that to fully investigate effects on the various remaining air quality-sensitive European sites within and surrounding the South Downs National Park detailed traffic modelling and air quality calculations

[56] www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf
[57] This is acknowledged on the APIS website, where it states that '… *the N addition experiments that have been undertaken have neither used very realistic N doses nor input methods i.e. they have relied on a single large application more representative of agricultural discharge*'. APIS website [accessed 21/05/16]: http://www.apis.ac.uk/node/968
[58] APIS website [accessed 21/05/16]: http://www.apis.ac.uk/node/968

were required. As such, for the sites discussed below a conclusion of 'no likely significant effect' could not be reached. Therefore the detailed transport and air quality modelling results are presented in this report as an 'appropriate assessment' in order to distinguish it from earlier stages of the HRA process.

5.3 Appropriate Assessment: Air Quality

5.3.1 This section presents the interpretation of the air quality calculations undertaken for each link. The nature of the transport and air quality calculations undertaken for this HRA means that they are inherently 'in combination' with growth in surrounding authorities as it would not otherwise be possible to generate the future forecasts. They are therefore compliant with the Conservation of Habitats and Species Regulations 2010 (as amended). Rather than scrutinise the contribution of the Local Plan separately from the general change in NOx concentrations and nitrogen deposition rates expected over the plan period this analysis therefore proceeds immediately to consideration of the Do Something air quality compared with the 2017 Base case i.e. the 'in combination' analysis. It does however include discussion of the difference between Do Nothing and Do Something scenarios as these single out the role of the South Downs Local Plan in the 'in combination' assessment.

5.3.2 To support the Local Plan HRA, air quality impact assessment and ecological interpretation has been undertaken to determine if the level of development provided in the Local Plan would result in adverse effects on the integrity of the following European designated sites when considered in combination with growth arising from other local authorities:

- River Itchen SAC
- Butser Hill SAC
- Kingley Vale SAC
- Thursley, Ash, Pirbright and Chobham Commons SAC/ Thursley, Hankley and Frensham Commons SPA
- Woolmer Forest SAC/ Woolmer Forest SAC/ Wealden Heaths Phase II SPA
- Ebernoe Common SAC
- The Mens SAC
- Ducton to Bignor Escarpment SAC
- Lewes Downs SAC; and
- Ashdown Forest SAC/SPA (details provided in an Addendum to the Local Plan HRA)

5.3.3 All links were modelled specifically for this project, except for Lewes Downs SAC, which was modelled for the Lewes Joint Core Strategy HRA. Appendix C outlines the technical results of the air quality calculations upon the above European designated sites. Ashdown Forest is addressed in a specific addendum to the HRA also included in Appendix C.

5.3.4 The analyses are summarised in the following paragraphs along with the ecological assessment of the modelled changes to air quality. The discussion below focusses on NOx concentrations and their primary mechanism of action, nitrogen deposition. Acid deposition rates were calculated and are presented in Appendix C. However, it can be seen that for European sites in (or to the west of) the National Park, acid deposition rates are expected to remain relatively static over the period to 2033, with or without the Local Plan. For Ashdown Forest, acid deposition rates for all transects on all modelled links are expected to improve over the plan period and the contribution of the South Downs Local Plan to any retardation of that improvement is zero, in that any contribution is too small to show in the model. Acid deposition is therefore not discussed further in this document. Although vehicles do contribute to acid deposition by virtue of contributing to nitrogen deposition they are not a significant source of acid in this case. Acid deposition is therefore not discussed further.

Link 1 - B3335 at River Itchen SAC

5.3.5 At its closest, the River Itchen SAC is 40m from the B3335. Appendix C shows that the baseline NOx concentrations at Link 1 are currently substantially below the 30 μgm^{-3} general Critical Level for vegetation (at 17.7 μgm^{-3}). This means that combustion (e.g. NOx from vehicle exhausts) is not a significant source of nitrogen in this area, probably due to the rural nature of the road and the low traffic flow. The calculations show that under the DS scenario (i.e. taking account of all expected growth balanced against forecast improvements in emissions factors) NOx concentrations at the

roadside are expected to improve further (by c. 3 μgm^{-3}), notwithstanding the expected small growth in vehicle flows. The additional vehicle flows on this rural minor road as a result of the South Downs Local Plan (DS compared with DN) are sufficiently small that they do not retard this level of improvement.

5.3.6 The baseline nitrogen deposition rate at this location is above the proxy Critical Load for the supporting habitats of the southern damselfly. Since roadside NOx concentrations are so low this indicates that the main source of atmospheric nitrogen in this grid square does not stem from local road sources but likely other contributing factors such as ammonia derived from livestock and fertiliser. As with NOx, there is forecast to be a net improvement in nitrogen deposition rates over the Local Plan period notwithstanding the expected growth in traffic from all sources (DN compared with Base), and since the road contributes a small amount of the nitrogen deposited in this grid square, the Local Plan growth does not retard this improvement (DS compared with DN). As such, it can be concluded that no adverse effect upon the River Itchen SAC will result from development provided by the Local Plan 'in combination' with growth from other sources.

Link 2 - A3 at Butser Hill SAC

5.3.7 At its closest, Butser Hill SAC is 23m from the A3. The air quality calculations provided in Appendix C show that the baseline NOx concentrations are above the 30 μgm^{-3} general Critical Level for vegetation for a distance of approximately 30m into the SAC, due to the commensurately higher existing vehicle flows on this link compared to the B3335. Under the DN scenario, concentrations are forecast to reduce to below the critical level by 2033 due to changes in vehicle emissions, notwithstanding the projected increase in traffic on the road. The DS scenario shows that the Local Plan has an essentially neutral impact as the change in AADT due to the change in flows as a result of the Local Plan being small. This is probably due to the distance of the population centres in South Downs National Park from this part of the A3.

5.3.8 The designated habitats for Butser Hill SAC are coniferous (yew) woodland and calcareous grassland. The lowest nitrogen Critical Load for these is 10kg/N/ha/yr, and as such the baseline for nitrogen deposition is currently considerably above the Critical Load. Under both the DN and DS scenarios nitrogen deposition, while remaining above the critical load, is forecast to reduce by up to c. 2 kgN/ha/yr and, for the reasons already given regarding NOx concentrations, Local Plan growth does not retard this improvement. It can therefore be concluded that no adverse effect upon Butser Hill SAC will result from development provided by the Local Plan in combination with other plans and projects.

5.3.9 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 3 - B2141 at Kingley Vale SAC

5.3.10 At its closest Kingley Vale SAC is 125m from the B2141. Given the distance from the road and its minor nature, NOx concentrations within the SAC are unsurprisingly currently well below the critical level and are forecast to reduce further up to 2033. The DS scenario (i.e. taking account of development identified within the Plan) is forecast to retard this improvement very slightly (by 0.1 μgm^{-3}) within the 10m belt of the SAC closest to the road but the NOx concentrations will remain well below the critical level.

5.3.11 The baseline nitrogen deposition rates are well above the Critical Load for the designated woodland and grassland habitats of the SAC. However, since NOx concentrations are so low, the elevated nitrogen deposition is not attributable to the local road. The elevated deposition rates could be the result of other sources of atmospheric nitrogen (such as ammonia from agriculture) or of other sources of NOx elsewhere in the grid square which do not overlap with the measured transect. Nitrogen deposition rates are forecast to reduce over the period to 2033 and the Local Plan growth is not expected to retard that improvement. As such, it can be concluded that no adverse effect upon the Kingley Vale SAC will result from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.12 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 4 - A287 at Thursley, Ash, Pirbright and Chobham SAC and Thursley, Hankley and Frensham Commons SPA

5.3.13 These two designated sites are discussed together as they are geographically coincident at this location and the SPA interest features are associated with the main habitats for which the SAC is designated. At their closest these sites are located adjacent to the A287. Appendix C has modelled 2 transects at this location. 'Thursley1' is to the east of the A287, whilst 'Thursley 2' is to the west of the A287. Appendix C shows that in both directions the baseline NOx concentrations are below the Critical Level for vegetation and under the DN scenario are expected to decrease further over the period to 2033. The contribution of the Local Plan (DS compared to DN) is not forecast to retard this improvement.

5.3.14 The SAC is designated for its mires and wet and dry heathland; these all have minimum nitrogen Critical Loads of 10 kg/N/ha/yr. On both transects the current baseline nitrogen deposition is approximately 50% above the Critical Load, although since NOx concentrations are relatively low the A287 is not the primary source of nitrogen even within 200m of the roadside. The DN scenario demonstrates a net expected improvement to 2033, of up to 1.9 kgN/ha/yr. This is due to reductions in background deposition rates, notwithstanding the expected growth in traffic on this road. The Local Plan (DS compared with DN) does not impede this improvement. As such, it can be concluded that no adverse effect upon the SAC and SPA will result from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.15 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 5 - A3 at Thursley, Ash, Pirbright and Chobham SAC / Thursley, Hankley and Frensham Commons SPA

5.3.16 At its closest, Thursley, Ash, Pirbright and Chobham SAC / Thursley, Hankley and Frensham Commons SPA are located adjacent to the A3. Appendix C models two transects at this location. 'Thursley1' is to the south of the A3, whilst 'Thursley 2' is to the north of the A3. Appendix C shows that along both transects the baseline NOx concentrations are considerably above the Critical Level for vegetation, which is unsurprising given the high traffic flows on the A3. NOx concentrations are highest (94.6 μgm^{-3}) immediately adjacent to the road on transect 'Thursley 1'. Modelling indicates that due to expected improvements in vehicle emissions the 2033 scenario without the Local Plan (DN) predicts NOx concentrations to improve considerably, although they will still exceed the critical level up to 20m from the roadside. Taking the South Downs Local Plan into account (the DS scenario) still results in a substantial improvement but the improvement is retarded by up to 3.3 μgm^{-3}. However, at no point on either transect will the Local Plan growth result in an exceedance of the critical level where this would not otherwise occur. Since the ecologically significant role of NOx is as a source of nitrogen it is necessary to consider what effect this may have on nitrogen deposition rates.

5.3.17 The SAC is designated for its mires and wet and dry heathland habitat all of which have a nitrogen Critical Load of 10 kg/N/ha/yr. Unsurprisingly, on both transects the baseline nitrogen deposition is above the Critical Load. As for NOx, the DN scenario demonstrates a forecast substantial improvement in nitrogen deposition rates of up to 3 kg/N/ha/yr due to improvements in background deposition rates and vehicle emissions factors, notwithstanding the expected growth in traffic on the A3 over the same period. For both transects the DS scenario (i.e. the South Downs Local Plan growth) impedes this improvement slightly, with the greatest impedance being within 5m of the roadside where the forecast improvement is predicted to reduce by up to 0.14kgN/ha/yr. This means the difference at the roadside between an improvement of 3 kgN/ha/yr and an improvement of 2.86 kgN/ha/yr; a difference that is not ecologically meaningful because the response of vegetation to small-scale changes in nitrogen deposition at fairly high background deposition rates is very limited. For example, data on dose response relationships in lowland heathland[59] indicate that at deposition rates of c. 15kgN/ha/yr (such as is expected within 200m of the A3 by 2033) an increase of c. 1.3kgN/ha/yr (ten times that which will result due to the South Downs Local Plan) would be required to lose one species from the sward. Since the overall trend to 2033 is expected to be a positive one and will not be retarded to an ecologically significant extent by the South Downs Local Plan, there is thus not considered to be an adverse effect in combination with growth arising from surrounding authorities.

[59] Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & Stevens, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

5.3.18 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

5.3.19 However, notwithstanding the conclusion of no adverse effect, surrounding local authorities have included provisions within their Local Plan documents to further provide improvements in air quality as follows:

- The 2016 HRA undertaken of the Waverley Borough Council Local Plan Part 1: Strategic Policies and Sites. Pre-Submission Draft (July 2016) states:

  '*The Council will work with partners to consider the best way to monitor changes in air quality across the Borough, and on European sites … This would include long term monitoring of the main roads that fall within 200m of the … Wealden Heaths Phase I and Wealden Heaths Phase II SPA…. If air quality was found not to improve then further protective measures would need to be devised.*'

- The 2012 HRA of the East Hampshire Joint Core Strategy states:

  '… the Council and the National Park Authority will need to explore with other local authorities (e.g. Waverley Borough Council) a framework for undertaking air quality monitoring along the main roads that traverse the Wealden Heaths. The monitoring is required before and for a number of years after the introduction of sustainable transport measures, such that further measures can be devised if air quality does not improve'. … 'While not mitigation, monitoring is an essential factor when dealing with an issue such as air quality, since it will enable the effectiveness of air quality improvement measures to be evaluated and amended.'

5.3.20 Since the background NOx concentrations and nitrogen deposition rates are so high and are likely to remain above the critical level and load by 2033 notwithstanding projected improvements, and to bring the South Downs Local Plan into line with neighbouring authorities, it has been recommended that the SDNPA Local Plan includes for similar provision of working with neighbouring authorities (such as East Hampshire and Waverley) and relevant agencies to monitor air quality levels along the A3 corridor within the Wealden Heaths Phase 2 and Thursley, Hankley & Frensham Commons (Wealden Heaths Phase 1) to track the projected improvements in air quality and enable the introduction of any further measures (beyond those already identified in policy) to assist in delivery of the projected improving trend. The manner in which this has been reflected in the Local Plan is discussed in the summary at the end of this Chapter.

Link 6 - A325 at Woolmer Forest SAC/ Wealden Heaths Phase II SPA

5.3.21 These two designated sites are discussed together as they are geographically coincident at this location and since the SPA interest features are associated with the habitats for which the SAC is designated. Woolmer Forest SAC and the Wealden Heaths Phase II SPA are located adjacent to the A325. Appendix C shows that the baseline NOx concentrations at Link 6 are slightly above the Critical Level for vegetation immediately adjacent to the roadside but below the critical level beyond 5m from the road. It also shows that under the DN scenario concentrations are expected to fall by a minimum of 13.4 μgm^{-3} (i.e. reducing to 24.8 μgm^{-3} adjacent to the road) as a result of improved vehicle emissions by 2033. The DS scenario (i.e. Local Plan growth) is not forecast to retard this improvement.

5.3.22 The SAC is designated for its acidic pools, mires and bogs including peat depressions, and dry and wet heathland. Table 4 identifies that the most sensitive habitat is the acidic pools which has a Critical Load for nitrogen of 3 KgN/ha/yr; however, for the remaining habitats the Critical Load is 10 KgN/ha/yr and it is these latter habitats that are within 200m of the roadside. The baseline nitrogen deposition rate at this link is currently above the critical load (being up to 17.51 KgN/ha/yr). Under the DN scenario nitrogen deposition rates are forecast to improve considerably (i.e. by up to c. 2 kg/N//ha/yr) notwithstanding traffic growth over the same period, although they will remain above the critical load. The DS scenario (i.e. with the South Downs Local Plan) is not forecast to retard this improvement except within 5m of the roadside where a nominal change of 0.01 kgN//ha/yr is forecast. This equates to 0.1% of the critical load and is a sufficiently small amount (equivalent to 1 milligram deposited per square metre, spread over a year[60]) that it is ecologically insignificant and no retardation of improvement would occur. As such, it can be concluded that no adverse effect upon the SAC and SPA will result from development provided by the Local Plan 'in combination' with growth from other sources.

[60] For comparison, a teaspoon of salt typically weighs 5000-6000 milligrams and a pinch of salt (c. 1/16th of a teaspoon) weighs roughly 300 milligrams

5.3.23 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 7 - A3 at Woolmer Forest SAC/ Wealden Heaths Phase II SPA

5.3.24 At its closest Woolmer Forest SAC and Wealden Heaths Phase II SPA are located adjacent to the A3. Appendix C provides the air quality calculations at this location. Although the numbers are different the trends are as per the A3 within 200m of Thursley, Hankley & Frensham Commons SPA. In summary, the baseline NOx concentrations substantially exceed the critical level up to 40m from the roadside but these are expected to fall below the critical level by 2033 even allowing for growth in traffic on the A3. With the South Downs Local Plan in place there will still be a considerable improvement but it is forecast to be up to 2.1 μgm^{-3} less than would be the case without the Local Plan. Since the ecologically significant role of NOx is as a source of nitrogen it is necessary to consider what effect this may have on nitrogen deposition rates.

5.3.25 The current baseline nitrogen deposition at this link is well above the Critical Load of 10KgN/ha/yr (being up to 19.36 KgN/ha/yr). Under the DN scenario considerable nitrogen deposition improvements are seen (by up to 2.90 kg/N//ha/yr). Whilst the DS scenario does retard this improvement along the length of the modelled transects, this is not considered to be ecologically significant being a maximum of 0.09 kgN/ha/yr and likely to be within the normal limits of annual variation in deposition rates. This is a sufficiently small amount (equivalent to 9 milligrams deposited per square metre, spread over a year[61]) that it is ecologically insignificant and no retardation of improvement would occur. As such, no adverse effect upon the SAC and SPA will result from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.26 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

5.3.27 However, as with Link 5 (also on the A3), it is considered that baseline NOx concentrations and nitrogen deposition rates are sufficiently high at the roadside that the SDNPA Local Plan makes provision to work with neighbouring authorities (such as East Hampshire and Waverley) and relevant agencies to monitor air quality levels along the A3 corridor within the Wealden Heaths Phase 2 and Thursley, Hankley & Frensham Commons (Wealden Heaths Phase 1) to track the projected improvements in air quality and enable the introduction of any further measures (beyond those already identified in policy) to assist in delivery of the projected improving trend. The manner in which this has been reflected in the Local Plan is discussed in the summary at the end of this Chapter.

Link 8 - A283 at Ebernoe Common SAC

5.3.28 At its closest, Ebernoe Common SAC is adjacent to the A283. Appendix C shows that the baseline NOx concentrations at Link 8 are below the general Critical Level for vegetation, probably due to the rural nature of this road link and thus the low vehicle flows. Under the DN scenario (growth without the South Downs Local Plan), these concentrations are forecast to improve by up to 6.4 μgm^{-3}. Under the DS scenario (with the South Downs Local Plan), this improvement is forecast to be retarded slightly by up to 0.3 μgm^{-3} within 30m of the road but they will remain well below the critical level.

5.3.29 The designated habitat for Ebernoe Common SAC is deciduous woodland, which has a Critical Load of 10 kgN/ha/yr, and as such the baseline for nitrogen deposition is currently above this Critical Load (being c. 22 kgN/ha/yr throughout the modelled transect). The DN scenario forecasts that this should reduce by up to 2.72 kgN/ha/yr by 2033, due to improvements in emissions factors and background nitrogen deposition rates. The DS scenario retards this improvement slightly within 15m of the roadside, but only by an ecologically insignificant 0.01 kgN/ha/yr. It can therefore be concluded that no adverse effect upon Ebernoe Common SAC will occur from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.30 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air

[61] For comparison, a teaspoon of salt typically weighs 5000-6000 milligrams and a pinch of salt (c. 1/16th of a teaspoon) weighs roughly 300 milligrams

Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 9 - A272 at The Mens SAC

5.3.31 At its closest The Mens SAC is located adjacent to the A272. Appendix C shows that the baseline for NOx concentrations at Link 9 is below the Critical Level for vegetation as a result of rural location and low traffic flows. It also shows that under the DN scenario this is forecast to improve by up to 6.4 μgm^{-3} by 2033. The DS scenario does retard this improvement of NOx concentrations by at worst 1.3 μgm^{-3} but in all instances NOx concentrations will remain well below the critical level.

5.3.32 The designated habitat for The Mens SAC is woodland. This habitat has a Critical Load of 10 kg/N/ha/yr, and as such the baseline nitrogen deposition is above this Critical Load (being approximately 26 kg/N/ha/yr throughout the modelled transect). However, the fact that nitrogen deposition rates barely change along the modelled transect illustrates the negligible role that NOx from the road has on nitrogen deposition in this case. Under the DN scenario nitrogen deposition rates are forecast to reduce by up to 3.13 kg/N/ha/yr due to improvements in background deposition notwithstanding the increase in traffic flows on the road. The DS scenario indicates that with the South Downs Local Plan in place this improvement will be inhibited but, given the small role played by the road in nitrogen deposition at this location, only by a very small amount adjacent to the road (0.07 kg/N/ha/yr). This is well within the normal limits of natural annual variation in nitrogen deposition rates and is not considered to be ecologically significant. It can therefore be concluded that no adverse effect upon The Mens SAC will result from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.33 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Link 10 - A285 at Ducton to Bignor Escarpment SAC

5.3.34 At its closest, Ducton to Bignor Escarpment SAC is adjacent to the A285. Appendix C shows that the baseline NOx concentrations at Link 10 are below the general Critical Level for vegetation, probably attributable to the rural location and low flows on this road. Under the DN scenario NOx concentrations are forecast to fall by up to 5.8 μgm^{-3} by 2033. Under the DS scenario (including the South Downs Local Plan), this improvement is retarded slightly by 0.1 μgm^{-3} within 10m of the roadside but concentrations will remain well below the critical level.

5.3.35 The designated habitat for Ducton to Bignor Escarpment SAC is woodland, which has a Critical Load of 10 kgN/ha/yr. As such the baseline for nitrogen deposition is considerably above this Critical Load (being up to 22.66 kg/N/ha/yr adjacent to the road). The deposition rate differs little between the roadside and 125m from the roadside, illustrating that NOx from the local road is not a significant source of nitrogen. Under the DN scenario the forecast improvement in nitrogen deposition rates will be up to 2.72 kgN/ha/yr. The DS scenario retards this improvement slightly, but by an ecologically insignificant 0.01kgN/ha/yr and only immediately adjacent to the road. Beyond this distance, the DS scenario does not retard the improvement in nitrogen deposition. As the retardation is only very small and is not significant, it can be concluded that no adverse effect upon the SAC will occur from development provided by the Local Plan 'in combination' with growth from other sources.

5.3.36 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Lewes Downs SAC

5.3.37 Two links within 200m of Lewes Downs SAC were modelled in 2015 for the Joint Core Strategy: the A26 and the B2192 (in addition to the junction between the two roads where they both lie within 200m of the SAC)[62]. Although these calculations ran to 2030 (rather than 2033) the scale of expected growth in the Lewes part of the National Park (and Lewes District outside the National Park) by 2030 has not materially changed since these calculations were undertaken and the addition of a further three years will not alter the trends and magnitudes depicted in the modelling.

[62] Although the Lewes JCS HRA assessment of impacts on Ashdown Forest was successfully challenged at Judicial Review, the assessment relating to that SAC was not challenged because air quality calculations were undertaken, 'in combination' with growth arising from all sources and the HRA for that European site was therefore legally compliant.

The DS trends shown for 2030 can be expected to continue to 2033. Baseline NOx concentrations within 200m of the B2192 (and at the junction between this road and the A26) were significantly below the critical level being c. 18 - 19 μgm^{-3}. This was partly due to the considerable distance between these links and the SAC (a minimum of 60m) and partly to the relatively low flows on these links. The DN scenario forecast those concentrations to reduce further over the period to 2030 and the inclusion of the Joint Core Strategy did not materially retard this improvement (resulting in a maximum difference of 0.1 μgm^{-3} up to 20m into the SAC). NOx concentrations are forecast to remain well below the critical level. As such there was no difference in nitrogen deposition rates between DN (growth without the plan) and DS (growth with the plan) and a substantial improvement in nitrogen deposition rates was forecast due to improvements in background.

5.3.38 For the A26 baseline NOx concentrations were identified to be above the critical level at the closest point to the road but these had fallen below the critical level before 30m into the SAC. The DN and DS scenarios both forecast a further lowering of NOx concentrations such that they are anticipated to fall below the critical level even at the closest point to the road by 2030. The DS scenario (including the JCS) slightly retarded the expected improvement (a forecast difference of 0.4 μgm^{-3} at the closest point to the road, equivalent to 1% of the critical level). Since the main role of NOx is as a source of nitrogen, the effect of this retardation on nitrogen deposition rates was also investigated. The calculations projected a net improvement in nitrogen deposition by 2030, notwithstanding forecast increases in traffic flows. The DS scenario (including the JCS) retarded this improvement slightly, by a maximum of 0.02 kgN/ha/yr at the closest point to the road. However, as already discussed for other European sites, this incremental change is so small that it is on the limits of what can be modelled, equating to 0.2% of the critical load or a 0.1% change in the deposition rate that would otherwise be expected by 2030 i.e. the difference between an annual average deposition rate of 14.47 KgN/ha/yr and 14.49 KgN/ha/yr. This difference is not ecologically significant, given that no habitats that have been studied to date are responsive to such very small incremental changes in nitrogen deposition (in practice annual variation in background deposition rates is likely to be much greater than this incremental change) and that for all the habitats that have been studied so far (as documented in Caporn et al 2016) a minimum change of 0.9 kgN/ha/yr to 2 kgN/ha/yr would be required to result in the loss of 1 species from the sward at a background rate of 15 kgN/ha/yr.

5.3.39 Moreover, the Local Plan contains sustainability policies (notably SD19 (Transport and Accessibility), SD20 (Walking, Cycling and Equestrian Routes) and SD54 (Pollution and Air Quality)) which have potential to reduce traffic movements and thus further improve air quality beyond those that have been modelled.

Ashdown Forest SAC/SPA

5.3.40 Refer to the HRA Addendum for the full details of this analysis. In summary, the analysis concludes that for all modelled links NOx concentrations are forecast to be below the critical level by 2033 due to changes in vehicle emissions and background, notwithstanding the projected increase in traffic on the road. On the A26 and A275, this improvement in NOx concentrations is forecast to be retarded slightly by up to 0.2 μgm^{-3} within 20m of the roadside when Local Plan/Lewes Joint Core Strategy growth is taken into account, while a nominal retardation of 0.1 μgm^{-3} at the roadside is forecast from some of the transects along the A22 at Royal Ashdown Forest Golf Course. However, concentrations are forecast to remain below the critical level in all cases. Since the ecologically significant role of NOx is as a source of nitrogen the next step is to consider what effect the slight retardation of improvement may have on nitrogen deposition rates.

5.3.41 Ashdown Forest SAC is designated for its heathland. The lowest part of the nitrogen Critical Load range for this habitat is 10 kg/N/ha/yr and as such the baseline for nitrogen deposition within 200m of the A26, A22 and A275 is currently above the Critical Load at c.14-15 kgN/ha/yr. Under both the DN and DS scenarios nitrogen deposition, while expected to remain above the critical load, is forecast to reduce by up to c. 1.9 kgN/ha/yr to 2033 notwithstanding overall growth in flows on the road. In other words, the improvement in vehicle emission factors and in background nitrogen deposition rates expected over the period to 2033 are forecast to more than offset the increase in nitrogen deposition from an increase in the volume of vehicle movements.

5.3.42 For the A26 and A275 the DS scenario (with the Local Plan/JCS) retards this improvement slightly within 5m of the roadside, but only by 0.01kgN/ha/yr. This equates to 0.1% of the critical load or 0.08% of the 2033 DN deposition rate and is likely to be well within the normal limits of annual variation in deposition rates. It is a sufficiently small amount (equivalent to 1 milligram of nitrogen[63]

[63] For comparison, a teaspoon of salt typically weighs 5000-6000 milligrams and a pinch of salt (c. 1/16th of a teaspoon) weighs roughly 300 milligrams

deposited per square metre over the course of a year) that it is ecologically insignificant and no retardation of any expected improvement in vegetation would occur. For example, data on dose response relationships in lowland heathland[64] indicate that at deposition rates of c. 10-15kgN/ha/yr (representative of current and future deposition rates in this area) an increase 0.8 - 1.3 kgN/ha/yr would be required to lose one species from the sward (Appendix B). Growth stimulation responses that are not sufficiently severe to result in loss of species would occur before this scale of increase was achieved, but it illustrates the very small magnitude of 0.01 kgN/ha/yr. Since the overall trend to 2033 is expected to be a positive one and will not be retarded to an ecologically significant extent by the South Downs Local Plan and JCS, there is thus not considered to be an adverse effect in combination with growth arising from surrounding authorities.

Summary

5.3.43 In summary, most of the modelled links (with the notable exception of the A3 adjacent to Thursley, Ash, Pirbright and Chobham SAC, Woolmer Forest SAC, Wealden Heaths Phase 2 SPA and Thursley, Hankley and Frensham Commons SPA) already have modelled baseline roadside NOx concentrations that are either below, or only slightly above, the critical level. All roadside NOx concentrations are predicted to fall further over the period to 2033 notwithstanding the predicted 'in combination' growth in housing, population, employment and jobs over the same time period. This fall in NOx concentrations is mirrored by an expected fall in nitrogen deposition rates over the same time period. Due to the relatively modest amount of growth planned within the South Downs National Park and its dispersed nature the Local Plan does not meaningfully retard the predicted improvement in air quality adjacent to any of these links. Therefore no adverse effects on the integrity of any European sites are expected, alone or in combination with other projects and plans. This is the conclusion even without taking into account the air quality and sustainable transport policies within the South Downs Local Plan, which may reduce the projected increase in vehicle flows.

5.3.44 The A3 corridor within 200m of Thursley, Ash, Pirbright and Chobham SAC /Thursley, Hankley and Frensham Commons SPA and Woolmer Forest SAC/Wealden Heaths Phase 2 SPA currently has roadside NOx concentrations that are considerably elevated above the critical level. Over the period to 2033 these NOx concentrations are predicted to decrease substantially due to improvements in vehicle emissions factors and background concentrations, notwithstanding the projected growth in housing/employment over that timescale, although they are forecast to remain above the critical level close to the roadside. When NOx concentrations are translated into nitrogen deposition rates the forecast improvements will not be retarded to an ecologically significant extent by the South Downs Local Plan. As such, there is not considered to be any adverse effect on the integrity of these sites in combination with growth arising from surrounding authorities.

5.3.45 Although no mitigation is required, it is however recommended that the SDNPA Local Plan includes for similar provision as neighbouring authorities (East Hampshire and Waverley) have done with regard to monitoring air quality along the A3 corridor within the Wealden Heaths Phase 2 and Thursley, Hankley & Frensham Commons (Wealden Heaths Phase 1) to track the projected improvements in air quality and enable the introduction of any further measures (beyond those already identified in policy) to assist in delivery of the projected improving trend. These sites have been singled out because they have NOx concentrations and deposition rates that are currently high and are expected to remain above the critical level/load (albeit considerably improved compared to the 2017 baseline) even by 2033. This will bring the South Downs Local Plan into line with neighbouring authorities.

5.3.46 Although it does not constitute mitigation (and is not presented as such), as a further safeguard specifically concerning Ashdown Forest, the SDNPA has also led on convening an Ashdown Forest working group which first met in April 2017. The shared objective of the working group is to ensure that impacts on the Ashdown Forest are properly assessed through HRA and that, if required, a joint action plan is put in place should such a need arise. It should be noted that the absence of any need for 'mitigation' associated with future growth in a particular authority does not prevent the various Ashdown Forest authorities cooperatively working together to do whatever they jointly consider appropriate in reducing traffic and improving nitrogen deposition etc. around the Forest as a matter of general good stewardship. This would also enable future trends in air quality to be tracked and the modelling (and responses to that modelling) to be updated as necessary. The aforementioned working group would be a suitable forum for this cooperative working.

[64] Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & Stevens, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

5.3.47 This is captured within the monitoring section of the Local Plan with regard to Policy Strategic Policy SD10: International Sites. This includes the ambitious long-term target for roadside NOx to be below the critical level, and roadside nitrogen deposition below the critical load, at specific internationally designated nature conservation sites. The same monitoring section includes the following triggers for further action: '*For sites listed in the South Downs Local Plan HRA as currently below the critical level, a trend of movement towards the critical level for NOx at specific internationally designated nature conservation sites reviewed at 3 year intervals'* and '*For sites listed in the South Downs Local Plan HRA as currently above the critical level, no improvement in NOx concentrations at specific internationally designated nature conservation sites reviewed at 3 year intervals*'. Similar trigger points are cited for roadside nitrogen deposition.

5.3.48 This analysis is based upon the planned levels of growth within the Local Plan. The National Park Authority will therefore need to be mindful of planning applications that are not specifically part of the Local Plan (such as some tourism applications) and how they will affect flows on the network, through their development control process and potential future updates to the traffic and air quality model. This is acknowledged through paragraph 7.3.26 of the Local Plan, which states that '*Where this* [potential for unacceptable deterioration in air quality] *affects internationally designated nature conservation sites an HRA will be required in line with Policy SD9: Biodiversity and Geodiversity. Should an air quality assessment or HRA be required it should address but is not restricted to: The existing background levels of air quality; the cumulative impact of development levels of air quality; and the feasibility of any measures of mitigation.'*

6 Hydrology

6.1 Introduction

6.1.1 Water quality includes components such as dissolved oxygen, acidity/alkalinity, levels of other chemicals such as nitrogen and phosphorous, amount of suspended solids and heavy metals. Dissolved oxygen is affected by the Biochemical Oxygen Demand (BOD); the higher the BOD the lower the dissolved oxygen available in the water for fish and other wildlife. Excess nutrients can lead to various impacts including algal blooms and smothering growth of large algae, while high ammonia concentrations and heavy metals are directly toxic to aquatic life. Each species has its own tolerance range with respect to water quality. For example, fish, such as the salmon, which are totally dependent on water are more sensitive to changes in water quality. Water quality can have other indirect effects, for example high volumes of nitrogen and phosphorous can lead to algal blooms and excessive growth of other water plants.

6.1.2 Water quantity has a significant effect on the biodiversity of a river catchment in many different ways. The amount of water falling on a catchment and getting into a river, has an effect on water levels (depth) in a river, water table levels in a floodplain, and a flow rate of a river. In turn, these properties influence other important river properties – for example levels of silt and dissolved oxygen in the water.

6.1.3 Different species have their own optimal ranges for these properties (and these can vary from season to season), and their own tolerance levels. So, for example with breeding wading birds of the floodplain such as the redshank, a high water-level during the spring breeding season, resulting in shallow pools to feed from and feed the young chicks is ideal. However, too much water (flooding) can wash away nests and eggs. Too little water (drought) and the invertebrate food in the grassland is more difficult to obtain, and chicks may not get enough food. Internationally designated sites that have potential for likely significant effects resulting from the SDNPA Local Plan are as follows:

- River Itchen SAC
- Arun Valley SAC, SPA and Ramsar site

6.1.4 There is also a pathway of impact on freshwater flows into the Solent European sites such as Chichester & Langstone Harbour SPA/Ramsar site, and the Dorset and Solent Coast pSPA. These are discussed further in the following paragraphs.

6.2 River Itchen SAC

6.2.1 The River Itchen SAC is vulnerable to changes in both water quantity (maintenance of flow velocity) and water quality (siltation and low nutrient inputs). Policies that allow for development adjacent to or in close proximity to the River Itchen have potential impact on both water quality and water quantity of this SAC.

6.2.2 Strategic Policy SD25 (Development Strategy) outlines residential development at the settlements of Cheriton (14 new dwellings) and Itchen Abbas (9 new dwellings)[65]. These settlements are located adjacent to the River Itchen SAC. Twyford (20 new dwellings) is located approximately 200m from the River Itchen SAC. These settlements are likely to be served by a Waste water Treatment Works (WwTW) which discharges into the River Itchen SAC. However, there are only 43 new dwellings between them and they are not served by the two works that have the biggest impact on Itchen water quality (Chickenhall WwTW and Harestock WwTW).

6.2.3 In addition the following site allocations have been identified in proximity to the River Itchen. Due to their close physical proximity to the SAC, run off from the sites into the river could result in a reduction in water quality within the SAC:

- Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton
- Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas

Water Quality

6.2.4 Eutrophication in the River Itchen, specifically regarding phosphate inputs (from wastewater discharge), is something the Environment Agency is seeking to resolve. In recent years the Agency

[65] In the previous iteration of the Plan 6 new dwellings were provided at Cheriton and 8 new dwellings were provided at Itchen Abbas. This is an increase of 9 additional new dwellings.

has worked with WRc plc to develop modelling evidence to enable permit changes for managing and reducing phosphate loads entering chalk streams in the Upper Itchen catchment and specifically the River Itchen SAC. The Agency used this evidence during 2013/14 to engage with stakeholders and agree revisions to discharge permits for fish farms and watercress farms in the upper catchment to reduce the levels of phosphate discharged to the Itchen. The watercress farms are aiming to comply with these new permits in 2016, while on-going action will reduce loadings from other agriculture sectors in the catchment.

6.2.5 The Environment Agency undertook a series of Reviews of Consents for the River Itchen. These identified that phosphorus concentrations in the River Itchen SAC were leading in combination to an adverse effect on the integrity of this site. The major discharge to the River Itchen SAC is from the Chickenhall Lane WwTW in Eastleigh, downstream of the SDNP. Harestock WwTW (also located downstream of the SDNP) also makes a significant contribution. The Agency subsequently introduced a series of amendments to WwTW discharge consents into these receiving watercourses intended to reduce the inputs of these nutrients to acceptable levels.

6.2.6 Further to this, in 2016 Natural England produced a report presenting findings from investigations relating to phosphorous inputs to watercourses from small sewage discharges[66]. Essentially this identified that small package treatment plants that discharge to ground, the phosphorous can move within the soakway up to 20-30m in the soil laterally and up to 1.5m in depth. Where there is no hydrological connectivity within this area then the soakaway is effective in removing phosphorous and will pose a low risk in terms of phosphorus entering any receiving water. However where there is hydrological connectivity e.g. watercourse or local drainage channels or a high water table, in this area the soakaway will not be effective and there will be a high risk that phosphorous will be transferred into waterbodies and to protected sites such as the River Itchen SAC.

6.2.7 Natural England's Site Improvement Plan for the River Itchen SAC, identifies further works to be undertaken by Partners to aid in improving the water quality of the River Itchen SAC via a Diffuse Water Pollution Plan. Actions include:

- Reducing road runoff (both as pathway for sediment from elsewhere, and as source from roadside) and a review of settling pond maintenance, both trunk roads and other public roads; quantifying the extent of the problem, through systematic catchment-wide risk appraisal, and address septic tank phosphate input. e.g. Compulsory registration of septic tanks and small package plants, to quantify inputs to the system and help reduce them, and to ensure best practice management of septic tanks/package plants is adhered to; and
- Addressing diffuse pollution from agriculture through a catchment based approach.

6.2.8 In addition, the Itchen Valley Grazing project aims to allocate funds to support project advice on land management of existing HLS agreements, and non HLS grazed land

6.2.9 The Site Improvement Plan includes additional actions such as: a review of consents for water cress farms and fish farms based on revised phosphate standards for the SAC; and, ensure existing HLS agreements continue to benefit water quality (particularly through control and monitoring of stocking densities where grazed) and southern damselfly habitat. These can all help improve water quality of the SAC

6.2.10 In addition to these the Environment Agency is leading a River Restoration Strategy with the aim of improving the quality of the River Itchen.

6.2.11 Strategic Policy SD26 (Supply of Homes) outlines 43 new residential dwellings within close proximity to the River Itchen SAC[67]. This is a relatively small number of new dwellings and the WwTW most likely to serve these dwellings have not been identified as being major contributors to exceedance of the River Itchen's water quality targets in the Review of Consents. Provided new development can be accommodated within the existing consent headroom for the relevant wastewater treatment works the Local Plan will not contribute to an adverse effect on any European sites. Given the small number of dwellings involved it is considered very unlikely that there will be a difficulty accommodating these dwellings. In-line with recommendations included in the Twyford Neighbourhood Plan, and **to ensure no likely significant effects result from potential increase in phosphorous levels as a result small sewage discharges associated with discharges from septic tanks and package treatment works associated with development, it is recommended that the applicant will need to provide a drainage plan to show that the drainage associated with the site will either utilise an existing mains drainage system at the nearest point of capacity or will be dealt with by a small package treatment**

[66] Natural England (2016) A summary of Natural England's research on Small Sewage Discharges and the risk to protected sites.
[67] Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton, Policy SD76: Land at Itchen Abbas House, Itchen Abbas, and dwellings expected for the settlement of Twyford

plant (or similar). If the decision is to use a small package treatment plant then this will need to demonstrate that there is no hydrological connectivity from the proposed package treatment plant to (for example) the River Itchen. The plan should assess if there are existing watercourse, local drainage channels or a high water table in the area of the proposed package treatment that will mean that the proposed package treatment would not be effective and would result in there being a high risk that phosphorous transferred into the protected watercourses (such as the River Itchen SAC and SSSI). If emission of phosphorous from the new development could not be prevented, the scheme should be refused until a suitable solution is identified.

6.2.12 Site allocations Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton and Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas are both located in proximity to the River Itchen SAC and runoff from the construction and operational phase of the development if inappropriately managed could result in a reduction in water quality within the SAC and thus have a likely significant effect. However, the policy for each of these allocations already includes wording to ensure the protection of the River Itchen SAC.

Water Quantity

6.2.13 The River Itchen is covered by the Environment Agency's Test and Itchen CAMS. The surface water resource is identified as having no water available for licencing, while the Itchen Groundwater supply is identified as 'restricted water available for licensing'. Water availability in the Itchen parts of the CAMS area is therefore very restricted. For salmon, flow rates are critical to the success of the species. Low flow rates affect food availability and migration. Low flows mean reduced invertebrate food, and increased concentrations of pollutants significantly reducing the numbers of salmon returning up river to spawn. In low flow years, salmon returning to spawn can be reduced by as much as 50%. Low flow also means more silt and less oxygen in the water, significantly reducing the survival rate for the eggs of the salmon that do spawn.

6.2.14 Natural England's Site Improvement Plan for the River Itchen SAC, identifies further works to be undertaken by Partners to aid in improving the hydrology of the river. Actions include:

- Amending water company abstraction licence identified through the Review of Consent process;
- Amend/ revoke Environment Agency permits to abstract and then augment river (Candover and Arle schemes respectively) and linked Water Resource Management Plan process; and,
- Investigate causes of apparent drying on floodplain meadows, with a focus on abstractions (if not covered by RoC) and water level management issues. Implement any changes identified through existing mechanisms. Affects discrete areas of the SAC floodplain

6.2.15 The Site Improvement Plan for the River Itchen SAC includes a Water Level Management Plan to manage water levels and avoid potentially damaging low flows. This is linked to the River Restoration Strategy.

6.2.16 Historically, the Environment Agency Review of Consents for the River Itchen SAC identified that abstraction could (during a dry year) result in flows in Candover Stream and the main River Itchen south of Winchester to fall to approximately 35% below naturalised flow in September. The Agency has therefore introduced a series of amendments to abstraction licences for the River Itchen SAC to reduce abstraction to acceptable levels. As part of its Review of Consents process, the EA has decided to modify licences to meet the Environment Agency target flow regime for the river by imposing a hands off flow condition (i.e. a condition which stipulates that the abstraction must cease when the river flow drops to a certain point) and by applying monthly totals for June to September (inclusive) (i.e. a maximum volume of water that can be abstracted).

6.2.17 An analysis of future water supply-demand balance across Southern Water supply area identified that in 2019 the level of abstraction on the River Itchen must be reduced for environmental reasons. As such the River Itchen will require Sustainability Reductions in abstraction to prevent likely significant effects upon the SAC. New restrictions limit the amount of water that can be abstracted from the River Itchen between the months of June and September each year. To counter this and to meet water demand within the Hampshire South Water Resource Zone (WRZ), Southern Water has developed a Water Resource Strategy.

6.2.18 Southern Water have identified that to meet the future water supply requirements to 2040 implemented in the Hampshire South and Isle of Wight WRZs, so that the security of supplies is maintained throughout the planning period[68].

- Universal metering;

[68] Southern Water. (2009) Water Resource Management Plan 2010 - 2035

- Leakage reduction;
- Asset improvement schemes for groundwater sources;
- Increase of Testwood Water Supply Works to licence limit;
- Development of the enabling Testwood to Otterbourne transfer and associated distribution infrastructure; and
- Optimisation of inter-zonal transfers (cross-Solent main).

6.2.19 Given these interventions identified to meet the public water supply requirement by 2040 it is therefore considered that increased abstraction from the River Itchen would not be required and there would therefore be no likely significant effect upon the River Itchen SAC. The HRA screening for the Southern Water WRMP did conclude that likely significant effects arising from implementation of the revised draft WRMP could not be ruled out due to potential effects of the Candover groundwater scheme for river augmentation on the River Itchen SAC. However, the subsequent Appropriate Assessment by Cascade Consulting confirmed that no adverse effects on integrity of the SAC/SPA/Ramsar site would arise.

6.2.20 Provided that new development can be accommodated within existing post-review abstraction licences for the relevant raw water treatment works it will not contribute to an adverse effect on any European sites.

6.3 Arun Valley SAC/ SPA/ Ramsar

6.3.1 The Arun Valley SAC/ SPA/ Ramsar site is vulnerable to changes in both water quantity (maintenance of flow velocity) and water quality (siltation and low nutrient inputs). The SAC is only designated for lesser whirlpool ram's-horn snail *Anisus vorticulus*. The SPA is designated for Bewick swan and waterfowl generally. Water quantity and water pollution are identified as a threat to these features.

6.3.2 Policies that allow for development adjacent to or in close proximity to the River Arun have potential impact on both water quality and water quantity of this site.

6.3.3 Strategic Policy SD26 (Supply of Homes) outlines residential development at the settlements of:

- Amberley (6 new dwellings) located adjacent to the designated sites and Fittleworth (6 new dwellings) located 4km from the designated sites - these settlements are treated by STW which discharge into the River Arun downstream of the Arun Valley SPA/Ramsar
- Bury (6 mew dwellings) located 1km from the designated sites and Coldwaltham (30 new dwellings[69]) located adjacent to the designated sites which are treated by STW which discharge into Arun Valley SPA. Coldwaltham STW is very close to the SPA but Fittleworth STW discharge is about 5km upstream and the STW has recently been upgraded to ensure it meets environmental standards.
- Washington (un-defined number of new dwellings) located 7km from the designated sites;
- Watersfield (un-defined number of new dwellings) located 480m from the designated sites;
- Petworth (150 dwellings) – Petworth STW discharges to a smaller watercourse and then drains to the River Rother and ultimately the Arun upstream of the SPA. However, this is a pathway of 8km.

6.3.4 Thus, there is potential for likely significant effects upon the internationally designated site.

Water Quantity

6.3.5 Existing water abstractions are regulated through the Environment Agency's Catchment Abstraction Management Strategies (CAMS). Within the Arun and Western Streams CAMS (2013)[70]:

'*the River Arun is assessed as having water available for licensing throughout the flow range with only an MRF restriction. However, water is available because the river is discharge rich and these discharges raise river flows above those that would naturally be present. This is due mainly to the large discharge from Horsham STW just above the Alfoldean assessment point. Much of the public water supply to this catchment is from the Hardham source in the Lower Rother, but this is discharged to the Arun, so there is a net loss in the Rother but gain in the Arun…'* This high discharge rate ensures maintenance of flow velocity. In addition to surface water, the 'Lower Greensand Arun & Western Streams' section of the CAMS, which

[69] In the previous iteration of the Plan, Coldwaltham was to provide 20 dwellings, this is an increase of 10 new dwellings.
[70] Environment Agency. River Arun and Western Streams Catchment Abstraction Management Strategy (2013). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289932/LIT_8062_987684.pdf

deals with groundwater states that: '*There will be a, general presumption against the issuing of new groundwater licences for consumptive abstraction from the Lower Greensand aquifer. This unit includes the Hardham Basin…The lower Greensand provides baseflow to the River Rother and its tributaries and also provides an important source of water for wetlands such as Pulborough Brooks and Amberley Wild Brooks which are SSSIs and part of Arun Valley SAC and SPA. The smaller area of Waltham Brooks is a SSSI and SPA. Any abstractions which could affect flows into a SPA or SAC may require an appropriate assessment to determine if they will have an adverse effect on the site or not*'. Further restrictions on abstraction are stated in the section of the CAMS concerned with the tidal abstraction downstream of the confluence with the River Rother: *'The majority of the surplus freshwater flow to the tidal reach has been licensed to this abstraction and so it is unlikely that any more low to mid flow consumptive surface water abstraction would be allowed from the entire River Arun (and Western Rother combined) in order to protect the tidal ecology and not derogate the tidal abstraction'*. The CAMS clearly indicates overall therefore that there are significant restrictions on the opportunity to undertaken further abstraction from the River Arun or its groundwater sources.

6.3.6 The public water supply strategy for the Local Plan period and beyond as it relates to this part of the National Park is set out within the Southern Water Resource Management Plan (WRMP). The Arun internationally designated site is located within the Sussex Worthing Water Resource Zone (WRZ). The HRA for Southern Water's WRMP[71] did not identify any likely significant effects upon the Arun sites as a result of the WRMP, due to the large flow rates already present within the river. Moreover, abstraction for the Worthing water resource zone is principally from the Worthing chalk block which is essentially isolated from the Arun Valley. In addition, it is expected that the SDNPA Local Plan will only deliver 189 new dwellings within the Sussex Worthing WRZ that as such, an impact pathway relating to the Worthing WRZ can be screened out.

6.3.7 Although located within the Worthing WRZ It is this 'North Sussex' water resource zone that includes both the surface water and groundwater abstraction at Hardham (in the Rother catchment) and the River Arun abstraction below the tidal limit and which could thus have the greatest effect on flows in the Arun Valley. The HRA screening undertaken for the Southern Water WRMP considered future public water supply abstraction impacts on the Arun Valley SAC/SPA/Ramsar site. It concluded that no likely significant effects would arise except potentially from implementation of the Ford WwTW effluent transfer scheme. However, the subsequent Appropriate Assessment by Cascade Consulting confirmed that no adverse effects on integrity of the SAC/SPA/Ramsar site would arise.

6.3.8 In addition to confirmation that overall public water supply requirements over the plan period can be achieved without a likely significant effect on European sites, there are policies in place within the SDNPA that ensure for the protection of water courses, notably Strategic Policy SD17 (Protection of the Water Environment). This policy states:

'*1. Development proposals that affect groundwater and surface water features and watercourse corridors will not be permitted unless they conserve and enhance, as relevant, their:*

a) water quality and quantity, and help achieve requirements of the European Water Framework Directive, or its replacement;

b) biodiversity;

2. Development proposals must incorporate measures to eliminate risk of pollution to groundwater and surface water features which would harm their ecological and/or chemical status.'

6.3.9 As such, it can be assessed that water quantity issues upon the Arun Valley designated site can be screened out.

Water Quality

6.3.10 The Arun Valley designated site is vulnerable to changes in water quality from siltation and low nutrient inputs. According to Natural England's Site Improvement Plan[72] for the Arun Valley SAC and SPA, the rivers Arun and Stor 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. Siltation on the other hand is primarily due to agricultural runoff rather than point sources. The main source of phosphate is from Marehill STW but the other smaller STWs serving Petworth, Coldwaltham and Fittleworth[73] may make a small contribution. There may also be a risk of increased levels of nutrients and silt entering the site through flooding, especially if the river banks are not maintained (see issue of changes in water levels). The ramshorn snail or which the SAC is

[71] Southern Water (2014) Water Resources Management Plan 2015–40 Habitats Regulations Assessment (Summary)
[72] Natural England Site Improvement Plan Arun Valley (2014) http://publications.naturalengland.org.uk/file/5185212862431232
[73] The SDNPA Local Plan outlines 150 new dwellings at Petworth, 30 at Coldwaltham and 6 at Fittleworth

designated is sensitive to eutrophication, and bird species for which the SPA and Ramsar site is designated are also vulnerable to increased levels of nutrient enrichment as there is an increased likelihood of certain disease. Increase in growth of vegetation from sustained nutrient enrichment can make the habitat unsuitable for many bird species. Diffuse pollution and siltation from agricultural runoff is likely to be contributing to the phosphate levels (this latter issue is managed via Catchment Sensitive Farming).

6.3.11 Although diffuse pollution from agricultural runoff is a significant issue that must be addressed, the principal pathway for a Local Plan to affect water quality in European sites is through increased discharge of treated sewage effluent. This issue (the potential for an effect from increased volume of treated sewage effluent) was considered in the HRA of the Southern Water WRMP, which stated that:

'The HRA Stage 1 screening assessment concluded uncertainty regarding water quality effects on the Arun Valley SAC, Special Protection Area (SPA) and Ramsar site; further clarification of the option through the WRMP process confirmed reverse osmosis membrane technology as the tertiary treatment process. Reverse osmosis membrane technology delivers effluent treated to a standard where there are very few nutrients or biological organisms remaining in the treated water, therefore allaying the water quality concerns associated with the alternative biological aerated flooded filter (BAFF) process.

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 Stor having relatively poorer water quality; treated effluent from Horsham WwTW also results in lower water quality entering from the Upper Arun. Given that the scheme is intended to bring the flows up to and beyond the MRF target, operation of the scheme would not lead to adverse effects on flows from the River Rother into the tidal Arun, which contributes to the dilution of the Stor and Upper Arun discharges.

Therefore, there are unlikely to be any significant effects on the qualifying features of the River Arun SAC, SPA or Ramsar site [from Southern Water WwTW]'.[74]

6.3.12 In addition, the following initiatives are being implemented to manage and improve water quality in the Arun catchment:

- Southern Water is leading a study intended to report by 2020 which is investigating impacts of WwTW upstream of the Arun Valley sites, which have not been addressed through Review of Consents (ROC). This action is in place to assess the levels of point source pollution entering the SPA via the rivers Arun and Stor, and to assess their impacts on the SPA features. Mitigation measures are then identified to be in place by 2027.
- In addition to addressing impacts of point source pollution, the Natural England Site Improvement Plan identifies a specific commitment to '*reduce nitrogen and phosphates from agricultural diffuse pollution through catchment-wide delivery of the options under the New Environmental Land Management Scheme'*. This will be delivered by Natural England in partnership with the SDNPA. Southern Water has also made a commitment to catchment management in the Rother part of the wider Arun catchment to reduce sediment yield in the river which causes outages at the Hardham surface water abstraction.

6.3.13 This is supported by Strategic Policy SD49 (Flood Risk Management) and Strategic Policy SD17 (Protection of the Water Environment) which outline the requirement for a site specific Flood Risk Assessment. This must demonstrate that the development will not negatively impact upon water quality of surface water and ground water. Policy SD17 ensures for the prevention of pollution risks to aquatic habitats to maintain their

'2. Development proposals must incorporate measures to eliminate risk of pollution to groundwater and surface water features which would harm their ecological and/or chemical status.'

6.3.14 Provided new development can be accommodated within the existing consent headroom for the relevant wastewater treatment works, it is considered that the existing initiatives being implemented to ensure compliance of relevant WwTW discharges and improve diffuse pollution, policies SD17 and SD49 within the SDNPA Local Plan and the small amount of development proposed within the catchment enable a conclusion that the South Downs National Park Local Plan will not result in a likely significant effect on the Arun Valley SAC/SPA/Ramsar site.

6.3.15 Following public consultation in late 2015, Natural England, Sussex Wildlife Trust and Hampshire Wildlife Trust highlighted the potential change of responsibility for the management of watercourses such as the River Arun. The Environment Agency currently manages three Internal Drainage Districts (IDDs) within West Sussex, including the River Arun IDD. In line with

[74] Southern Water (2014) Water Resources Management Plan 2015–40 Habitats Regulations Assessment (Summary)

government policy, individual IDDs could be abolished by September 2016. The abolition will bring all ordinary watercourses within the County under West Sussex County Council's watercourse regulation and enforcement powers. At the time of writing, no further details are available regarding these changes. In addition it is considered that this change is not a 'plan' that proposes any specific interventions on the ground that may impact on a European site, but a legal document outlining a change of responsibility for the watercourses. The change in responsibility cannot be accompanied by an a priori assumption (implied in the Wildlife Trusts response) that enforcement and appropriate watercourse management will therefore decline. Presumably the Environment Agency would not be proposing such a solution if they believed that the outcome would be negative. As such, the abolition of the River Arun IDD is not considered further.

6.4 Solent Sites

Water quantity

6.4.1 The South Downs National Park covers large rural parts of Winchester district, East Hampshire district and Chichester district, all of which contain watercourses (such as the River Meon and River Itchen) that ultimately drain into the Solent or groundwater resources that are connected to those watercourses. The National Park in these areas has public water supply from three companies: Portsmouth Water, Southern Water and South East Water.

6.4.2 The Local Plan area in Chichester district is supplied with water from the Environment Agency Arun and Western Streams catchment, which currently assesses groundwater availability as being 'restricted' in terms of supplies from the Chichester chalk. Freshwater flows into Chichester Harbour arise from the Chichester Rifes - the River Lavant, River Ems, Fishbourne Springs, Bosham Stream, Cutmill Creek, Ham Brook, and the springs at Warblington. The Habitats Directive review of consents investigated the impact of abstraction on freshwater flows to the SPA and the abstraction management strategy noted that any new licence would need to consider impacts on this conservation site. Portsmouth Water supplies the National Park via their Chichester and Bognor Regis resources zone.

6.4.3 Portsmouth Water's licences in the Chichester area are now fully compliant with the Habitats Regulations. The only outcome from the Water Framework Directive investigations in this area was to consider increased augmentation of the River Ems. This scheme is in the EA's National Environment Programme and has been included in the Company's Business Plan. Portsmouth Water has confirmed that overall water demand is not increasing despite increased populations and they do not intend to apply for additional licences over the period to 2040. On this basis, the HRA of the Chichester Local Plan was able to conclude no adverse effect from increased public water supply requirements. The HRA of the Portsmouth Water Resource Management Plan in 2014 did not identify any adverse effects on the integrity of the Chichester & Langstone Harbours SPA/Ramsar site due to public water supply needs over the plan period.

6.4.4 Southern Water supplies those parts of the National Park relevant to the Solent coast European sites from its 'Hampshire South' Water Resource Zone. A Habitat Regulations Assessment was undertaken in 2014 which considered the potential for adverse effects on European sites from Southern Water's WRMP, essentially its proposals for meeting public water supply requirements over the period until 2040. The HRA concluded that no likely significant effect would be posed to any of the Solent coastal European sites as a result of the expected population growth and associated water demands in the Southern Water supply area over the plan period.

6.4.5 South East Water supplies relevant parts of the north of the National Park from their RZ5 resource zone. RZ5 remains predominantly in surplus for the whole of the planning period to 2040 with the development of two ground water schemes (Greatham and East Meon) at the end of the planning period. Given that South East Water's relevant supply zone will be essentially in surplus for the whole planning period the potential for a water resource/supply effect on European sites can be screened out of this assessment.

6.4.6 Based on these information sources there is no reason to expect that development in the National Park over the Local Plan period, and associated population growth, will result in increases in abstraction that would trigger a likely significant effect on the Solent coastal European sites.

Water quality

6.4.7 Internationally designated sites in the Solent area are known to be vulnerable to elevated nitrogen levels. Elevated nitrogen levels result in green seaweed mats in many areas of the Solent that restrict growth, distribution and variety of food available for designated wetland birds, thus potentially resulting in likely significant effects upon bird features, fish features and potentially

habitat features of the designated sites. To investigate this further the Environment Agency and Natural England produced a note to help Local Planners approach the issue of excess nutrients and sewage discharge within the Solent[75]. This document acknowledges that a large contribution of nutrient inputs are from agricultural inputs, yet a small but substantial contribution comes from human sewage. The note identifies that protected areas in the Solent are widely failing their WFD targets due to the abundance of green seaweed and will continue to do so until nitrogen levels are significantly reduced. Both regulatory and voluntary schemes have been put in place, however the reduction these are achieving are small relative to the quantities of nitrogen draining into the Solent from agricultural sources. A Habitats Regulations Review of Consents of the Solent area resulted in consent tightening for many Solent sewage treatment works. Whilst the nutrient contribution from agriculture to the Solent needs to be reduced, nitrogen inputs from new development such as that identified in the SDNPA Plan need to ensure they do not erode reductions that have been achieved. The note recommends that PUSH authorities and water companies work together to reduce the amount of increased nutrient inputs as a result of future growth. Recommended provisions include:

- Targeting housing development in the least sensitive areas;
- Upgrading sewage treatment works;
- Location placement of sewage discharge;
- Reducing the volume of wastewater requiring treatment; and
- Offsetting nitrogen generation from new development by taking agricultural land out nitrogen intensive use.

6.4.8 The Solent European sites are at their closest located 2.3km from the SDNPA area. This is Chichester and Langstone Harbours SPA / Ramsar site and Solent Maritime SAC. Pagham Harbour international site is located approximately 8km from the SDNPA area, and Dorset and Solent Coast pSPA is located 5.7km from the SDNPA area.

6.4.9 The following settlements identified within the SDNPA Local Plan to provide new housing feed into the Solent sites and Pagham Harbour internationally designated site and lie within relatively close proximity:

- Lavant (20 dwellings) – located just north of Chichester; it is considered likely that this would be encompassed within the 3,000 dwellings already accounted for at Tangmere STW planned upgrades.
- West Ashling (10 dwellings) – located north-west of Chichester. The Council will need to ensure before submitting the Local Plan that the WwTW that serves this settlement can accommodate this increase in dwellings within its headroom.
- Funtington (10 dwellings) – located north-west of Chichester. The Council will need to ensure before submitting the Local Plan that the WwTW that serves this settlement can accommodate this increase in dwellings within its headroom.

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

6.4.10 Many of the features of Chichester and Langstone Harbours internationally designated site and the Solent Maritime SAC, and Dorset and Solent pSPA are vulnerable to water quality resulting from eutrophication and toxicity. Sources include both point source discharges (including flood alleviation / storm discharges) and diffuse water pollution from agriculture / road runoff, as well as historic contamination of marine sediments, primarily from copper and Tributyltin (TBT)76. The provision of additional housing within the SDNPA Local Plan has potential increase pollution levels from nitrogen outputs from WwTW. This has been discussed in the Chichester Local Plan HRA77. Natural England has agreed with the HRA and the Plan was adopted in July 2015.

6.4.11 The Chichester (Apuldram) WwTW discharges to the head of Chichester Harbour. Due to the sensitive nature of the Harbour the current environmental permit limit at Chichester WwTW is finite. The discharge is already treated to exceptionally tight nitrogen levels, established under the Habitats Directive Review of Consents process. As such, Chichester WwTW is at capacity.

6.4.12 Southern Water have an approved upgrade scheme for Tangmere WwTW for AMP 6 (2015-2020) and continue to investigate the groundwater infiltration issue that is impacting Chichester WwTW.

[75] Environment Agency/ Natural England (2015) Addressing the needs of housing growth and protecting the Marine Environment in the Solent area.
[76] Natural England (2014). Site Improvement Plan. Solent Sites
[77] URS (2014) Chichester District Council Chichester Local Plan: Key Policies Submission 2014-2029 Habitats Regulations Assessment

Whilst the capacity in that catchment continues to be limited, any additional capacity requirements in the meantime could be diverted to Tangmere. The anticipated delivery date of additional capacity at Tangmere WwTW is 2019. Therefore the delivery of the strategic locations would be constrained until at least 2019 in the Plan period78.

6.4.13 The approach set out above in the Chichester Local Plan HRA has been accepted by Natural England. Due to the nature of the dispersed nature of the proposed residential development within the SDNPA Local Plan, at least 30 new houses79 have been proposed within the Plan that could result in treated wastewater discharges into the SPA/Ramsar site and SAC. This is a small number of houses. Provided new development can be accommodated within the adjusted consent headroom for the expanded Tangmere WwTW (or an appropriate alternative WwTW if the connection will not be to Tangmere), it is considered that a conclusion can be drawn that the South Downs National Park Local Plan will not result in a likely significant effect on the Chichester & Langstone Harbours SPA/Ramsar site.

Pagham Harbour SPA/Ramsar site

6.4.14 Studies by the Environment Agency under the Review of Consents process indicated that sewage discharges have not had a significant adverse effect on the integrity of the Pagham Harbour SPA/Ramsar site and that WwTW have capacity to accommodate new homes without a significant adverse effect on water quality. As noted above, no settlements within the SDNPA Local Plan identified to provide new housing have been identified that feed into Pagham Harbour SPA/ Ramsar site. As such, this impact pathway can be screened out.

Portsmouth Harbour SPA

6.4.15 No settlements within the SDNPA Local Plan identified to provide new housing have been identified that feed into Portsmouth Harbour SPA. As such, this impact pathway can be screened out.

Dorset and Solent Coast pSPA

6.4.16 The majority of this site is located outside of internal waters of the harbour designated sites. This site does have potential to be impacted by changes in water quality from shipping and waste water discharges. The Plan does not provide for any increase in shipping, as such this source can be screened out. In addition, due to the fact that this pSPA is highly tidal any waste water discharged to this designated site would be rapidly diluted and dispersed, and thus not result in adverse effects upon the fish populations upon which the feeding tern species depend. As such this source can also be screened out from impacting upon the pSPA.

[78] AMEC (2015) South Downs National Park Authority Water Cycle Study and SFRA Level 1 Scoping and Outline Report.
[79] In the previous iteration of the Plan, 20 dwellings were provided for that had potential to discharge to the SPA/SAC and SAC sites. This is an increase of 10 dwellings. This can still be considered to be a small increase in number of dwellings discharging to these sites.

7 Loss of functionally-linked habitat

7.1 Introduction

7.1.1 European sites are designated on the basis of key habitats and species. While most internationally designated sites have been geographically defined in order to encompass the key features that are necessary for coherence of their structure and function, this is not the case for all such sites. Due to the highly mobile nature of bats and waterfowl it is inevitable that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of the internationally designated site for which they are an interest feature. However, this area will still be essential for maintenance of the structure and function of the interest feature for which the site was designated and land use plans that may affect this land should still therefore be subject to appropriate assessment.

7.2 Likely Significant Effects

Loss of supporting habitat for bats

7.2.1 Bats are a designated feature of three international sites within the sphere of influence of the SDNPA Local Plan. These are:

- Ebernoe Common SAC
- The Mens SAC
- Singleton and Cocking Tunnels SAC

7.2.2 Any development that has potential to impact greenfield sites or existing mature vegetation lines and/ or river bank 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 sound/ vibration pollution.

7.2.3 All three of the sites are designated for their populations of barbastelle bats. Ebernoe Common SAC and Singleton and Cocking Tunnels SAC are also designated for their populations of Bechsteins' bats.

Ebernoe Common SAC

7.2.4 Ebernoe Common is an exceptional site for both species of bats. Much of what is known about the foraging behaviour of barbastelle bats has been derived by studies carried out over the past fifteen 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

7.2.5 These site specific studies revealed that the barbastelle bats at Ebernoe Common SAC had directional flightlines that followed watercourses, particularly the River Kird, and woodland cover for distances of typically **7km**[80]. Flightlines outside the SAC are particularly to the south (the Petworth and Tillington area) but also to the west, north and east.

7.2.6 There has been less study of the Bechstein bat populations. However, those radio-tracking projects which have been implemented for the species have established that the tracked individuals generally remained within approximately **1.5 km** of their roosts[81]. These distances do fit with those identified from radio-tracking of Bechstein's that has been undertaken at Ebernoe Common SAC from 2001, which identified that the maximum distance travelled by a tagged Bechstein's bat to its foraging area was 1,407m, with the average 735.7m[82].

7.2.7 Any development proposals within 7km of Ebernoe Common SAC (including windfall sites and sites not identified within the SDNPA Local Plan) have potential to result in likely significant effects upon the bats species of Ebernoe Common SAC via direct habitat loss or disturbances from lighting, noise and vibrations both during construction and operational phases of development. It

[80] This figure represents the distance travelled by 75% of all the bats sampled.
[81] Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust
[82] 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

can be argued that these distances are insufficient or arbitrary. The distances identified above represent those distances travelled by a sample of bats that are representative of a population. It may be that bats from the SAC travel further and in different directions to those sampled, however, the distances identified above are likely to capture a significant portion of the SAC population (i.e. 75% of the population). The National Planning Policy Framework (NPPF) sets out government policy regarding consideration of biodiversity in the planning decisions. Under the NPPF the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat, as such al bat species, including those beyond the distances identified above will be protected. Within SDNPA Local Plan, Strategic Policy SD25 (Development Strategy) and Strategic Policy SD26 (Supply of Homes) have the potential to impact upon the bats of Ebernoe Common. They provide for development at Petworth, Northchapel and Lodsworth, all located within 5km of Ebernoe Common SAC. Fernurst is located 6.7km from the SAC:

- Petworth is located within 3.4km of Ebernoe Common SAC. Bats are identified to use key areas for commuting and foraging. The Petworth area has been identified as a key area for bats of the SAC;
- Nothchapel is located 1.7km from Ebernoe Common SAC;
- Lodsworth is located 4km from Ebernoe Common SAC; and
- Fernhurst is located 6.7km from Ebernoe Common SAC.

7.2.8 Policy SD10 (International Sites) takes note of the requirement to take due regard within a defined buffer of international sites designated for bat features (which for Ebernoe Common SAC is 7km). As such effects from the SDNPA Local Plan upon bat features of Ebernoe Common SAC can be screened out.

The Mens SAC

7.2.9 The Mens SAC is owned and managed by Sussex Wildlife Trust. The Mens SAC is important for its barbastelle populations and radio-tracking studies have been undertaken to identify core foraging areas. These reports have identified that the barbastelles of The Mens SAC forage to the east of the SAC, principally on the floodplain of the river Arun from close to Horsham in the north to Parham in the south. They also cross to the Adur floodplain. In some cases the bats travelled up to 12.2km to visit foraging areas[83]. Whilst 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, the currently available radio-tracking evidence indicates that a **9km** distance is likely to encompass the core foraging area of importance for barbastelle bats associated with the SAC[84]. Development within 9km of the SAC therefore has greatest potential to significantly affect barbastelle flightlines or foraging areas.

7.2.10 Any development proposals within 9km of The Mens SAC (including windfall sites and sites not identified within the SDNPA Local Plan) have potential to result in likely significant effects upon the barbastelle bats of The Mens SAC via direct habitat loss or disturbances from lighting, noise and vibrations both during construction and operational phases of development. As previously noted, the distances identified above represent those distances travelled by a sample of bats that are representative of a population. It may be that bats from the SAC travel further and in different directions to those sampled, however, the distances identified above are likely to capture a significant portion of the SAC population (i.e. 75% of the population). The National Planning Policy Framework (NPPF) sets out government policy regarding consideration of biodiversity in the planning decisions. Under the NPPF the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat, as such al bat species, including those beyond the distances identified above will be protected.

7.2.11 Within the SDNPA Local Plan Strategic Policy SD25 (Development Strategy) and Strategic Policy SD26 (Supply of Homes) has potential to impact upon the bats of The Mens SAC. They provide for development at Petworth, Fittleworth, Coldwaltham, and Watersfield, all within 9km of The Mens SAC.

- Fittleworth is located 2.6km from The Mens SAC;
- Petworth is located 3.1km from The Mens SAC;
- Coldwaltham is located 5km from The Mens SAC;

[83] Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008
[84] This figure represents the distance travelled by 75% of all the bats sampled.

- Watersfield is located 5.5km from The Mens SAC;
- Lodsworth is located 8km from the Mens SAC.

7.2.12 As noted above, Policy SD10 (International Sites) takes note of the requirement to take due regard within a defined buffer of international sites designated for bat features (which for The Mens SAC is 9km). As such effects from the SDNPA Local Plan upon bat features of The Mens SAC can be screened out.

Singleton and Cocking Tunnels SAC

7.2.13 Singleton and Cocking Tunnels SAC is designated for its hibernating populations of barbastelle and Bechstein's bats. The tunnels are grilled at both ends and so secured from human disturbance. Whilst the site is designated for hibernating bats, in the wider sense, the habitat that supports the dispersal of the population of bats for which the SAC is designated are also protected is also subject to assessment, this also includes foraging routes. There has been no formal research to determine the areas and/ or distances that the hibernating bat features of the Tunnels SAC disperse to outside of the hibernating season. There is some evidence to indicate that bats from Ebernoe Common SAC hibernate within the Tunnels SAC. In addition, data from ringing has indicated that barbastelle bats from both Ebernoe Common SAC and The Mens SAC have been recorded swarming at the Tunnels SAC (pers. Comm. with Bat Conservation Trust[85]).

7.2.14 The SIPs includes the following recommendations that relate to habitat use of bats:

- Investigate movements and requirements of bats to aid future tailored management to enhance and reconnect commuting and foraging habitat in the wider countryside outside of the site and across other nearby related SACs designated for bats.

7.2.15 **It is recommended that this work is undertaken to better inform future planning matters**. Bats will travel large distances from a hibernating roost to a summer roost, with transitory roosts in between used as stop over points. It is noted that protected species (such as bats) will be of note during the Planning Process.

- Identify further areas with suitable available, restored or created habitat to provide winter foraging, summer/night/autumn swarming activity and connectivity to related sites.

7.2.16 Policy SD10 (International Sites) provides the following text to provide specific protection for Singleton and Cocking Tunnels SAC.

'*Singleton and Cocking Tunnels SAC*

2. Proposed use or development of the tunnels comprising the Singleton and Cocking Tunnels SAC will be required to demonstrate that there is no adverse effect on the conservation features, including hibernation habitat for barbastelle and Bechsteins bats, or on the integrity of the site. Suitable commuting and foraging habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development.'

7.2.17 Whilst research has been undertaken to determine flight lines of bat features of the two nearby SACs (Ebernoe Common and The Mens SAC), there is no information regarding flight lines of the hibernating bats of Singleton and Cocking Tunnels SAC. **It is recommended that the Authority undertake research to help define the area form which bat features of Singleton and Cocking Tunnels SAC travel to use this hibernation feature.** Whilst this is not a recommendation for inclusion within the Local Plan, it will help inform future development policy regarding this issue.

7.2.18 However, defining a 'catchment' for a hibernation site such as Singleton and Cocking Tunnels SAC will always be more difficult than defining the catchment for a breeding site such as Ebernoe Common and The Mens. Moreover, defining such a zone is arguably less relevant for a hibernation site since there is no core 'sustenance zone' as such since the bats primarily use the site to hibernate. In the absence of any definitive data relating to commuting distances of the bat population for which the SAC is designated, each proposed development site should be assessed on a site-by-site basis. This should not cause deliverability issues, but ensuring important features used within the wider landscape by the SAC bat population for commuting to and from the hibernation sites are retained may pose constraints on the layout of a proposed development site. However, this does not introduce a new constraint on developers since barbastelle bats are an internationally important species even when not known to be associated with a specific European

[85] Email dated 24/06/15

site, such that the potential for their presence on any site should be considered through the development control process as a matter of course.

7.2.19 The following sites have been identified as being likely to particularly require consideration of this issue during development control (see Appendix B Table 2 for further information):

- Strategic Allocation Policy SD81: West Sussex County Council Depot and former Brickworks site, Midhurst;
- Strategic Allocation Policy SD82: Holmbush Caravan Park, Midhurst;
- Allocation Policy SD83: Brisbane House, Midhurst;
- Allocation Policy SD84: Land at Lamberts Lane, Midhurst;
- Allocation Policy SD85: Land at Park Crescent, Midhurst; and
- Allocation Policy SD96: Land South of Heather Close, West Ashling

7.2.20 In all of the associated policies and/or supporting text, the need for a project-level HRA to clarify these issues as a result of detailed design is explicitly cited. It is considered that the above precautions will ensure policies within the SDNPA Local Plan do not result in likely significant effects upon the hibernating bats features of the Singleton and Cocking Tunnels SAC.

Loss of supporting habitat for birds

7.2.21 The Arun Valley SPA and Ramsar site is designated for its wintering population of Bewick's swan. It is widely accepted[86] that Bewick's swans 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. The SDNP Local Plan includes policies that could result in loss of supporting habitat within 5km of the Arun Valley SPA and Ramsar site depending on how they are delivered. These are as follows: Strategic Policy SD25: (Development Strategy), and Strategic Policy SD26 (Supply of Homes). These provide for residential development within the following settlements, all located within 5km of the designated site and could potentially lead to loss of supporting habitat (it is impossible to know at this stage whether they actually would or not):

- Amberley is located adjacent to the designated site;
- Coldwaltham is located adjacent to the designated site;
- Watersfield is located within 480m of the designated site;
- Bury is located within 1km of the designated site; and
- Fittleworth is located within 4km of the designated site.

7.2.22 Policy SD10: (International Sites) includes the following text:

'Arun Valley SPA

3. Development proposals on greenfield sites within 5km of the Arun Valley SPA, a shown on the Policies Map, will undertake an appraisal as to whether the land is suitable for wintering Bewick swan. If it suitable then surveys will be undertaken to determine whether the fields are of importance to the swan population. If so, appropriate alternative habitat would be required before development could proceed.'

7.2.23 The inclusion of this policy ensures that no likely significant effects upon the Arun Valley SPA and Ramsar site will result as a consequence of loss of supporting habitat resulting from the SDNPA Local Plan. Moreover, with specific regard to Site Allocation SD64 (Land South of London Road, Coldwaltham) the policy specifically requires any application '*To demonstrate that there would be no likely significant effect on the Waltham Brooks Site of Special Scientific Interest (SSSI), the Amberley Wild Brooks SSSI, and the Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site and that suitable mitigation, where deemed necessary, will be secured through planning obligations and/or planning conditions.'*

[86] 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 within which likely significant effects could result from loss of supporting habitat.

8 Urbanisation

8.1 Introduction

8.1.1 This impact is closely related to recreational pressure, in that they both result from increased populations within close proximity to sensitive sites. Urbanisation is an issue in area where a designated site is located within close proximity to a large urban area. Urbanisation is considered separately as the detail of the impacts is distinct from the trampling, disturbance and dog-fouling that results specifically from recreational activity and is more related to close proximity of large scale urban development. The list of urbanisation impacts can be extensive[87], but core impacts can be singled out:

- Increased fly-tipping - Rubbish tipping is unsightly but the principle adverse ecological effect of tipping is the introduction of invasive alien species with garden waste. Garden waste results in the introduction of invasive aliens precisely because it is the 'troublesome and over-exuberant' garden plants that are typically thrown out[88]. Alien species may also be introduced deliberately or may be bird-sown from local gardens.
- Arson – Heathlands are particularly susceptible to arson or accidental fires. Consultations reported in the Whitehill & Bordon HRA have revealed a snapshot of the extent of fire on European sites over recent years. Monitoring has not always been carried out uniformly, but site managers logged two incidences of fire on Shortheath Common in 2010, with none in the preceding two years. The total area of Shortheath Common lost to wildfire in 2010 was 0.92 hectares, representing about 1.6% of the site, much of which is not heathland (pers. comm., 2011). On Broxhead Common, four fires were logged between 2008 and 2010, totalling 5.60 hectares.
- Cat predation - A survey performed in 1997 indicated that nine million British cats brought home 92 million prey items over a five-month period[5]. A large proportion of domestic cats are found in urban situations, and increasing urbanisation is likely to lead to increased cat predation.

8.1.2 The impact of general urbanisation also of course involves recreational pressure. However that impact pathway arises from a potentially much wider catchment than 400m and thus has been discussed separately above. The most detailed consideration of the link between relative proximity of development to European sites and damage to interest features has been carried out with regard to the Thames Basin Heaths SPA.

8.1.3 After extensive research, Natural England and its partners produced a 'Delivery Plan'[89] which made recommendations for accommodating development while also protecting the interest features of the European site. This included the recommendation of implementing a series of zones within which varying constraints would be placed upon development. While the zones relating to recreational pressure expanded to 5km (as this was determined from visitor surveys to be the principal recreational catchment for this European site), that concerning other aspects of urbanisation (particularly predation of the chicks of ground-nesting birds by domestic cats but also including other disturbance) was determined at 400m from the SPA boundary. The delivery plan concluded that the adverse effects of development located within 400m of the SPA boundary could not be mitigated and as such, no new housing should be located within this zone.

8.1.4 No exact correlation can be made between the incidence of fly-tipping and deliberate arson and the specific proximity of large-scale human settlement, since it does depend on circumstances. However, it is reasonable to conclude that the risk will be particularly high when large amounts of human settlement is very near (for the purposes of this assessment we have as a precaution defined 'very near' as being within 400-500m rather than immediately adjacent). While this is not an empirically derived distance, it does enable urbanisation effects to be defined and the likelihood assessed at this scale.

8.2 Discussion

8.2.1 The following designated sites are located adjacent to settlements identified within the SDNPA Local Plan to provide new residential development:

[87] Underhill Day, JC. 2005. A Literature Review of Urban Effects on Lowland Heaths and their Wildlife: English Nature Research Report 623

[88] Gilbert, O. & Bevan, D. 1997. The effect of urbanisation on ancient woodlands. British Wildlife 8: 213-218.

[5] Woods, M. et al. 2003. Predation of wildlife by domestic cats *Felis catus* in Great Britain. Mammal Review 33, 2 174-188.

[89] http://www.southeast-ra.gov.uk/documents/sustainability/thames_basin_heaths/delivery_framework_march2009.pdf

- Arun Valley SPA, SAC and Ramsar site
- East Hampshire Hangers SAC
- Lewes Down SAC
- River Itchen SAC
- Woolmer Forest SAC
- Wealden Heaths Phase II SPA

8.2.2 Whilst the Arun Valley designated site is located adjacent to the settlements of Amberley and Coldwaltham, there is a proposal to only bring forward a total of 36 new houses, six at Amberley and 30 at Coldwaltham[90] (Allocation Policy SD64: Land South of London Road, Coldwaltham). This is a small number of new dwellings. As such, it is not considered that urbanisation is a strategic issue at this designated site.

8.2.3 East Hampshire Hangers SAC is located adjacent to Selbourne which is identified to accommodate six new dwellings. This is a small number of new dwellings. In addition, no specific site locations have been assessed, so it is possible that development will not be adjacent or in close proximity to the designated site and as such, it is not considered that urbanisation is a strategic issue at this designated site.

8.2.4 Lewes Downs SAC is located in close proximity to Lewes town which is identified to accommodate 875 new dwellings[91]. These same dwellings are identified within the emerging Lewes Joint Core Strategy which was adopted in 2015. The HRA which was agreed by Natural England did not identify any likely significant effects upon the SAC resulting from the Joint Core Strategy. This is in part because the A26 lies between the SAC and the settlement, separating the settlement from the designated site and is also partly due to the steep topography of the SAC; it is considered that this impact pathway upon Lewes Downs SAC can be screened out.

8.2.5 The River Itchen SAC is located adjacent to the settlements of Cheriton and Itchen Abbas. The allocation of dwellings to these settlements will result in a total of 23 new dwellings[92], including 12 to 15 dwellings at Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton and 8 to 10 dwellings at Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas. Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton is located 180m from the River Itchen SAC and is separated from the site by a road and existing residential properties. Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas was present in the Preferred Options HRA and was assessed at that time, although the number of dwellings has increased from 8 dwellings to 10 dwellings. This site is located within 50m of the River Itchen SAC, separated from the SAC by the B3047 and a 30m deep block of woodland. As only a small number of dwellings are to be provided at these settlements and none of the site allocations are immediately adjacent to the designated site and, as such, it is not considered that urbanisation is a significant issue at this designated site.

8.2.6 Both Liss and Greatham at their closest lie immediately adjacent to the Wealden Heaths Phase II SPA. It was determined during the Examination of the East Hampshire/South Downs Joint Core Strategy that a strategic prohibition on development within 400m of the SPA was not required due to the small number of housing proposals expected within that zone. However, the analysis on which that conclusion was based assumed that approximately 30 dwellings would be delivered over the plan period within 400m of the Wealden Heaths Phase II SPA (not just in the National Park, but within the entire 5km zone). Natural England has since advised that new gypsy and traveller pitches should be included within this definition of 'dwellings'. Since this time a further increase in housing numbers to 43 dwellings within 400m of the Wealden Heaths Phase II SPA has been agreed by Natural England and East Hampshire Council.

8.2.7 In order to avoid exceeding this figure it was advised in previous drafts of this HRA that the National Park authority should keep a record of permissions granted within 400m of the Wealden Heaths Phase II SPA in liaison with East Hampshire District Council. For the same reason, it was also recommended that further permissions for Gypsy and Traveller sites within 400m of the Wealden Heaths Phase II SPA are discouraged and that housing sites at Liss Forest and Greatham should be mainly targeted on land more than 400m from the SPA. Further, it was recommended that reference to the fact that there is an agreed limit on the number of net new

[90] In the previous iteration of the Plan this was 20 new dwellings were provided at Coldwaltham, as such there is an increase of 10 dwellings in Coldwaltham

[91] In the previous iteration of the Plan this was 835 new dwellings were provided at Lewes, as such there is an increase of 40 dwellings in Lewes

[92] In the previous iteration of the Plan this was 14 new dwellings were provided at Cheriton and Itchen Abbas, as such there is an increase of 9 dwellings in Cheriton and Itchen Abbas.

dwellings (including gypsy and traveller sites) should be included within the supporting text of Policy SD10 (International Sites). It will also be necessary to work in conjunction with other authorities that share this 43 dwelling capacity within 400m of the Wealden Heaths Phase II SPA to ensure that this capacity is not exceeded.

8.2.8 These recommendations are reflected in paragraph 5.95 of the Local Plan which states that *'To avoid likely significant effect upon the SPA, the National Park Authority will monitor all development within the 400m zone in liaison with East Hampshire District Council, Waverley District Council and Natural England. The National Park Authority has worked with East Hampshire District Council on the preparation of a Supplementary Planning Document (SPD) that provides guidance to applicants where development proposals in East Hampshire District, including the area that falls within the South Downs National Park, will result in a net increase in residential development within 400m of the Wealden Heaths Phase II SPA'*.

8.2.9 A single site allocation for 4 permanent Gypsy and Traveller pitches is provided by Allocation Policy SD74: Land at Fern Farm, Greatham located 190m from the Wealden Heaths Phase II SPA. In line with Policy SD10 (International Sites), this allocation will be required to undertake a project specific HRA and this has been reflected within the policy itself. In addition, this allocation either must count towards the capped dwelling provision capacity within 400m of the Wealden Heaths Phase II SPA, or the site must be designed such that the four net new pitches all lie more than 400m from the Wealden Heaths Phase 2 SPA.

8.2.10 Whilst the settlement of Greatham is at its closest adjacent to the Wealden Heaths Phase II SPA, its second allocation (Allocation Policy SD73: Land at Petersfield Road, Greatham) which seeks to accommodate 35 to 40 dwellings[93] is located c. 600m from the SPA and therefore outside the 400m zone and so is not considered to contribute to increased urbanisation effects as it is more than 400m from the SPA.

[93] In the previous iteration of the Plan this was 30 new dwellings were provided at tis allocation, as such there is an increase of between 5 and 10 additional new dwellings at this site allocation.

9 Renewable Energy Development

9.1 Introduction

9.1.1 The term renewable energy covers a wide range of energy generation methods most of which would not have a negative interaction with any European sites. Renewable energy developments in the form of wind turbines and wind farms have the potential to result in:

- A risk of bird collisions with turbine blades;
- Displacement of birds through disturbance,
- A barrier effect to bird movement through creation of a wind array;
- A risk of bat collisions with turbine blades; and
- A risk of barotrauma effects on bats causing mortality from turbine blades (barotrauma is a decompression effect occurring as a result of rapid pressure changes at moving turbine blades, resulting in mortality of bats)

9.2 Discussion

9.2.1 Different types of internationally designated sites that contain bat or bird features have different vulnerabilities, depending on the species present and have potential to result in likely significant effects if a renewable energy scheme is bought forward. Policy SD51 (Renewable Energy) is a development management policy. It does not outline any location, type or extent of renewable energy.

9.2.2 Since any proposed development will have to be bought forward in accordance with all relevant Plan policies (such as SD10: International Sites), it is considered that no likely significant effect would arise. ,

9.2.3 It is advised that where renewable energy development is to take place within proximity to internationally designated sites that contain bird and bat features, caution should be given and Policy SD10 should be strictly adhered to.

10 In Combination Assessment

10.1 Introduction

10.1.1 It is a requirement to consider the effects of the Local Plan in combination with other projects and plans, in particular to identify any issues that only arise when the plans/projects are considered together. Only one significant project has been raised for consideration, which is the proposed A27 corridor around Arundel, Worthing and Lancing. There is no current preferred option. The options under consideration involve bypasses on the A27 at Arundel, at Worthing/Lancing or to the east of Lewes. None of the options are close to a European site and none are expected to result in changes in flows at any European sites.

10.1.2 With regard to other plans, the main other plans of relevance are the Core Strategies/Local Plans for adjacent authorities and in particular those which overlap with the South Downs National Park.

10.1.3 It should be noted that the preceding chapters have effectively already considered effects 'in combination' with respect to:

- Air quality on European sites from all relevant Local Plans
- East Hampshire District Local Plan: Joint Core Strategy – This was a Joint Core Strategy between East Hampshire district and the South Downs National Park Authority. As such impacts between these authorities were considered 'in combination' as an inherent part of the process. In addition, the accompanying HRA had its own 'in combination' assessment which explored impacts with other surrounding authorities affecting the European sites in East Hampshire (Wealden Heaths Phase II SPA, Woolmer Forest SAC, East Hampshire Hangers SAC, Shortheath Common SAC, Butser Hill SAC and River Itchen SAC). As such, impacts on European sites in East Hampshire have already been fully assessed and have informed the conclusion of this HRA report;
- Lewes Joint Core Strategy (adopted May/ June 2016) - the housing identified for Lewes in the Lewes Joint Core Strategy and that identified in the National Park Local Plan are the same as they overlap spatially. As such impacts on Lewes Downs SAC have effectively been fully assessed;
- All wastewater discharge and public water supply impacts have effectively already been assessed 'in combination' since the analysis is based on water company Water Resource Management Plans and the Environment Agency's Review of Consents work. The in combination impact on the Solent sites is thus discussed in sections 4.4 and 6.4 and so is not repeated here.

10.1.4 The potential for in-combination effects has been considered for each remaining European site below.

10.2 Arun Valley SAC/SPA/Ramsar site

10.2.1 The principal other plans and projects of relevance to development around the Arun Valley SAC/SPA/Ramsar site are the Local Plans for Horsham and to a lesser extent Arun and Adur districts, which between them intended to deliver approximately 31,238 dwellings over the Local Plan period. Since the previous iteration of the SDNP Plan HRA, Horsham has adopted its new Horsham District Planning Framework which provides for 16,000 new dwellings during its Plan period, 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[94], whilst Arun are providing for approximately 20,000 new dwellings during its emerging Plan period), thus resulting in a potential increase of approximately 39,600 new dwellings within the three surrounding Authorities.

10.2.2 The HRA for the Horsham Core Strategy HRA scoped out recreational pressure as an impact pathway. The HRA for the emerging Arun Local Plan enabled impacts upon Arun Valley SAC/SPA and Ramsar site to be screened out, alone and in combination. The HRA for the emerging Adur Local Plan identified that impacts upon the Arun Valley SAC/ SPA and Ramsar site can be screened out alone and in combination.

10.2.3 The SDNPA Local Plan outlines at least 56 new houses within 7km of the Arun Valley designated site. This is a very small fraction of the 39,600 new houses to be provided within the Arun and Adur Core Strategy and Horsham Core Strategy. It can be considered that the Local Plan will not result in likely significant effects upon the Arun Valley SPA, SAC and Ramsar site, alone or in-combination with any other project or plan.

[94] This Plan is in its final stages of preparation and the submission version was submitted to the SoS in October 2016.

10.3 Castle Hill SAC

10.3.1 Lewes District adopted its Joint Core Strategy in 2016. The HRA undertaken to support this Plan screened out any likely significant effects upon this SAC. It can therefore be concluded that any adverse effects associated with the emerging Joint Core Strategy are taken account of as part of the Core Strategy HRA, which screened out recreational pressure on Castle Hill SAC.

10.3.2 It can be considered that the SDNPA Local Plan will not result in likely significant effects upon Castle Hill SAC alone or in-combination with other project or plans.

10.4 Duncton to Bignor Escarpment SAC

10.4.1 The HRA for the neighbouring emerging Arun District Local Plan (2013) screened out any likely significant effects as a result of this Plan. As no impact pathways were identified within this plan or the SDNPA Local Plan, it is considered that there will be no likely significant effects on this SAC alone or in-combination with other projects or plans.

10.5 Ebernoe Common SAC

10.5.1 Since there is no aspect of the Local plan that could result in likely significant effects upon this SAC provided precautions are taken (as noted in this HRA). It can be concluded that there will be no likely significant effects upon the SAC resulting from other project or plans alone or in-combination. The Chichester Local Plan HRA established that there would be no likely significant effect of development in those parts of Chichester district covered by the Local Plan (i.e. those parts outside the National Park) on this European site and it is considered that there is no mechanism for an in combination effect.

10.6 Kingley Vale SAC

10.6.1 The Local Plan for the area and surrounding authorities' Plans provides for increased populations to the area through housing provision etc. However, since there is no aspect of the SDNPA Local Plan that could be deemed likely to have a significant adverse effect on the designated SAC site there is no mechanism for it to contribute to any 'in-combination' effect.

10.7 The Mens SAC

10.7.1 One other project or plan has been identified that could result in a likely significant effect upon the SAC, namely the emerging Horsham District Planning Framework. The radio-tracking studies undertaken for the SAC indicate clearly that the main foraging areas for barbastelle are towards to the east of the SAC into Horsham district. The Horsham District Planning Framework already identifies the need to protect habitat outside the SAC and this is incorporated into the Council's development control decisions. As such, it can be considered that there will be no likely significant effects upon the SAC alone or in-combination with any other project or plan. The Chichester Local Plan HRA established that there would be no likely significant effect of development in those parts of Chichester district covered by the Local Plan (i.e. those parts outside the National Park) on this European site and it is considered that there is no mechanism for an in combination effect.

10.8 Pevensey Levels SAC/ Ramsar site

10.8.1 No impact pathways have been identified that could result in likely significant effects as a result of the SDNPA Local Plan. As such, it can be considered that there will be no likely significant effect upon the SAC and Ramsar site alone or in-combination with any other project or plan.

10.9 Rook Clift SAC

10.9.1 No other projects or plans have been identified that could result in a likely significant effect upon the SAC. As such, it can be considered that there will be no likely significant effects upon the SAC alone or in-combination with any other project or plan.

10.10 Singleton and Cocking Tunnels SAC

10.10.1 Likely significant effects upon the SAC have been screened out within the SDNPA Local Plan. There is potential for likely significant effects resulting from the re-establishment of the railway line of which the tunnels form a part. However, the SDNPA Local Plan, contains sufficient protection to ensure no likely significant effects result from other projects or plans either alone or in-combination.

10.11 Ashdown Forest SAC and SPA

10.11.1 Whilst Ashdown Forest is located more than 12 km from the SDNPA boundary, there is potential for the Plan to contribute atmospheric deposition within the site in combination with other projects and plans. Increased traffic as a result of the Plan could lead to increased traffic along the A22 and A26 which are located adjacent to the designated site and thus atmospheric deposition within the designated site, thus impacting upon habitats and supporting habitats of avian features. As previously noted in Chapter 5, transport modelling and a subsequent air quality assessment has been undertaken to inform this HRA.

11 Summary of Recommendations

11.1.1 There are no recommendations made for further changes to the plan itself. However, a number of recommendations have been made for initiatives to be taken forward either strategically or via more detailed project-level HRA for individual planning applications. These are summarised below.

11.2 Hydrology

River Itchen SAC

11.2.1 Site allocations Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton and Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas are both located in proximity to the River Itchen SAC and runoff from the construction and operational phase of the development if inappropriately managed could result in a reduction in water quality within the SAC and thus have a likely significant effect. However, policy for each of these allocations includes wording to ensure the protection of the River Itchen SAC. In order to better match the terminology of the Conservation of Habitats and Species Regulations 2010 it is recommended that this protective text is rephrased to read '*no likely significant effect on the River Itchen SAC…'.* To ensure no likely significant effects result a project specific HRA should be undertaken to ensure suitable avoidance measures are provided. This requirement should be included within policy/ supporting text of the Plan.

11.2.2 In-line with recommendations included in the Twyford Neighbourhood Plan, and to ensure no likely significant effects result from potential increase in phosphorous levels as a result small sewage discharges associated with discharges from septic tanks and package treatment works associated with development, it is recommended that the applicant will need to provide a drainage plan to show that the drainage associated with the site will either utilise an existing mains drainage system at the nearest point of capacity or will be dealt with by a small package treatment plant (or similar). If the decision is to use a small package treatment plant then this will need to demonstrate that there is no hydrological connectivity from the proposed package treatment plant to (for example) the River Itchen. The plan should assess if there are existing watercourse, local drainage channels or a high water table in the area of the proposed package treatment that will mean that the proposed package treatment would not be effective and would result in there being a high risk that phosphorous transferred into the protected watercourses (such as the River Itchen SAC and SSSI). If emission of phosphorous from the new development could not be prevented, the scheme should be refused until a suitable solution is identified.

West Ashling (10 dwellings) and Funtington (10 dwellings).

11.2.3 The Council will need to confirm which WwTW serve this settlement and that the WwTW can accommodate this increase in dwellings within its headroom.

11.3 Loss of functionally-linked habitat

Loss of functionally-linked habitat for bats

11.3.1 The SIPs includes the following two recommendations that relate to habitat use of bats:

- Investigate movements and requirements of bats to aid future tailored management to enhance and reconnect commuting and foraging habitat in the wider countryside outside of the site and across other nearby related SACs designated for bats.

11.3.2 It is recommended that this work is undertaken to better inform future planning matters.

Singleton and Cocking Tunnels SAC

11.3.3 Whilst research has been undertaken to determine flight lines of bat features of the two nearby SACs (Ebernoe Common and The Mens SAC), there is no information regarding flight lines of the hibernating bats of Singleton and Cocking Tunnels SAC. It is recommended that the Authority undertake research to help define the area form which bat features of Singleton and Cocking Tunnels SAC travel to use this hibernation feature. Whilst this is not a recommendation for inclusion within the Local Plan, it will help inform future development policy regarding this issue.

Strategic Allocation Policy SD81: West Sussex County Council Depot and former Brickworks site, Midhurst; Strategic Allocation Policy SD82: Holmbush Caravan Park, Midhurst; Allocation Policy SD83: Brisbane House, Midhurst; Allocation Policy SD84: Land at Lamberts Lane, Midhurst; Allocation Policy SD85: Land at Park Crescent, Midhurst

11.3.4 Whilst SD10 (International Sites) is sufficient to enable this allocation to be screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. It is recommended that a project level HRA is conducted to support planning applications within these sites. The requirement for this should be incorporated within Plan policy/ supporting text.

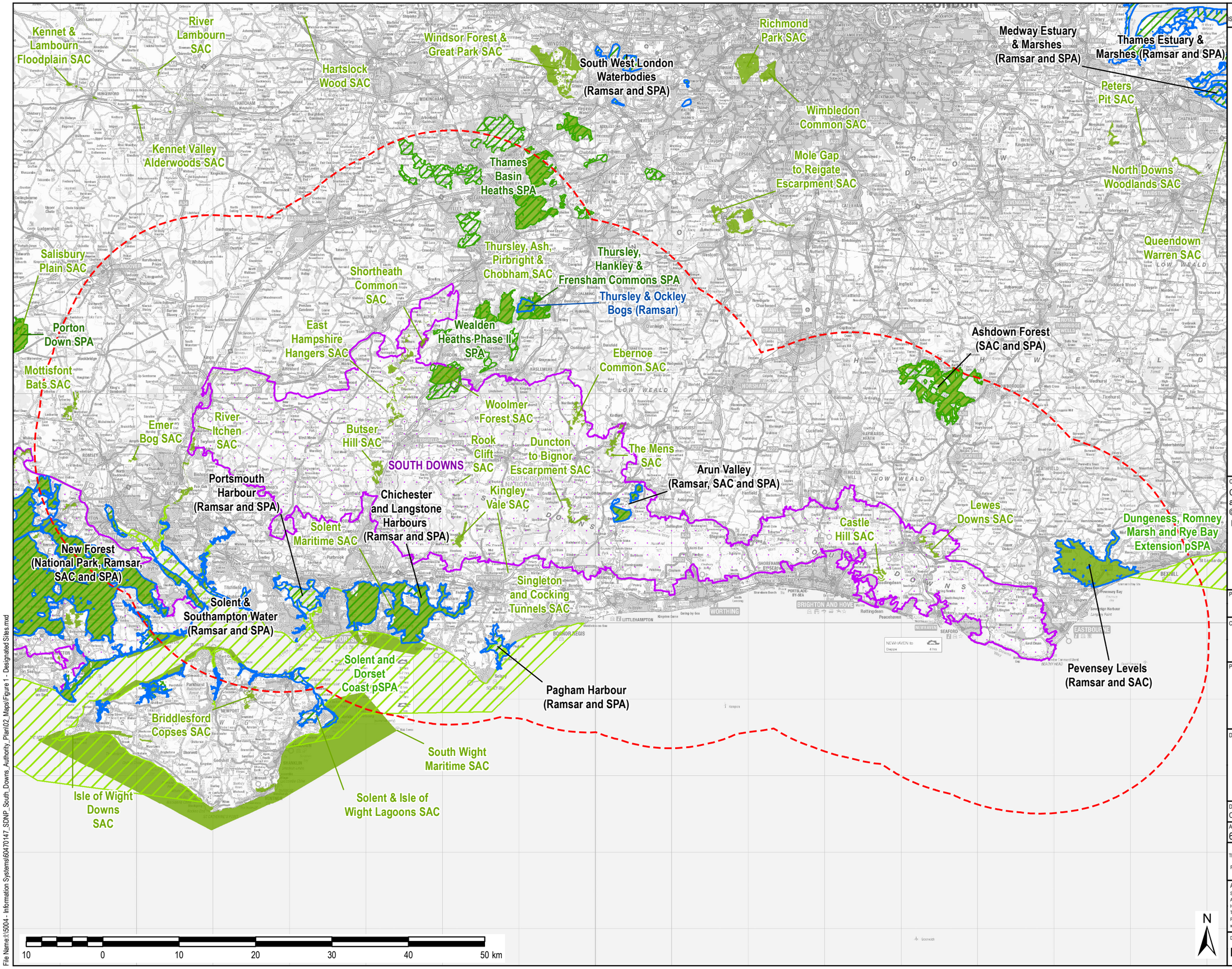
11.4 Air quality

Ashdown Forest SAC/SPA

11.4.1 Although it does not constitute mitigation (and is not presented as such), as a further safeguard specifically concerning Ashdown Forest, the SDNPA has also led on convening an Ashdown Forest working group which first met in April 2017. The shared objective of the working group is to ensure that impacts on the Ashdown Forest are properly assessed through HRA and that, if required, a joint action plan is put in place should such a need arise. It should be noted that the absence of any need for 'mitigation' associated with future growth in a particular authority does not prevent the various Ashdown Forest authorities cooperatively working together to do whatever they jointly consider appropriate in reducing traffic and improving nitrogen deposition etc. around the Forest as a matter of general good stewardship. This would also enable future trends in air quality to be tracked and the modelling (and responses to that modelling) to be updated as necessary. The aforementioned working group would be a suitable forum for this cooperative working.

Appendix A. Internationally Designated Sites

Appendix A, Figure 1 and 2 – Internationally Designated Sites and Site Allocations



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- South Downs National Park 20km Buffer
- Ramsar
- Potential Special Protection Areas (Marine) (pSPA)
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- National Park

Purpose of Issue
DRAFT

Client
SOUTH DOWNS NATIONAL PARK AUTHORITY

Project Title
SOUTH DOWNS LOCAL PLAN PRE-SUBMISSION SEPTEMBER 2017

Drawing Title
LOCATION OF THE SOUTH DOWNSNATIONAL PARK AUTHORITY ANDEUROPEAN DESIGNATED SITES

Drawn	Checked	Approved	Date
CN	JW	IHH	01/06/2017

AECOM Internal Project No.	Scale @ A3
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Drawing Number	Rev
FIGURE 1	01

File Name:I:\5004 - Information Systems\60470147_SDNP_South_Downs_Authority_Plan\02_Maps\Figure 1 - Designated Sites.mxd

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Map Extent
- Employment Site Allocation
- Gypsy and Traveler Site Allocation
- Residential Housing Site Allocation
- Strategic Site Allocation
- National Park
- South Downs National Park 20km Buffer
- Ramsar
- Special Area of Conservation (SAC)
- Solent and Dorset Coast Potential Special Protection Area (Marine) (pSPA)
- Special Protection Area (SPA)

Purpose of Issue
DRAFT

Client
SOUTH DOWNS NATIONAL PARK AUTHORITY

Project Title
SOUTH DOWNS LOCAL PLAN PRE-SUBMISSION SEPTEMBER 2017

Drawing Title
SITE ALLOCATIONS OVERVIEW

Drawn	Checked	Approved	Date
SM	JW	IHH	31/05/2017

AECOM Internal Project No.	Scale @ A3
60470147	1:350,000

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Drawing Number	Rev
FIGURE 2	02

File Name:I:\5004 - Information Systems\60470147_SDNP_South_Downs_Authority_Plan\02_Maps\Figure 2 - Site Allocations Overview.mxd

5 0 5 10 15 20 25 km

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12 Arun Valley SAC/ SPA/ Ramsar site

12.1 Introduction

Arun Valley SPA covers 528.62ha of West Sussex, with 95% of the site comprising of mesophile grassland, 2% inland water bodies, 2% bog, marshes, water fringed vegetation, fens and 1% broad leaved deciduous woodland. The site comprises of low-lying grazing marsh, largely on alluvial soils, but with an area of peat derived from a relict raised bog. Southern parts of the Arun Valley are fed by calcareous springs, while to the north, where the underlying geology is Greensand, where the water is more acidic. These water bodies support internationally important numbers of Berwick's swan *Cygnus columbianus bewickii*.

Arun Valley SPA consists of three SSSIs; Amberley Wild Brooks SSSI, Pulborough Brooks SSSI and Waltham Brooks SSSI. Together these sites comprise an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley.

The birds that winter on many SPAs (the Arun Valley being no exception) are not confined to the boundaries of the SPA, but in fact utilise areas of 'supporting habits' located outside of the boundaries and sometimes many kilometres distant.

12.2 Reasons for Designation

SAC criteria

The site was designated as being of European importance for the following interest feature:

- Ramshorn snail *Anisus voticulus*, once a species covering over 15 sites in the south east of England, now only remains in a few select locations as a result a massive decline. Arun Valley is one of the few remaining site in the UK to support this particular species.

SPA criteria

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

Over winter;

- Bewick's swan, 115 individuals representing at least 1.6% of the wintering population in Great Britain (5 year peak mean for 1992/93 to 1996/7).

Assemblage qualification: A wetland of international importance.

- The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl.

Over winter, the area regularly supports 27,241 individual waterfowl (5 year peak mean for 1992/93 to 1996/97) including: shoveler, teal, wigeon, Bewick's swan.

Ramsar criteria

The Arun Valley Ramsar site qualifies on three of the nine Ramsar criteria Table 7.

Table 6: Ramsar crieria and qualification

Ramsar criterion	Description of Criterion	River Arun and marshes
2	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically	The site supports seven wetland invertebrate species listed in the British Red Book and the endangered *Pseudamnicola confuse* (swollen

	endangered species or threatened ecological communities.	spire snail). As well as four nationally rare and four nationally scarce plant species.
3	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region	Within the ditches intersecting the site there are 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.
5	A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.	Species with peak counts in winter: • 13774 waterfowl (5 year peak mean 1998/99-2002/2003) Species identified subsequent to designation for possible future consideration: • Northern pintail , *Anas acuta*, NW Europe 641 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3) Species currently occurring at levels of national importance: • Eurasian wigeon , *Anas penelope*, NW Europe 4742 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3) • Eurasian teal , *Anas crecca*, NW Europe 2931 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3) • Northern shoveler , *Anas clypeata*, NW & C Europe 222 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9- 2002/3) • Ruff , *Philomachus pugnax*, Europe/W Africa 27 individuals, representing an average of 3.8% of the GB population (5 year peak mean 1998/9-2002/3).

The Arun Valley SPA and Ramsar and SAC site comprises of three SSSIs.

12.3 Historic Trends and Current Pressures

Amberley Wild Brooks SSSI

The Amberley Wild Brooks SSSI lies within the greensand natural area and covers approximately 322.6ha. The site supports an extensive area of alluvial grazing marsh, which is dissected by draining ditches supporting over 156 flowering plants. This part of the Arun Valley flood each year making it a haven for breeding birds. This site is managed by the RSPB but unlike many other RSPB reserves, recreational visitors are not encouraged 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.

Over-wintering birds are of international importance, with a rich community of breeding birds and several uncommon invertebrate assemblages. These ditches support a range of rich flora which includes one nationally rare plan the cut grass *Leersia oryzoide*st which is currently restricted to only ten UK locations. The marsh fern *Thelpteris thelypteroides* an uncommon plant is found within the fen. Where this fen is situated two rare snails (molluscs): *Anisus vorticulatus* and *Pseudamnicola confuse* can be found.

Pulborough Brooks SSSI

A large part of the site is now managed as an area of wet grassland principally for the benefit of breeding waders and internationally important assemblages of wintering wildfowl. Controlled flooding of this part of the valley during the winter attracts large flocks of nationally and internationally important numbers of Bewick's swan, wigeon, teal, pintail, shoveler and ruff. Other wintering species of note include white-fronted goose, golden plover, snipe and large flocks of lapwing.

Waltham Brook SSSI

Waltham Brook SSSI is situated the other side of the river to that of Amberley Wild Brooks SSSI. Like Amberley Wild Brooks the site lies within the greensand natural area and covers approximately 47.39ha. The site is comprised of alluvial grazing marsh which is dissected by draining ditches supporting a species-rich community of aquatic plants.

This part of the Arun Valley floods almost every winter, resulting in the site becoming a giant lake. This site is particularly important for wildfowl such as teal, shoveler, wigeon and pintail that take advantage of the sanctuary and feeding opportunities offered.

Condition Assessment

During the most recent condition assessment process, 98.05% of Amberley Wild Brooks SSSI was unfavourable but recovering, 100% of Pulborough Brooks SSSI were judged to be meeting PSA targets and in favourable condition, and Waltham Brook SSSI was assessed as being 100% unfavourable condition but recovering. The Arun Valley SPA, Ramsar and SAC were judged to be in favourable condition.

The following key environmental conditions were identified for the Arun Valley SPA/SAC/Ramsar:

- Appropriate ditch management including control of shade-inducing marginal vegetation.
- Good water quality
- Sympathetic management of lowland wet grassland/grazing marsh
- Control of fertilizers.
- Hydrology management (abstraction, river maintenance, ensuring continuation of winter floods).
- Absence of nutrient enrichment.

13 Ashdown Forest SAC/SPA

13.1 Introduction

Ashdown Forest contains one of the largest single continuous blocks of lowland heath in south-east England, with both European dry heaths and, in a larger proportion, wet heath.

13.2 Reasons for Designation

SAC criteria

The site was designated as being of European importance for the following interest features:

- Wet heathland and dry heathland

SPA criteria

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

Breeding;

- Nightjar;
- Woodlark.

13.3 Historic Trends and Current Pressures

During the most recent condition assessment process, 99% of the SSSI was considered to be in either ‘favourable’ or ‘unfavourable recovering’ condition.

The following key environmental conditions were identified for Ashdown Forest SAC/SPA:

- Appropriate land management
- Effective hydrology to support the wet heathland components of the site
- Low recreational pressure
- Reduction in nutrient enrichment including from atmosphere.

14 Butser Hill SAC

14.1 Introduction

Butser Hill is a 238.66ha chalk massif with a discontinuous cap of clay-with-flints. The massif has been eroded to leave a series of deep combes in which the modern spring-line is about 1km from the combe-head. The combes on the south-east flank support dense yew *Taxus baccata* woods and the remaining slopes of the hill are sheep-grazed chalk grassland. The calcareous yew woods are outstanding examples of a habitat with a very small representation in Britain. The series of vegetation types represented in the SSSI (chalk grassland, mixed scrub and yew wood) were the subject of a series of pioneer ecological studies.

14.2 Reasons for Designation

Butser Hill qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:

- Semi –natural dry grassland and scrub and facies on calcareous substrate (*Festuco Brometalia)* and an important orchid site. The site contains the richest diversity lichen flora of any chalk grassland site in England. Also supports the distinctive *Scapanietum aspera* or southern hepatic mat association of leafy liverworts and mosses on north-facing chalk slopes. This association is very rare in the UK and Butser Hill supports the largest known example.
- Yew-dominated woodland

14.3 Historic Trends and Current Pressures

The site has traditionally been vulnerable to the effects of surrounding agriculture (i.e. spray drift causing eutrophication). Most of the SAC is in favourable condition (92.13%), and landowners, supported by English Woodland Grant Schemes have been removing inappropriate conifers and clearing excessive scrub.

The environmental vulnerabilities of the Butser Hill SAC are:

- Minimal air pollution (nitrogen deposition may cause reduction in diversity, sulphur deposition can cause acidification).
- Absence of direct fertilisation.
- No spray-drift (i.e. eutrophication) from surrounding intensive arable land.

15 Castle Hill SAC

15.1 Introduction

Castle Hill SAC is situated in Brighton and Hove; East Sussex and covers approximately 114.68ha, with 90% of the site consisting of semi-natural dry grassland and scrubland facies, 5% heath and 5% humid grassland. The site comprises mainly of semi-natural dry grasslands and scrubland facies: on calcareous substrates Festuco-Brometalia which is considered to be one of the best habitats in the UK, this particular habitat is particular important for orchid species. Early gentian *Gentianella anglica*, which is listed as a nationally scarce species is considered to comprise a significant presence on this site. The site is a NNR leased to Natural England from the local authority.

15.2 Reasons for Designation

The site was designated as being of European importance for the following interest feature:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates Festuco-Brometalia
- Early gentian classified as a nationally scarce species.

15.3 Historic Trends and Current Pressures

During the most recent condition assessment process, 100% of the site is classified as having favourable conditions and meeting PSA targets. The site has the occurrence of many positive indicator species at good levels such as tor-grass *Brachypodium pinnatum,* which is abundant in places but is generally confined to the terraces, which are interspersed with short, species-rich turf. Current grazing levels seem appropriate; grasses are not out-competing the herbs and sward height is within suitable levels.

The environmental vulnerabilities of Castle Hill SAC are:

- Controlled encroachment of scrub.
- Maintenance of grazing regimes.
- Absence of nutrient enrichment (leaching and spray drift from surrounding agricultural land).

16 Chichester and Langstone Harbours SPA and Ramsar

16.1 Introduction

Chichester and Langstone Harbours internationally designated sites are located on the south coast in West Sussex and East Hampshire. They cover approximately 5810ha of sheltered estuarine basins comprising extensive sand and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The mud-flats are rich in invertebrates and also support extensive beds of algae, and eelgrasses *Zostera spp*. The basin contains a wide range of coastal habitats supporting important plant and animal communities. The site is of particular significance for waterbirds, especially in migration periods and in winter.

16.2 Reasons for Designation

The SPA is designated for:

- Internationally important wintering populations of dark-bellied brent goose, pintail, shoveler, teal, wigeon, ruddy turnstone, sanderling, dunlin, ringed plover, bar-tailed godwit, whimbrel, red-breasted merganser, grey plover, shelduck, common redshank.
- Internationally important breeding population of little tern, common tern and sandwich tern.
- Over winter the area regularly supports: 93230 waterfowl (5 year peak mean 01/04/1998) Including: Branta bernicla bernicla, Tadorna tadorna, Anas penelope, Anas crecca, Anas acuta, Anas clypeata, Mergus serrator, Charadrius hiaticula, Pluvialis squatarola, Calidris alba, Calidris alpina alpina, Limosa lapponica, Numenius arquata, Tringa totanus, Arenaria interpres

The Ramsar site is designated for the following criterion:

- Ramsar criterion 1:

Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

- Ramsar criterion 5

Assemblages of international importance: Species with peak counts in winter: 76480 waterfowl (5 year peak mean 1998/99-2002/2003)

- Ramsar criterion 6

Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

- Ringed plover *Charadrius hiaticula (*Europe/Northwest Africa) 853 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9- 2002/3)
- Black-tailed godwit *Limosa limosa islandica* (Iceland/W Europe) 906 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9- 2002/3)
- Common redshank *Tringa totanus*, 2577 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)

Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*, 12987 individuals, representing an average of 6% of the population (5 year peak mean 1998/9- 2002/3)
- Common shelduck *Tadorna tadorna*, (NW Europe) 1468 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

- Grey plover *Pluvialis squatarola*, (E Atlantic/W Africa –wintering) 3043 individuals, representing an average of 1.2% of the population (5 year peak mean 1998/9-2002/3)
- Dunlin Calidris *alpina alpina*, (W Siberia/W Europe) 33436 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)

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

Species regularly supported during the breeding season:

- Little tern *Sterna albifrons albifrons*, (W Europe) 130 apparently occupied nests, representing an average of 1.1% of the breeding population (Seabird 2000 Census)

16.3 Historic Trends and Current Pressures

The key environmental vulnerabilities of the SPA/ Ramsar site are:

- Coastal squeeze.
- Unpolluted water.
- Absence of nutrient enrichment of water.
- Minimal recreational and other disturbance
- Absence of non-native species e.g. from shipping activity.
- Maintenance of appropriate hydrological regime, e.g. freshwater flows at heads of channels are important for birds to preen, drink and feed.
- Short grasslands surrounding the site are essential to maintaining interest features as they are now the key foraging resource for dark-bellied brent goose.

17 Dorset and Solent potential Special Protected Area

17.1 Introduction

The site is located on the south coast in the English Channel. It reaches from the Isle of Purbeck in the west to Bognor Regis in the East. The proposed Special Protected Area (pSPA) partially overlaps with four SPAs within the Greater Solent. These are Chichester & Langstone Harbours SPA (designated for Sandwich and Little tern), the Solent and Southampton Water SPA (designated for Common, Sandwich and Little tern), Pagham Harbour SPA (designated for Little tern) and Poole Harbour SPA (designated for Common Tern and Sandwich tern).

17.2 Reasons for Designation

Dorset and Solent pSPA is designated as a pSPA for its foraging habitat that supports:

- Common tern
- Sandwich tern
- Little tern

17.3 Key Environmental Conditions

- Water pollution including changes in turbidity that could impact upon fish populations
- Disturbance from activity. It is noted that the Poole harbour and the Solent Coast are already subject to high levels of shipping activity.

18 Duncton to Bignor Escarpment SAC

18.1 Introduction

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.

18.2 Reasons for Designation

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

- Beech forests on acid soils.

18.3 Historic Trends and Current Pressures

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'.

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.

The key environmental conditions that support the features of European interest have been defined as:

- Appropriate woodland management.

19 East Hampshire Hangers SAC

19.1 Introduction

The East Hampshire Hangars describe a series of woodlands (totalling 569.68ha) on the western edge of the Weald. The SAC is made up of a number of SSSIs.

Upper Greensand Hangers: Empshott to Hawkley

A series of steep, rocky woodlands on calcareous soils. The dominant tree is ash, often with evidence of past coppicing. A variety of herb layer plants occurs, including ancient woodland indicators such as early purple orchid *Orchis mascula*, herb Paris *quadrifolia*, butcher's broom *Ruscus aculeatus*, sanicle *Sanicula europaea*, wild daffodil *Narcissus pseudonarcissus* and sweet woodruff *Galium odoratum*. The woodland supports the nationally scarce Italian lords-and-ladies *Arum italicum* sub species *neglectum*. Bryophyte communities are notable and include nationally scarce species. Molluscs and hoverflies are also represented by nationally scarce species.

Upper Greensand Hangers: Wyck to Wheatley

The geology and species supported are similar to those found at Empshott to Hawkley.

Coombe Wood and The Lythe

The hanger woodlands comprise a range of species including ash, oak *Quercus robur*, beech *Fagus sylvatica* and hazel *Corylus avellana*. These woods support a relatively rich calcareous ground flora with substantial populations of green hellebore *Helleborus viridis* and violet helleborine *Epipactis purpurata*. The hanger woods also possess a rich bryophyte flora, mostly epiphytic on the older trees.

Wick Wood and Worldham Hangers

The species rich ancient *woodland* associated with varied soils is ecologically distinct and contains a number of nationally rare woodland types. On the freely draining upper slopes ash and wych elm *Ulmus glabra* predominate forming an extremely rare woodland type. Beech, pedunculate oak and whitebeam *Sorbus aria* also occur on the upper slopes. A few large coppice stools of small leaved lime *Tilia cordata* occur in Wick Hill Hanger. Fifty-seven species of plant which are indicative of ancient woodlands have been found in the SSSI. Two ponds provide added diversity, which attracts a variety of common and uncommon birds, butterflies, dragonflies and damselflies.

Selborne Common

This SSSI is beech-dominated woodland on a steep east-facing chalk slope, grading to mixed plateau woodland with relict open acid grassland on clay-with-flints. The ground flora is well-developed, with a number of unusual plant species and rare moss species. On the clay-with-flints plateau, acid grassland adds variety, together with a small water body. A small area of downland turf also exists. Selborne Common is one of the most important mollusc sites in Britain, and a number of notable beetles and butterflies also occur.

Noar Hill

Noar Hill exhibits a range of chalk vegetation seral stages from open short-sward chalk grassland overlying ancient quarries, through invasive mixed scrub of hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa*, juniper *Juniperus communis*, and sweetbriar and southern downy roses *Rosa micrantha* and *Rosa tomentosa* to mature beech hanger woodland. In addition, hazel coppice is found on the top of the steep scarp slopes. Eleven species of orchid occur, and the site is of national importance for butterflies and grasshoppers.

Wealden Edge Hangers

The Wealden Edge Hangers comprise the mainly wooded easterly facing escarpment of the Hampshire chalk plateau, at the western extremity of the Weald. It exhibits a wide range of woodland types including mono-specific yew (in some

cases developed over former juniper scrub), yew/beech and beech/ash with beech/wych elm /field maple *Acer campestre*/ash, and oak /hazel, on deeper soils, and moist ash/alder *Alnus glutinosa* wood by escarpment-foot springs. Ash, beech and elm all occur in coppice forms. A wide range of calcareous shrubs occur. The bryophyte flora is extremely rich, and the lichen flora is the richest for any woodland on chalk in Britain, after Cranborne Chase, with 74 species. The total vascular flora of the area comprises a known 289 species.

19.2 Reasons for Designation

The East Hampshire Hangers qualify as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitats of:

- Dry grasslands and scrublands on chalk or limestone, including important orchid sites: Noar Hill in particular, has an outstanding assemblage of orchids, including one of the largest UK populations of the nationally scarce musk orchid.
- Beech forests on neutral to rich soils: the site is extremely rich in terms of vascular plants.
- Tilio-Acerion forests of slopes, screes and ravines**.** The bryophyte flora is richer than on the chalk examples and includes several species that are rare in the lowlands
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
- Yew woods of the British Isles

Secondly, the site contains the Habitats Directive Annex II species early gentian.

19.3 Historic Trends and Current Pressures

The habitats of the East Hampshire Hangers SAC are dependent upon maintenance of appropriate species composition and cover. The great majority of the SAC is in favourable condition, and where not, this is due to factors such as non-native species present, inappropriate vegetation structure (e.g. lack of regeneration, or too much scrub), and inadequate grazing regimes.

The key vulnerabilities to the SAC are:

- Low nutrient runoff from surrounding land: being steep and narrow, the Hanger woodlands are vulnerable to nutrient run-off leading to eutrophication.
- Disease outbreaks affecting beech trees.
- Absence of direct fertilization (agricultural runoff).
- Appropriate woodland management

20 Ebernoe Common SAC

20.1 Introduction

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.

20.2 Reasons for Designation

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

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

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

- Barbastelle bat; and
- Bechstein's bat

20.3 Historic Trends and Current Pressures

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)[95].

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

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

The barbastelles at Ebernoe Common SAC had flightlines that followed watercourses, particularly the River Kird, and woodland cover for distances of typically 7km. Flightlines outside the SAC are particularly to the south (the Petworth and Tillington area) but also to the west, north and east. There has been less study of the Bechstein bat populations. However, those radio-tracking projects which have been implemented for the species have established that the tracked individuals generally remained within approximately 1.5 km of their roosts[96]. These distances do fit with those identified from radio-tracking of Bechstein's that has been undertaken at Ebernoe Common SAC from 2001, which identified that the maximum distance travelled by a tagged Bechstein's bat to its foraging area was 1,407m, with the average 735.7m[97].

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.

[95] Monk-Terry, M and Lyons, G. Sussex Wildlife Trust Ebernoe Nature Reserve Management Plan 2010-2015.
[96] Cited in: Schofield H & Morris C. 2000. 'Ranging Behaviour and Habitat Preferences of Female Bechstein's Bats in Summer'. Vincent Wildlife Trust
[97] 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

The key vulnerabilities to the SAC are:

- Traditional management to maintain the structural diversity and associated lichen and fungal flora, including appropriate grazing regime.
- The retention of deadwood within the site
- Minimal atmospheric pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities.
- Absence of disturbance.
- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting. For barbastelle bats this is up to 7km from a known roost and up to 1.5km for Bechstein bats.
- Both bat species have close association with woodland. Areas of undesignated woodland adjacent to SAC may be of most importance to population.
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.

21 Kingley Vale SAC

21.1 Introduction

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

21.2 Reasons for Designation

The Kingley Vale valley qualifies as a SAC due to the following Annex I habitats:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia* for which the area is considered to support a significant presence;
- Yew-dominated woodland for which this is considered to be one of the best areas in the UK.

21.3 Historic Trends and Current Pressures

The long-term conservation of the yew forest requires the maintenance of nurse scrub habitat and the regulation of numbers of resident deer. Current management practices address these problems. The threat to characteristic chalk grassland of scrub invasion is considered to be adequately countered by the cutting and grazing regimes currently employed.

The key vulnerabilities to the SAC are:

- Over grazing by deer
- Scrub invasion
- Management of cutting and grazing regimes.

22 Lewes Downs SAC

22.1 Introduction

Lewes Downs SAC covers 146.86ha of east Sussex, with 85% dry grassland steeps, 5% heath/scrub/maquis and garrigue/phygrana, 5% humid grassland, 5% Mesophile grassland and 5% improved grassland. The site comprises mainly of semi-natural dry *Festuco-Brometalia* grasslands and scrubland facies on calcareous substrates and is considered to be one of the best examples of this habitat in the UK. This particular habitat is particular important for orchid species. The site is a National Nature Reserve (NNR) managed by the landowner under a management agreement.

22.2 Reasons for Designation

The site was designated as being of European importance for the following interest feature:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates *Festuco-Brometalia*.
- This site contains an important assemblage of rare and scarce orchids, including early spider-orchid *Ophrys sphegodes*, burnt orchid *Orchis ustulata* and musk orchid *Herminium monorchis*. The colony of burnt orchid is one of the largest in the UK.

22.3 Historic Trends and Current Pressures

During the most recent condition assessment process, 95.32% of the site is in favourable condition, 1.8% of the site is unfavourable recovering and 2.88% is unfavourable declining. Unfavourable conditions have been created due to unsuitable grazing regimes across the site and lack of vegetation removal leading to leaf litter build up and scrub encroachment, resulting in a loss of plant diversity.

The following key environmental conditions needed to maintain the interest features are identified as follows:

- Controlled encroachment of scrub.
- Maintenance of grazing regimes.
- Avoidance of heavy poaching.
- Absence of nutrient enrichment.
- Appropriate levels of recreational activity.
- Absence of non-native species.
- Good air quality.

23 The Mens SAC

23.1 Introduction

The Mens remains as one of the most extensive examples of Wealden Woodland in West Sussex and measures 203.28ha. It is important for its size, structural diversity and the extremely rich fungal and lichen floras which occur here. The wood supports a diverse community of breeding birds, and is the locality of a nationally endangered species of fly.

23.2 Reasons for Designation

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

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

Secondly the site contains the Annex II species:

- Barbastelle bat

23.3 Historic Trends and Current Pressures

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 7km to visit foraging areas. Development within 7km of the SAC has potential to affect barbastelle flightlines or foraging areas.

In the most recent Natural England condition assessment process, 97.32% of The Mens SSSI was considered to be in favourable condition.

The key environmental conditions that support the features of European interest have been defined as:

- Appropriate woodland management.
- Low recreational pressure (because management is by minimum intervention and Bridleway degradation by horse riding is a recurring threat).
- Retention of deadwood
- Minimal air pollution - may increase the susceptibility of beech trees to disease and alter epiphytic communities.
- Barbastelles require a constant humidity around their roosts; any manipulation of the shrub layer must be carefully considered.
- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting.

24 Pevensey Levels SAC/ Ramsar site

24.1 Introduction

Pevensey Levels is 3585ha in size located on the south coast within East Sussex, 3.2km east of the South Downs National Park boundary. 97.5% of the site comprises humid grassland and mesophile grassland, whilst 2.5% comprises inland waterbodies. The levels support a range of important communities of wetland flora and fauna including the internationally designated ramshorn snail *Anisus vorticulus.*

24.2 Reasons for Designation

The SAC is designated for:

- Ramshorn snail

The Ramsar site is designated under:

Criterion 2:

- The site supports an outstanding assemblage of wetland plants and invertebrates including many British Red Data Book species.

Criterion 3:

- The site supports 68% of vascular plant species in Great Britain that can be described as aquatic. It is probably the best site in Britain for freshwater molluscs, one of the five best sites for aquatic beetles Coleoptera and supports an outstanding assemblage of dragonflies Odonata

24.3 Historic Trends and Current Pressures

Pevensey Levels SSSI

Pevensey Levels SSSI covers approximately 3585ha. The site is comprised of low-lying grazing meadows, intersected by a system of ditches, showing a large variety of form and species composition and support important communities of flora and fauna. The site supports one nationally rare and several nationally scarce aquatic plants and many nationally rate invertebrates. Ornithologically, the site is of national importance as the number of wintering lapwings has regularly exceeded 1% of the total British population.

The following key environmental sensitivities were identified for Pevensey Levels SAC/ Ramsar site:

- Eradication and prevention of invasion of non-native invasive species such as: floating pennywort *Hydrocotyle ranunculoides*, and Crassula *Crassula helmsii*.
- Phosphates in the water. This comes from sewerage outputs. Phosphate striping has been introduced
- The maintenance of ditches
- Sea level rise from climate change

25 Pagham Harbour SPA / Ramsar site

25.1 Introduction

Pagham Harbour comprises 636.68ha of an extensive central area of saltmarsh and tidal mudflats, with surrounding habitats including lagoons, shingle, open water, reed swamp and wet permanent grassland. The intertidal mudflats are rich in invertebrates and algae and provide important feeding areas for birds.

Most of the site is a Local Nature Reserve managed by West Sussex County Council.

25.2 Reasons for Designation[98]

Pagham Harbour SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive. During the breeding season:

- Little Tern *Sterna albifrons*: 0.3% of the breeding population in Great Britain (5-year mean, 1992-1996);
- Common Tern *Sterna hirundo*: 0.5% of the breeding population in Great Britain (1996).
- Over winter:
- Ruff *Philomachus pugnax*: 1.4% of the population in Great Britain (5-year peak mean 1995 - 1999);
- Little Egret *Egretta garzetta*: 100 individuals, representing up to 20.0% of the wintering population in Great Britain (1998).

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

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

Pagham Harbour Ramsar site qualifies under one of the nine Ramsar criteria.

Table 2: Pagham Harbour Ramsar site criteria

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

It is important to note that this area also includes include the Medmerry Realignment Scheme which was created in order to provide compensatory habitat for future effects on the Solent European sites as a result of coastal defence work.

25.3 Historic Trends and Current Pressures

The majority of the site is managed as a nature reserve by West Sussex County Council. Historical land drainage for agricultural purposes is being addressed through the Local Nature Reserve Management Plan and Management Agreements, while pollution from inadequate treatment of sewage discharges is reviewed by the Environmental Agency.

[98] Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.
[99] This population was identified subsequent to designation, for possible future consideration.

Studies by the Environment Agency indicate that existing sewage discharges are not having a significant adverse effect on the integrity of the Pagham Harbour SPA/Ramsar site.

The latest Natural England condition assessment of Pagham Harbour SSSI indicated that 93% of the site was in favourable condition.

25.4 Key Environmental Conditions

The following key environmental conditions have been identified for the site:

- Sufficient space between the European site and development to allow for managed retreat of intertidal habitats (to avoid coastal squeeze)
- Maintenance of appropriate hydrological regime
- Unpolluted water
- Absence of nutrient enrichment of water
- Absence of non-native species
- Absence of disturbance

26 River Itchen SAC

26.1 Introduction

This 309.26ha site comprises chalk stream and river, fen meadow, flood pasture and swamp habitats, particularly formations of in-channel vegetation dominated by water crowfoot *Ranunculus* spp, riparian vegetation communities (including wet woodlands) and side channels, runnels and ditches associated with the main river and former water meadows. There are significant populations of the nationally-rare southern damselfly *Coenagrion mercuriale* and assemblages of nationally-rare and scarce freshwater and riparian invertebrates, including the white-clawed crayfish *Austropotamobius pallipes*. Other notable species include otter *Lutra lutra*, water vole *Arvicola terrestris*, freshwater fishes including bullhead *Cottius gobbo*, brook lamprey *Lampetra planeri* and Atlantic salmon *Salmo salar*. A good range of wetland bird species breed.

26.2 Reasons for Designation

The River Itchen qualifies as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitat:

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. The Itchen is a classic example of a sub-type 1 chalk river.

Secondly, the SAC also contains the following Annex II species:

- Southern damselfly: Representing one of the major population centres in the UK
- Bullhead: High densities occur along much of the river's length
- White-clawed crayfish (though not a primary reason for site selection)
- Otter (though not a primary reason for site selection)
- Atlantic salmon (though not a primary reason for site selection)
- Brook lamprey (though not a primary reason for site selection)

26.3 Historic Trends and Current Pressures

A principal threat to the habitats within this SAC has been decreases in flow velocities and increases in siltation, in turn affecting macrophyte cover. Surveys during the 1990s showed declines in *Ranunculus* cover since 1990, attributable to increased abstractions in the upper catchment, coupled with a series of years with below-average rainfall. Low flows interact with nutrient inputs from point sources to produce localised increases in filamentous algae and nutrient-tolerant macrophytes at the expense of *Ranunculus*. The Environment Agency has undertaken assessments to inform licensed water abstraction at critical times. Efforts are currently being made to increase the viability of the southern damselfly population through population studies and a Species Action Plan.

Recent Condition Assessment process reviews indicated that large sections of the river are suffering from inappropriate water levels, with siltation and abstraction cited as problems in places. In some areas, discharges were causing reduced water quality.

The key environmental conditions needed to maintain site integrity include:

- Maintenance of flow velocities - low flows interact with nutrient inputs from point sources to produce localised increases in filamentous algae and nutrient-tolerant macrophytes at the expense of Ranunculus.
- Low levels of siltation,
- Unpolluted water and low nutrient inputs.
- Maintenance of grazing pressure is essential for southern damselfly habitat

27 Rook Clift SAC

27.1 Introduction

At 10.82ha, Rook Clift is the largest known remnant stand of *Tilio-Acerion* forests dominated by large-leaved lime *Tilia platyphyllos* in the south of England. It lies on the deeper soils towards the base of the slope and valley bottom of a small wooded combe, which gives the site its humid microclimate. The soils are rather deeper and there is less exposed rock at this site because the chalk is more readily weathered than the limestones on which many of the other sites lie. Despite this, the vegetation is otherwise typical of the habitat type, with an abundance of ferns such as hart's-tongue *Phyllitis scolopendrium* and shield-fern *Polystichum* spp. In addition to species more common in the west of Britain, continental species such as Italian lords-and-ladies *Arum italicum* also occur.

27.2 Reasons for Designation

Rook Clift qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:

- *Tilio-Acerion* forests of slopes, screes and ravines for which this is considered to be one of the best areas in the United Kingdom

27.3 Historic Trends and Current Pressures

Rook Clift is a small wooded coombe on the scarp slope of the South Downs. Large-leaved lime dominates the canopy together with ash and some beech. The site is in private ownership and is managed under the Woodland Grant Scheme. As with almost any woodland in southern England, deer could be a problem when plans are instituted for regeneration. Its small size and unusual composition mean that any planting inside the wood would need to be tightly controlled. At present 100% of the site is in favourable condition.
The key vulnerabilities to the SAC are:

- Over grazing by deer – deer management
- Controlled planting of appropriate species of tree

28 Shortheath Common SAC

28.1 Introduction

Shortheath Common SAC is a 58.94ha heathland site located on the western Weald. Large areas of open heathland and habitats and the seral stages of the succession to oak wood contribute to the considerable habitat diversity of the site as a whole. Substantial valley mire exists, dominated by Sphagnum mosses, but with a large population of cranberry *Vaccinium oxycoccus*, a low-growing shrub now rare and declining in southern England. The invertebrate fauna includes 23 breeding species of dragonflies, including a number which are rare or local, e.g. *Cordulia aenea, Erythromma najas, Orthetrum coerulescens* and *Anax imperator*, and a colony of the rare damselfly *Ceriagrion tenellum*. The full heathland range of *Orthoptera* is represented, including a recent re-introduction of the field cricket *Gryllus campestris* and grayling *Hipparchia semele*, purple hairstreak *Quercusia quercus* and purple emperor *Apatura iris* butterflies are present in substantial populations.

28.2 Reasons for Designation

Shortheath Common qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:

- Transition mires and quaking bogs
- European dry heaths
- Bog woodland

28.3 Historic Trends and Current Pressures

The Common was not managed for conservation until its purchase by Hampshire County Council in 1994. Though this site has been historically grazed, this has since ceased and much of the site is now in a position of recovery from encroachment of scrub, whilst conversely, in some of the acid grassland, rabbit control has been required. The most recent condition assessment by Natural England found that 97.96% is in unfavourable recovering condition, previously in 2003 it was found that almost 10% of the site had been destroyed by the presence of 4-5 recently built houses and part of Oakhanger village green. The village green is used for recreation, contains a children's play area, and the grassland is regularly mown. Opportunities for recreation at Shortheath Common include horse riding, walking, jogging and angling. There have been occasional incidents of fire and fly-tipping on the Common.

The key vulnerabilities to the SAC are:

- Control of invasive scrub and tree encroachment
- Grazing regime

29 Singleton and Cocking Tunnels SAC

29.1 Introduction

Singleton and Cocking Tunnels cover 2.45ha and are of international importance as the most important sites for hibernating bats in south-east England and are the fifth most important in Britain.

These two disused brick railway tunnels, located in rural Sussex, once formed part of the Chichester to Midhurst railway line. They now support, during the winter months, large numbers of hibernating bats, and are the only known location in Britain for the Mouseeared bat *Myotis myotis*. Eight species have been found in all; those best represented include Natterer's *Myotis nattereri*, Daubenton's *Myotis daubentoni*, brown long-eared *Plecotus auritus* and Brandt's *Myotis brandti*/Whiskered *Myotis mystacinus* (these two cannot normally be distinguished in the field, but are both known to occur here). Other species regularly occur in small numbers.

29.2 Reasons for Designation

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

- Hibernating Barbastelle bat *Barbastella barbastellus*
- Hibernating Bechstein`s bat *Myotis bechsteinii*

29.3 Historic Trends and Current Pressures

The tunnels are grilled at both ends and so secured from human disturbance (100% of the site is in favourable condition). In the long-term the tunnels may start to deteriorate (collapse) but this is not anticipated for many years. There have previously been proposals to use the tunnels as a cycle route.

The barbastelle bat is very rare, found in southern and central England and Wales. Few breeding sites are currently known in the UK and it is important that surrounding environments of these and winter hibernation sites are maintained. It is thought that they prefer pastoral landscapes with deciduous woodland, wet meadows and water bodies, such as woodland streams and rivers. Barbastelle bats tend to forage over a wide area. They are fast, agile flyers and specialist foragers in a range of habitats. The majority of UK winter records are of single bats in underground sites[100].

Until recently very little was known about the Bechstein's bat in the UK; in 2005 there were just six breeding populations of Bechstein's bat. They are found in southern Wales and parts of southern England. The UK is at the northernmost edge of its distribution range. The Bechstein's bat has gone from being one of the commonest UK species after the last ice age to one of the rarest, due largely to the destruction of ancient woodland that once covered the UK (it now represents around 2%).

The key vulnerabilities to the SAC are:

- Lack of disturbance
- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting.
- 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.

[100] www.bats.org.uk

30 Solent Maritime SAC

30.1 Introduction

Solent maritime SAC is a 11325ha site located on the south coast within West Sussex and East Hampshire. Habitats on site include: marine areas, sea inlets (14%), tidal rivers, estuaries, mud flats, sand flats, lagoons (including saltwork basins) (59%), salt marshes, salt pastures, salt steppes (23%), coastal sand dunes, sand beaches, machair (0.5%), shingle, sea cliffs, islets (3%), and broad-leaved deciduous woodland (0.5%).The SAC also include Chichester and Langstone Harbours SPA and Ramsar site.

30.2 Reasons for Designation

The site is designated for:

Annex 1 habitats

- Estuaries
- Spartina swards Spartinion maritimae
- Atlantic salt meadows
- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Coastal lagoons * Priority feature
- Annual vegetation of drift lines
- Perennial vegetation of stony banks
- Salicornia and other annuals colonizing mud and sand
- "Shifting dunes along the shoreline with *Ammophila arenaria* (""white dunes"")"

- Annex 2 species
- Desmoulin's whorl snail

30.3 Historic Trends and Current Pressures

The key environmental vulnerabilities of the SPA/ Ramsar site are:

- Existing and proposed flood defence and coast protection works;
- Coastal squeeze of intertidal habitats due to coastal erosion/ sea level rise and sea-walls/ development in the hinterland;
- Developments pressures including ports, marinas, jetties etc. Proposals often involve capital/ maintenance dredging to provide/ improve deep water access, and land-claim of coastal habitats;
- Potential accidental pollution from shipping, oil/chemical spills, heavy industrial activities, former waste disposal sites and waste-water discharge;
- Introduction of non-native species e.g. from shipping activity.

31 Wealden Heaths Phase II SPA

31.1 Introduction

The Wealden Heaths Phase II SPA is a 2,053.83 ha site made up of four separate SSSI units.

Woolmer Forest SSSI and SAC

See Section 31.1

Broxhead and Kingsley Commons SSSI

The site comprises a mosaic of heathland and acid grassland with areas of scrub and secondary woodland. The bird fauna includes breeding populations of nightjar, woodlark and Dartford warbler. Other heathland species include stonechat and tree pipit.

Bramshott and Ludshott Commons SSSI

Bramshott and Ludshott Commons support extensive tracts of mature heathland vegetation dominated by heather *Calluna vulgaris*, bell heather *Erica cinerea*, dwarf gorse *Ulex minor* and common gorse *U. europaeus*. Dartford warbler, woodlark, stonechat, nightjar and hobby breed.

Devil's Punch Bowl SSSI

This site, comprising Hindhead Common, the Devil's Punch Bowl and the Highcomb Valley supports an excellent series of semi-natural habitats including broadleaved and coniferous woodland, heathland, scrub and small meadows. The site contains an outstanding variety of birdlife, with over sixty breeding species. The Highcombe Valley supports breeding wood warblers. Rarer woodland breeding species include firecrest, redpoll and crossbill whilst siskin and hawfinch may breed occasionally. Heathland breeding species include nightjar, woodlark, Dartford warbler, stonechat, and tree pipit.

31.2 Reasons for Designation

Wealden Heaths Phase II qualifies as a SPA for its breeding bird species. The site contains:

- 1.3% of the British breeding population of nightjar (5 year mean, 1989-1993)
- 2.5% of the British breeding population of woodlark (1997)
- 1% of the British breeding population of Dartford warbler (5 year mean 1989-1993; 1994)

31.3 Historic Trends and Current Pressures

In the most recent Condition Assessment process, almost all of the Devil's Punch Bowl SSSI was considered to be recovering from unfavourable condition that had resulted largely from inappropriate grazing regimes. The other SSSI components of the Wealden Heaths Phase II SPA were also largely recovering from unfavourable status. Although many constituent units lie adjacent to the A3, air quality was not implicated as a factor in unfavourable status during these assessments.

The SPA is designated for ground-nesting bird species that would be particularly vulnerable to cat predation, and the heathland habitat itself is extremely vulnerable to accidentally or deliberately started fires.

The heathland habitats of the SPA are very dependent upon grazing and other traditional management practices. In the absence of a functional commoning system the re-establishment of successful grazing management is dependent on the involvement landscape scale heathland management projects. The SPA is vulnerable to heathland fires and there has been pressure for development associated with military training activities. This and the problems caused by formal and informal recreation activities (e.g. mountain biking, orienteering, car and motorcycle events) that are a potential threat to

the breeding success of the Annex 1 birds are being addressed by improved liaison and annual consultation meetings with the Ministry of Defence and through management plans on National Trust land.

A visitor survey was conducted to study recreational access the Devil's Punchbowl and Hindhead Common, commissioned as a result of the tunnelling of the A3 that has historically run through the SPA/SSSI[101]. Among the main findings of the report were that the site receives approximately 1,830 to 1,930 visitors per week (the survey was carried out between June and October). Most visitors were relatively local, with 75% of dog walkers and 54% of visitors generally coming from within 5km, and the majority of the remaining visitors origins (those outside 5km) showed clear correlation with the A3 corridor. Haslemere, Grayshott and Beacon Hill were clearly foci from which visitors journeyed. Eighty percent of visitors travelled to the site by car. Once on the site, 82% of visitors travelled 1km, with 70% travelling over 2km. 60% of dog walkers were found to travel over 2.8km.

The study mapped visitor movements and the territories of the bird species for which the SPA is designated. There was found to be no correlation between the visitor distribution and bird distribution.

The Hindhead Concept Statement HRA (RPS, 2010; the report is called a Conservation Regulations Assessment on the report cover) examined the status of bird populations for which the Wealden Heaths SPA has been designated, at Hindhead. The report identifies that at present SPA bird territory distribution does not correlate to patterns of visitor activity, indicating that there is no evidence of SPA birds consistently avoiding areas of high visitor usage at present.

The Whitehill Bordon HRA (UE Associates, 2009 and 2010) compared population trends in European protected bird species at the national level with those for the Wealden Heaths Phase 1 SPA (Thursley Hankley & Frensham Commons SPA) and Phase II SPA, to help determine whether the European sites around Whitehill and Bordon are in favourable conservation status. For example, if the national population for a certain species is growing, whereas the local population is declining, it might be surmised that conservation status within the local site is unfavourable. The data are summarised below for Dartford warbler, nightjar and woodlark[102]:

- Dartford warbler: between 1994 and 2006 the England population grew by 70%, from 1,800 to 3,214. Over the same period, the Wealden Heaths (both Phase 1 and Phase II) population grew by 81%, from 152 pairs to 275 (146 pairs in Phase 1 and 129 pairs in Phase II);
- Nightjar: between 1992/93 and 2004/05 the UK population grew by 36% to 4,605 males. Over the same period, the Wealden Heaths (Phase 1 and 2) population grew by 117%, from 63 pairs to 133; and
- Woodlark: between 1997 and 2006 the England population grew by 88%, from 1,552 to 3,064. Over the same period, the Wealden Heaths (Phase 1 and 2) population grew by 36%, from 84 pairs to 114[103].

In other words, data from the early nineties to 2006 indicate that the increases in the populations of Dartford warbler and nightjar on the Wealden Heaths Phase 1 and 2 exceeded the national trend while for all three species (including woodlark) the numbers at 2006 exceeded the numbers at the time of designation. The increase in both the SPA bird populations and housing in proximity to the SPA since designation does not constitute evidence that further housing could not have an adverse effect. It is likely that habitat improvements over the same time period have contributed to the population increase, along with other factors such as more thorough surveying, and any effect from new housing will be dependent upon the scale and location/density of that housing.

Analysis by 2J's Ecology of data specific to Wealden Heaths Phase II SPA and covering the period 2006-2010 does confirm that the populations of woodlark and nightjar are 'stable' and although the population of Dartford warbler is currently lower than it has been for some years, this is most likely attributable to adverse winters.

As a summary therefore, SPA bird populations are identified as being 'stable' at current levels of recreational activity (with the exception of Dartford warbler, which has been affected by recent poor weather rather than anthropogenic impacts, and is expected to recover) and studies have not identified any evidence of a negative correlation between areas of current greatest recreational activity and territory density/location.

The environmental requirements of the Wealden Heaths Phase II SPA are mainly:

[101] Sharp, J. & Liley, D. (2010). Visitor flow monitoring and analysis at Hindhead Common and the Devil's Punchbowl. Footprint Ecology.
[102] Email correspondence between UE Associates and Nick Radford, Senior Specialist, Natural England (Lyndhurst), cited in the draft UE Associates HRA for Whitehill-Bordon Masterplan (2009), updated by reference to the final Whitehill-Bordon Eco-town HRA Report (July 2011)
[103] The sedentary woodlark population of the Hampshire/Surrey border is more susceptible to cold winters which may explain why the scale of increase locally was lower than the national figure

- Appropriate management: maintenance of traditional grazing regimes
- Risk of fire (military/ urbanisation).
- Management of disturbance during breeding season (March to July).
- Minimal air pollution.
- Absence or control of urbanisation effects, such as fires and introduction of invasive non-native species.
- Maintenance of appropriate water levels.
- Maintenance of water quality.

32 Woolmer Forest SAC

32.1 Introduction

The Woolmer Forest SAC is part of the Wealdon Heaths Phase II SPA. Woolmer Forest SSSI contains the largest and most diverse area of lowland heathland habitats in Hampshire (outside of the New Forest), covering 666.68ha, and is considered the most important area of heathland in the Weald of southern England.

Woolmer Forest SSSI is of international importance for its rich diversity of breeding and wintering heathland birds including nationally important breeding populations of nightjar, woodlark and Dartford warbler. The heathland also supports breeding hobby *Falco subbuteo*, breeding populations of stonechat *Saxicola torquata*, tree pipit *Anthus trivialis* and linnet *Acanthis cannabina*. In winter up to two roosts of hen harrier Circus cyaneus, as well as merlin *Falco columbarius* and great grey shrike *Lanius excubitor* are regularly recorded in the heathland. The valley mires and wetlands around Woolmer and Cranmer Ponds attract breeding curlew, redshank Tringa totanus and snipe *Gallinago gallinago*. The sandy shores of Woolmer Pond also provide habitat for nesting little-ringed plover. The woodlands of Holm and Holly Hills and Passfield Common support redstart *Phoenicurus phoenicurus*. These mature pasture woodlands have also attracted several breeding pairs of wood warbler *Phylloscopus sibilatrix*.

32.2 Reasons for Designation

Woolmer Forest qualifies as a SAC for its habitats. The site contains the Habitats Directive Annex I habitats of:

- Natural dystrophic lakes and ponds: Cranmer Pond is a southern example of a dystrophic pond in an area of Northern Atlantic wet heaths with *Erica tetralix* and depressions on peat substrates of the *Rhynchosporion*.
- European dry heaths
- Woolmer Forest contains the largest and most diverse area of lowland heathland in Hampshire, outside the New Forest, representing a transition between this and the Surrey heaths. Dry heaths in Woolmer Forest include examples of NVC type H1b *Calluna vulgaris – Festuca ovina* heath, *Hypogymnia physodes – Cladonia impexa* sub-community, dominated by heather *Calluna vulgaris* and Cladonia lichens. Most of the dry heath is H2 *Calluna vulgaris – Ulex minor*, characterised by dwarf gorse *Ulex minor*. Woolmer Forest is the only site in Britain that supports all six native reptiles (including the Annex IV species sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*) and all six native amphibians (including great crested newt *Triturus cristatus*). It also supports an outstanding invertebrate fauna and bird assemblage, including European nightjar, wood lark, Dartford warbler, Eurasian hobby, hen harrier and merlin.
- Depressions on peat substrates of the *Rhynchosporion*
- Northern Atlantic wet heaths with *Erica tetralix*
- Transition mires and quaking bogs

32.3 Historic Trends and Current Pressures

The key vulnerabilities to the SAC are:

- The site is vulnerable to neglect (encroachment of invasive scrub and trees due to cessation of traditional grazing management) and vulnerable to military activities

Appendix B. Initial Screening of Policies and Site Allocations

Settlements identified in **green** present no conceivable impact pathways present. They are considered not to result in likely significant effects upon an internationally designated site.
Development at settlements identified in **orange** present potential impact pathways to European sites. Development at these settlements is considered in more detail in Appendix B Table 2 and in the main text of the report.

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
Settlements with defined strategic housing allocations				
East Sussex	Alfriston	15	8.5km from Lewes Down	– None
			9km from Pevensey Levels SAC/ Ramsar	– None
West Sussex	Amberley	6	Adjacent to Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Loss of supporting habitat (Bewicks swan) – Recreational pressure – Urbanisation
East Hampshire	Binsted	11	3km from Wealden Heaths Phase II SPA	– Recreational Pressure
			3.7km from Shortheath Common SAC	– Recreational Pressure
East Hampshire	Buriton	10	1.2km from Butser Hill SAC	– Recreational pressure

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
West Sussex	Bury	6	1km Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Loss of supporting habitat (Bewicks swan) – Recreational pressure
East Hampshire	Cheriton	14	Adjacent to River Itchen SAC	– Water quantity (maintenance of flow velocity) – Water quality (siltation and low nutrient inputs) – Recreational pressure – Urbanisation
West Sussex	Coldwaltham	30	Adjacent to Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Loss of supporting habitat (Bewicks swan) – Recreational pressure
			3.8km from Duncton to Bignor Escarpment SAC	– Recreational pressure
			5km from The Mens SAC	– Loss of supporting habitat (barbastelle bats)
East Hampshire	Corhampton and Meonstoke	18	9.7km from Butser Hill	– None
East Sussex	Ditchling	15	10km from Lewes Downs SAC	– None

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
East Hampshire	Droxford	30	9.8km from Butser Hill SAC	– None
West Sussex	Easebourne	50	7km from Ebernoe Common SAC	– None
East Sussex	East Dean and Friston	11	10km from Pevensey Levels SAC/Ramsar site	- None
East Hampshire	East Meon	17	2.6km from Butser Hill SAC	– Recreational pressure
West Sussex	Fernhurst	220 (including Syngenta)	6.7km from Ebernoe Common SAC	– Loss of supporting habits (bats)
West Sussex	Findon	31	9km from Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction)
West Sussex	Fittleworth	6	2.6km from The Mens SAC	– Recreational pressure – Potential loss of supporting habitat for barbastelle bats
			4km from Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Loss of supporting habitat (Bewicks swan) – Recreational pressure

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			5km from Duncton to Bignor Escarpment SAC	– Recreational pressure
East Hampshire	Greatham (Hampshire)	38	Adjacent to Woolmer Forest SAC	– Recreational pressure
			Adjacent to Wealden Heaths Phase II SPA	– Urbanisation (fire & invasive species) – Recreational pressure (bird breeding season) – Water quality – Water quantity
			1.6km from East Hampshire Hangers SAC	– Recreational pressure
			4.8km from Shortheath Common SAC	– Recreational pressure
East Hampshire	Itchen Abbas	9	Adjacent to the River Itchen SAC	– Water quantity (maintenance of flow velocity) – Water quality (siltation and low nutrient inputs)
East Sussex	Kingston near Lewes	14	1.7km from Castle Hill SAC	– Recreational pressure
			2.9km from Lewes Downs SAC	– Absence of nutrient enrichment. – Appropriate levels of recreational activity. – Good air quality
West Sussex	Lavant (including Mid Lavant and East Lavant)	20	2.8km from Kingley Vale SAC	– Recreational pressure
			3.8km from Chichester and Langstone Harbours SPA/	– Water quality

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			Ramsar	– Water quantity – Recreational disturbance – Loss of supporting habitat
			Solent Maritime SAC	– None
Lewes	Lewes	875 (including North Street Quarter)	Adjacent to Lewes Downs SAC	– Absence of nutrient enrichment. – Appropriate levels of recreational activity. – Absence of non-native species. – Good air quality
			3.3km Castle Hill SAC	– Recreational pressure
East Hampshire	Liss (including West Liss and Liss Forest)	150	Adjacent to Wealden Heaths Phase II SPA	– Urbanisation (fire & invasive species) – Recreational pressure (bird breeding season) – Water quality – Water quantity
			1.8km from East Hampshire Hangers SAC	– Recreational pressure
			2.2km from Woolmer Forest SAC	– Recreational pressure
West Sussex	Midhurst	175	3.3km Singleton & Cocking Tunnels SAC	– Loss of supporting habitat for bats – Recreational pressure
			6km from Rook Clift SAC	– Recreational pressure
			8.4km from Duncton to Bignor Escarpment SAC	– None

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			8.4km from Ebernoe Common SAC	– None
East Hampshire	Petersfield	805	1.5km from East Hampshire Hangers SAC	– Recreational pressure
			2.3km from Butser Hill SAC	– Recreational pressure
			5.7km from Wealden Heaths Phase II SPA	– None
West Sussex	Petworth	150	3.1km from The Mens SAC	– Loss of supporting habitat for barbastelle bats – Air quality – Recreational pressure
			3.4km from Ebernoe Common SAC	– Loss of supporting habitat for barbastelle bat – Air quality – Recreational pressure
			4.7km from Duncton to Bignor Escarpment SAC	– Recreational pressure
West Sussex	Pyecombe	8	9.2km from Castle Hill SAC	– None
West Sussex	Rogate	11	5km from Rook Clift SAC	– Recreational pressure
			6km from Wealden Heaths Phase II SPA	– None The settlement of Petersfield is over 5km from Wealden Heaths Phase II SPA
			7km from East Hampshire	– None

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			Hangers SAC	
			9km from Butser Hill SAC	– None
East Hampshire	Selbourne	6	Adjacent to East Hampshire Hangers SAC	– Recreational pressure
			3.6km from Shortheath Common SAC	– Recreational pressure
			4km from Wealden Heaths Phase II SPA	– Recreational pressure (bird breeding season)
East Hampshire	Sheet	31	2.6km to East Hampshire Hangers SAC	– Recreational pressure
			4.7km from Wealden Heaths Phase II SPA	– Recreational pressure (bird breeding season)
			5.1km from Butser Hill SAC	– Recreational pressure
West Sussex	South Harting	13	3km from Rook Clift SAC	– Recreational pressure
			6km from Butser Hill SAC	– Recreational pressure
West Sussex	Stedham	18	4.8 Singleton & Cocking Tunnels SAC	– Loss of supporting habitat for bats – Recreational pressure
			5.5km from Rook Clift SAC	– Recreational pressure
			8.5km from Ebernoe Common SAC	– None
			9km from Duncton to	– None

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			Bignor Escarpment SAC	
East Hampshire	Steep	10	0.6km from East Hampshire Hangers SAC	– Recreational pressure
			4.2km from Butser Hill SAC	– Recreational pressure
			4.6km from Wealden Heaths Phase II SPA	– Recreational pressure (bird breeding season)
East Hampshire	Stroud	28	1.8km from East Hampshire Hangers SAC	– Recreational pressure
			2.3 km from Butser Hill SAC	– Recreational pressure
			6.7km from Wealden Heaths Phase II SPA	– None The settlement of Petersfield is over 5km from Wealden Heaths Phase II SPA
East Hampshire	Twyford	20	Less than 200m from the River Itchen SAC	– Water quantity (maintenance of flow velocity) – Water quality (siltation and low nutrient inputs)
West Sussex	West Ashling	10	2.7km from Kingly Vale SAC	– None
			2.1km from Chichester and Langstone Harbours SPA/ Ramsar	– Water quality – Water quantity – Recreational disturbance – Loss of supporting habitat

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			2.1km from Solent Maritime SAC	– None
East Hampshire	West Meon	16	6.6km from Butser Hill SAC	– Recreational pressure
			8.3km from East Hampshire Hangers SAC	– None
Settlements without defined allocations but may accommodate windfall housing				
West Sussex	Funtington	Un-defined	1.7km from Kingly Vale SAC	– None
			2.8km from Chichester and Langstone Harbours SPA/ Ramsar	– Water quality – Water quantity – Recreational disturbance – Loss of supporting habitat
			2.8km from Solent Maritime SAC	– None
West Sussex	Compton	Un-defined	5km from Rook Clift SAC	– Recreational pressure
			5.4km from Kingley Vale SAC	– Recreational pressure
			6.4km from Butser Hill SAC	– Recreational pressure
West Sussex	Northchapel	Un-defined	1.7km from Ebernoe Common SAC	– Loss of supporting habitat for barbastelle and bechstein's bats – Air quality – Recreational pressure

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			7.2km from Wealden Heaths Phase II SPA	– None – The settlement of Petersfield is over 5km from Wealden Heaths Phase II SPA
East Hampshire	Hambledon	Un-defined	6.8km from Butser Hill SAC	– Recreational pressure
West Sussex	Singleton	Un-defined	700m from Singleton and Cocking Tunnels SAC	– Loss of supporting habitat for bats – Recreational pressure
			4.2km from Kingley Vale SAC	– Recreational pressure
			7.3km from Rook Clift SAC	– None
			7.4km from Duncton to Bignor Escarpment SAC	– Recreational pressure
East Hampshire	Lower and Upper Farringdon	Un-defined	1.9km from East Hampshire Hangers SAC	– Recreational pressure
			5.6km from Shortheath Common SAC	– None
			7km from Wealden Heaths Phase II SPA	– None
West Sussex	Cocking	Un-defined	400m from Singleton and Cocking Tunnels SAC	– Loss of supporting habitat for bats – Recreational pressure
			5.3km from Rook Clift SAC	– Recreational pressure
			6.1km from Kingley Vale SAC	– Recreational pressure

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			7.7km from Duncton to Bignor Escarpment SAC	– Recreational pressure
West Sussex	Poynings	Un-defined	10.8km from Castle Hill SAC	– None
			15.5km form Lewes Downs SAC	– None
West Sussex	Lodsworth	Un-defined	4.0km from Ebernoe Common SAC	– Loss of supporting habitat for barbastelle bats – Recreational pressure
			8km from The Mens SAC	– Loss of supporting habitat for barbastelle bats
			7.8km from Wealden Heaths Phase II SPA	– None – The settlement of Petersfield is over 5km from Wealden Heaths Phase II SPA
West Sussex	Watersfield	Un-defined	480m from Arun Valley SPA/ SAC/ Ramsar site	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Loss of supporting habitat (Bewicks swan) – Recreational pressure
			2.5km from Duncton to Bignor Escarpment SAC	– Recreational pressure
			5.5km from The Mens SAC	– Loss of supporting habitat
			10km from Ebernoe Common SAC	– None

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
West Sussex	Graffham	Un-defined	2.4km from Duncton to Bignor Escarpment SAC	– Recreational pressure
			5km from Singleton and Cocking Tunnels SAC	– Loss of supporting habitat for bats – Recreational pressure
West Sussex	Washington	Un-defined	7km from Arun Valley SAC/ SPA/ Ramsar	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction) – Recreational pressure
Western Weald	Milland	Un-defined	3.7km from Wealden Heath Phase II SPA	– Recreational Pressure
			5.4km from Woolmer Forest SAC	– None
East Hampshire	Owslebury	Un-defined	3.2km from the River Itchen SAC	– None
			10.5km from the Solent and Southampton SPA/ Ramsar and Solent Maritime SAC.	– None
West Sussex	Slindon	Un-defined	4.5km from Duncton to Bignor Escarpment	– Recreational pressure
			7.7km to Arun Valley SPA/ Ramsar / SAC	– Water quality (absence of nutrient enrichment) – Water quantity (abstraction)
East Hampshire	Chawton	Un-defined	4.2km from East Hampshire Hangers SAC	– Low nutrient runoff from surrounding land – Absence of direct fertilisation

Geographic area	Settlement	Quantum of housing	Distance from designated site(s)	Impact pathways
			6.3km from Shortheath Common SAC	– Recreational pressure
East Sussex	Rodmell	Un-defined	3km from Lewes Downs SAC	– Air quality – Appropriate levels of recreational activity.
			3.5km from Castle Hill SAC	– Recreational pressure

Table 2. Initial Screening of Each Policy (including Site Allocations)

Policies identified in **green** have been identified for no further screening as there are no conceivable impact pathways present. They are considered not to result in likely significant effects upon an internationally designated site.

Policies identified in **orange** have potential for impact pathways, and therefore likely significant effects. These policies cannot be dismissed at the initial screening stage and are subject to further detailed discussion of likely significant effects within the main report.

Screening of the South Downs Local Plan Pre-Submission Policies

Policy	Description	HRA Implications
Core Policy SD1: Sustainable Development	1. When considering development proposals that accord with relevant policies in this Local Plan and with National Park purposes, the Authority will take a positive approach that reflects the presumption in favour of sustainable development. It will work with applicants to find solutions to ensure that those development proposals can be approved without delay, unless material planning considerations indicate otherwise. 2. The National Park purposes are i) to conserve and enhance the natural beauty, wildlife and cultural heritage of the area; and ii) to promote opportunities for the understanding and enjoyment of the special qualities of the national park by the public. Where it appears that there is a conflict between the National Park purposes, greater weight will be attached to the first of those purposes. In pursuit of the purposes, the National Park Authority will pay due regard to its duty to seek to foster the economic and social well-being of the local communities within the National Park. 3. When determining any planning application, the Authority will consider the cumulative impacts of development. Planning permission will be refused where	No HRA implications This policy enshrines the presumption in favour of sustainable development. Further this policy identifies one of the National Park purposes (and the one that would ultimately take precedent if necessary) is to conserve and enhance the '*natural beauty, wildlife and cultural heritage of the area*'. It also identifies that planning permission will be refused were '*development proposals fail to conserve the landscape, natural beauty, wildlife… of the National Park'* This is a positive policy. There are no linking impact pathways present.

Policy	Description	HRA Implications
	development proposals fail to conserve the landscape, natural beauty, wildlife and cultural heritage of the National Park unless, exceptionally: a) the benefits of the proposals demonstrably outweigh the great weight to be attached to those interests; and b) there is substantial compliance with other relevant policies in the development plan.	
Core Policy SD2: Ecosystem Services	1. Development proposals will be permitted where they have an overall positive impact on the ability of the natural environment to contribute goods and services. This will be achieved through the use of high quality design, and by delivering all opportunities to: a) sustainably manage land and water environments; b) protect and provide more, better and joined up natural habitats; c) conserve water resources and improve water quality; d) manage and mitigate the risk of flooding; e) improve the National Park's resilience to, and mitigation of, climate change; f) increase the ability to store carbon through new planting or other means; g) conserve and enhance soils; h) support the sustainable production and use of food, forestry and raw materials; i) reduce levels of pollution; j) improve opportunities for peoples' health and wellbeing; and k) provide opportunities for access to the natural and cultural resources which contribute to the special qualities. Development proposals must be supported by a statement that sets out how the development proposal impacts, both positively and negatively, on ecosystem services.	No HRA implications. This policy identifies that development will not be permitted if it is likely to have a detrimental impact upon ecosystem services. This is a positive policy. There are no linking impact pathways present.
Core Policy SD3: Major Development	1. In determining what constitutes major development the National Park Authority will consider whether the development, by reason of its scale, character or nature, has the potential to have a serious adverse impact on the natural beauty, wildlife or cultural heritage of, or recreational opportunities provided by, the National Park. The potential for adverse impact on the National Park will be dependent on the individual characteristics of each proposal and its context. 2. Planning permission will be refused for major developments in the National Park except in exceptional circumstances, and where it can be demonstrated they are in the public interest. Consideration of such applications should include an assessment of:	No HRA implications. This policy identifies the criteria that constitute major development rather than presenting actual allocations. It identifies that major development will only be permitted in exceptional circumstances and it is in the public interest. This policy also provides for the requirement of sustainable measures. Whilst major development could potential result in likely significant effects, this policy does not

Policy	Description	HRA Implications
	a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy; b) the cost of, and scope for, developing elsewhere outside the designated area, or meeting the need for it in some other way; and c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated. 3. If it is considered that exceptional circumstances exist and development would be in the public interest, all opportunities to enhance the special qualities should be sought. Development proposals should be sustainable as measured against the following factors: • Zero Carbon • Zero Waste • Sustainable Transport • Sustainable Materials • Sustainable Water • Land Use and Wildlife • Culture and Community • Health and Wellbeing.	explicitly provide for major development, merely criteria by which it will be assessed against and enhancement opportunities that will be sought. There are no linking impact pathways present.
Strategic Policy SD4: Landscape Character	1. Development proposals will only be permitted where they conserve and enhance landscape character by demonstrating that: a) they are informed by a demonstrable understanding of landscape character and reflect the context and type of landscape in which the development is located; b) the design, layout and scale of proposals conserve and enhance existing landscape and seascape character features which contribute to the distinctive character, pattern and evolution of the landscape; c) they will safeguard the experiential and amenity qualities of the landscape; d) where planting is considered appropriate, it is consistent with local character, enhances biodiversity, contributes to the delivery of green infrastructure and uses native species, unless there are appropriate and justified reasons to select non-native species. 2. Where development proposals are within designed landscapes, or the setting of designed landscapes, (including historic parkscapes and those on the Historic England Register of Historic Parks and Gardens) they should be based on a demonstrable understanding of the design principles of the landscape and should be complementary to it.	No HRA implications. This policy provides for the protection of landscape character. This is a positive policy as it provides for the safeguarding of green corridors. There are no linking impact pathways present.

Policy	Description	HRA Implications
	3. The individual identity of settlements, actual or perceived, will be maintained and the integrity of predominantly open and undeveloped land between settlements will not undermined. 4. Green and blue corridors will be safeguarded. Development proposals should identify and take opportunities to create and connect green corridors. 5. The restoration of landscapes where either natural or cultural heritage features have been lost or degraded will be supported where it contributes positively to landscape character.	
Strategic Policy SD5: Design	1. Development proposals will be permitted where they adopt a landscape-led approach and respect the local character, through sensitive and high quality design that makes a positive contribution to the overall character and appearance of the area. The following design principles should be adopted as appropriate: a) Integrate with, respect and sympathetically complement the landscape character by ensuring development proposals are demonstrably informed by an assessment of the landscape context; b) Achieve effective and high quality routes for people and wildlife, taking opportunities to connect green infrastructure; c) Contribute to local distinctiveness and sense of place through its relationship to adjoining buildings, spaces and landscape features. d) Create high-quality, clearly defined public and private spaces within the public realm; e) Incorporate hard and soft landscape treatment which takes opportunities to connect to the wider landscape, enhances green infrastructure, and is consistent with local character; f) Utilise architectural design which is appropriate and sympathetic to its setting in terms of height, massing, density, roof form, materials, elevational and, where relevant, vernacular detailing; g) Provide high quality, secure, accessible, and where possible, integrated storage for general and recycling waste, heating fuel, and transport related equipment; h) Provide high quality outdoor amenity space appropriate to the needs of its occupiers or users; i) Ensure development proposals which are durable, sustainable and adaptable over time; j) Give regard to improving safety and perceptions of safety, and be inclusive and accessible for all; and k) Have regard to avoiding harmful impact upon, or from, any surrounding uses and amenities.	No HRA implications. This policy provides for a landscape led approach to design. There are no linking impact pathways present.

Policy	Description	HRA Implications
Strategic Policy SD6: Safeguarding Views	1. Development proposals will be permitted where they preserve the visual integrity, identity and scenic quality of the National Park, in particular by conserving and enhancing key views and views of key landmarks within the National Park. 2. Development proposals will be permitted that conserve and enhance the following view types and patterns identified in the Viewshed Characterisation Study: a) landmark views to and from viewpoints and tourism and recreational destinations; b) views from publically accessible areas which are within, to and from settlements which contribute to the viewers' enjoyment of the National Park; c) views from public rights of way, open access land and other publically accessible areas; and d) views which include or otherwise relate to specific features relevant to the National Park and its special qualities, such as key landmarks including those identified in Appendix 2 of the Viewshed Characterisation and Analysis Study, heritage assets (either in view or the view from) and biodiversity features. 3. Development proposals will be permitted provided they conserve or enhance sequential views, and do not result in adverse cumulative impacts within views.	No HRA implications. This policy provides for safeguarding of views. There are no linking impact pathways present.
Strategic Policy SD7: Relative Tranquillity	1. Development proposals will be permitted where they conserve and enhance relative tranquillity and should consider the following impacts: a) direct impacts that the proposals are likely to cause by changes in the visual and aural environment in the immediate vicinity of the proposals; b) indirect impacts that may be caused within the National Park that are remote from the location of the proposals themselves such as vehicular movements; and c) experience of users of the public right of way network and other publicly accessible locations. 2. Development proposals in highly tranquil and intermediate tranquillity areas should conserve and enhance, and not cause harm to, relative tranquillity. 3. Development proposals in poor tranquillity areas should take opportunities to enhance relative tranquillity where these exist.	No HRA implications. This policy provides for the conservation and enhancement of relative tranquillity. There are no linking impact pathways present.
Strategic Policy SD8: Dark Night Skies	1. Development proposals will be permitted where they conserve and enhance the intrinsic quality of dark night skies, and the integrity of the Dark Sky Core (as shown on the Policies Map).	No HRA implications. This policy provides for the conservation of dark night skies.

Policy	Description	HRA Implications
	2. Development proposals must demonstrate that all opportunities to reduce light pollution have been taken, and must ensure that the measured and observed sky quality in the surrounding area is not affected, having due regard to the following hierarchy: a) The installation of lighting is avoided; b) If lighting cannot be avoided, it is demonstrated to be necessary and appropriate, for its intended purpose or use: i. any adverse impacts are avoided; or ii. if that is not achievable, then adverse impacts are mitigated to the greatest reasonable extent. 3. Lighting which is proposed to be installed must meet or exceed the level of protection appropriate to the environmental zone, as shown on the Policies Map, as set out in the table below [table omitted].	This is a positive policy as the retention of dark habitats will benefit bat species travelling throughout the Authority area and the wider area. There are no impact pathways present.
Strategic Policy SD9: Biodiversity and Geodiversity	1. Development proposals will be permitted where they conserve and enhance biodiversity and geodiversity, giving particular regard to ecological networks and areas with high potential for priority habitat restoration or creation, and should: a) retain, protect and enhance features of biodiversity and geological interest (including supporting habitat and commuting routes through the site and taking due account of any use by migratory species) and ensure appropriate and long-term management of those features. Opportunities for net gains in biodiversity should be identified and incorporated; b) contribute to the restoration and enhancement of existing habitats, the creation of wildlife habitats and the creation of linkages between sites to create and enhance local and regional ecological networks; c) seek to eradicate or control any invasive non-native species present on site; and d) be required to contribute to the protection, management and enhancement of biodiversity and geodiversity, for example by enhancing Biodiversity Opportunity Areas, delivering Biodiversity Action Plan targets and delivering green infrastructure. 2. The following hierarchy of designation will apply in the consideration of development proposals: a) International Sites, as shown on the Policies Map (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar Sites, or candidate and formally proposed versions of these designations): i. Development proposals with the potential to impact on one or more international sites(s) will be subject to a Habitats Regulations Assessment to determine the potential for likely	No HRA implications. This is a positive policy that provides for the requirement that development proposals must have regard for biodiversity and geodiversity. It provides a designation hierarchy. It also provides for the explicitly requirement for HRA where a development proposal is considered to have the potential to have a likely significant effect on an internationally designated site, thus providing sufficient protection for European designated sites. This is a key policy in providing explicit protection to European designated sites. There are no linking impact pathways present.

Policy	Description	HRA Implications
	significant effects. Where likely significant effects may occur, development proposals will be subject to Appropriate Assessment ii. Development proposals that will result in any adverse effect on the integrity of any international site will be refused unless it can be demonstrated that: there are no alternatives to the proposal; there are imperative reasons of overriding public interest why the proposal should nonetheless proceed; and adequate compensatory provision is secured. b) National Sites (Sites of Special Scientific Interest (SSSI), National Nature Reserves, Marine Conservation Zone) as shown on the Policies Map: i. Development proposals considered likely to have a significant effect on national sites will be required to assess the impact by means of an Ecological Impact Assessment. ii. Development proposals where any adverse effect on the site's notified special interest features is likely and which cannot be either avoided or adequately mitigated will be refused, unless the benefits of the development clearly outweigh the likely impact to the notified features of the site and any broader impacts on the network of nationally protected sites. c) Local sites (Sites of Nature Conservation Importance (SNCIs) /Local Wildlife Sites (LWS)/ Sites of Importance for Nature Conservation (SINCs), Local Nature Reserves, Biodiversity Opportunity Areas and Local Geodiversity Sites) as shown on the Policies Map: i. Development proposals considered likely to have a significant effect on local sites will be required to assess the impact by means of an Environmental Impact Assessment. ii. Development proposals that will result in any adverse effect on the integrity of any local site which cannot be either avoided or adequately mitigated will be refused, unless exceptional circumstances outweighing the adverse effects are clearly demonstrated. d) Irreplaceable Habitats (including ancient woodland as shown on the Policies Map, and the loss of veteran trees): Development proposals which result in the loss or deterioration of irreplaceable habitats, including ancient woodland and veteran trees will be refused unless the need for, and benefits of, the development in that location clearly outweigh the loss.	

Policy	Description	HRA Implications
	e) Outside of designated sites (including habitats listed in the Biodiversity 2020, protected species and priority species, and habitats list): development proposals must have particular regard to their effects on species and habitats which have been designated in law as requiring protection or priority. Development proposals that affect those interests will be assessed strictly in accordance with legal requirements and will – as a minimum - be required to avoid adverse impacts or, if unavoidable, adequately mitigate those adverse impacts. Development proposals should not prejudice the aims of BOA and should take opportunities to deliver on the aims of the BOA where possible.	
Strategic Policy SD10: International Sites	**The Mens SAC and Ebernoe Common SAC** 1. Development proposals on greenfield sites and sites that support or are in close proximity to suitable commuting and foraging habitat (including mature vegetative linear features such as woodlands, hedgerows riverine and wetland habitats) within 9km of the Mens SAC or 7km of the Ebernoe Common SAC, as shown on the Policies Map, should have due regard to the possibility that barbastelle and Bechstein bats will be utilising the site. Such proposals will be required to incorporate necessary surveys and ensure that key features (foraging habitat and commuting routes) are retained, in addition to a suitable buffer to safeguard against disturbance. **Singleton and Cocking SAC** 2. Proposed use or development of the tunnels comprising the Singleton and Cocking Tunnels SAC will be required to demonstrate that there is no adverse effect on the conservation features, including hibernation habitat for barbastelle and Bechsteins bats, or on the integrity of the site. Suitable commuting and foraging habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development. **Arun Valley SPA** 3. Development proposals on greenfield sites within 5km of the Arun Valley SPA, a shown on the Policies Map, will undertake an appraisal as to whether the land is suitable for wintering Bewick swan. If it suitable then surveys will be undertaken to determine whether the fields are of importance to the swan population. If so, appropriate alternative habitat would be required before development could proceed. **Wealden Heaths Phase II SPA** 4. Development proposals resulting in a net increase in residential units within	No HRA implications This is a positive policy and another key policy provided by the Plan to ensure protection against likely significant effects. This policy provides bespoke requirements for European designated sites that require strategic avoidance measures to ensure the Plan will not result in likely significant effects. This policy provides strategic avoidance measures for The Mens SAC, Ebernoe Common SAC, Singleton and Cocking Tunnels SAC, Arun Valley SPA, Wealden Heaths Phase II SPA, and the Solent Coast SPA sites. There are no linking impact pathways present.

Policy	Description	HRA Implications
	400m of the boundary of the Wealden Heaths Phase II SPA, as shown on the Policies Map, will be required to undertake a project-specific Habitats Regulations Assessment (HRA). Development proposals resulting in a net increase in residential units within 5km of the boundary of the Wealden Heaths Phase II SPA will be required to submit a screening opinion to the Authority for a project-specific Habitat Regulations Assessment (HRA) which, in consultation with Natural England, will determine whether a likely significant effect on the integrity of the site will result. Likely significant effects will be assessed through the HRA and any requirement for mitigation identified. **Solent Coast SPAs** 5. Development proposals resulting in a net increase in residential units, within the Solent Coast Special Protection Area's (SPA) (Chichester & Langstone Harbours SPA, Portsmouth Harbour SPA and Solent & Southampton Water SPA) zone of influence shown on the Policies Map, defined as 5.6km from the boundary of these sites, may be permitted where 'in combination' effects of recreation on the Solent Coastal Special Protection Areas are satisfactorily mitigated through the provision of an appropriate financial contribution to the delivery of strategic mitigation. In the absence of a financial contribution toward mitigation, an appropriate assessment may be required to demonstrate that any 'in combination' negative effects can be avoided or can be satisfactorily mitigated through a developer-provided package of measures.	
Development Management Policy SD11: Trees, Woodland and Hedgerows	1. Development proposals that affect trees, hedgerows and woodland will be permitted where they conserve and enhance trees, hedgerows and woodlands. 2. Development proposals that affect trees, hedgerows and woodland must demonstrate that they have been informed by a full site survey, including an Arboricultural Impact Assessment, Arboricultural Method Statement and associated Tree Protection Plan, and include a management plan. 3. The felling of protected trees, groups of trees or woodland will only be permitted in exceptional circumstances and in accordance with the relevant legislation, policy and good practice recommendations. Where protected trees are subject to felling, a replacement of an appropriate number, species and size in an appropriate location will be required. 4. A minimum buffer of 15 metres will be required between the development and ancient woodland or veteran trees. Development proposals should also provide adequate protection zones and buffers around hedgerows and other woodland and trees to prevent damage to root systems and taking account of future growth. 5. A proposed loss or damage of non-protected trees, woodland or hedgerows should be avoided, and if demonstrated as being unavoidable, appropriate replacement or compensation will be required. 6. Development proposals must demonstrate that appropriate protection	No HRA implications. This is a positive policy that provides for protection of trees woodland sand hedgerows. These features have potential to be used for roosting and foraging and commuting designated bat species associated with The Mens SAC, Ebernoe Common SAC, Singleton and Cocking Tunnels SAC. There are no linking impact pathways present.

Policy	Description	HRA Implications
	measures are in place prior to any work on site throughout the development process as part of a comprehensive landscaping plan, and that suitable opportunities for the restoration, enhancement or planting of trees, woodland, and hedgerows are identified and incorporated.	
Strategic Policy SD12: Historic Environment	1. Development proposals will only be permitted where they conserve and enhance the historic environment, including through the safeguarding of heritage assets and their setting. 2. Applicants will be required to provide a Heritage Statement sufficient to allow an informed assessment of the impact of the proposed development on the significance of the heritage asset(s). 3. Development proposals which affect heritage assets (whether designated or non-designated) or their setting will be determined with regard to the significance of the asset, including the long-term conservation and enhancement of that asset. 4. Development proposals will be permitted where they enhance or better reveal the significance of heritage assets, particularly where they are considered to be at risk of irreversible harm or loss. 5. Development proposals which appropriately re-use redundant or under-used heritage assets with the optimal viable use, which secures their long-term conservation and enhancement, including of their setting, will be supported. 6. Development proposals for enabling development that would otherwise conflict with other planning policies but which would secure the future conservation of a heritage asset will be permitted provided: a) the proposals will not materially harm the heritage values of the asset or its setting; b) it can be demonstrated that alternative solutions have failed; c) the proposed development is the minimum necessary to protect the significance of the heritage asset; d) it meets the tests and criteria set out in Historic England guidance Enabling Development and the Conservation of Significant Places (or guidance superseding it); e) it is subject to a legal agreement to secure the restoration of the asset prior to completion of the enabling development; and f) it enables public appreciation of the saved heritage asset.	No HRA implications. This is a development management policy relating to historic environment. There are no linking impact pathways present.
Development Management Policy SD13: Listed Buildings	1. Development proposals which affect a listed building or its setting will be permitted and listed building consent granted where: a) they preserve and enhance the significance of the listed building and its setting by demonstrating that unnecessary loss of historic fabric and detail of significance, including internal features, floor plans and the	No HRA implications. This is a development management policy relating to listed buildings. There are no linking impact pathways present.

Policy	Description	HRA Implications
	integrity of the rooms, is avoided; or b) harm to the significance of the listed building or its setting is considered to be outweighed by public benefits by the Authority, when appropriate mitigation measures will be expected, including archaeological investigation (including a written report) or recording. 2. Development proposals will be refused planning permission and/or listed building consent where they cause substantial harm to a listed building or its setting.	
Development Management Policy SD14: Climate Change Mitigation and Adaptation of Historic Buildings	1. Development proposals will be permitted, and where relevant listed building consent granted, for works to heritage assets to adapt to, or mitigate the effects of, climate change where it can be clearly demonstrated that this is consistent with all of the following: a) The preservation and enhancement of the heritage asset's significance, character and appearance; b) The preservation and enhancement of the heritage asset's special architectural or historic interest; c) The long-term preservation of the historic built fabric; and d) The setting of the heritage asset.	No HRA implications. This is a development management policy relating to climate change mitigation and adaptation of historic buildings. There are no linking impact pathways present.
Development Management Policy SD15: Conservation Areas	1. Development proposals within a conservation area, or within its setting will only be permitted where they preserve or enhance the special architectural or historic interest, character or appearance of the conservation area. Sufficient information to support an informed assessment should be provided on the following matters: a) the relevant conservation area appraisal and management plan; b) overall settlement layout and relationship to established landscape setting; c) historic pattern of thoroughfares, roads, paths and open spaces, where these provide evidence of the historic evolution of the settlement, and the historic street scene; d) distinctive character zones within the settlement; e) mix of building types and uses, if significant to the historic evolution of the settlement; f) use of locally distinctive building materials, styles or techniques; g) historic elevation features including fenestration, or shop fronts, where applicable; h) significant trees, landscape features, boundary treatments, open space, and focal points; and i) existing views and vistas through the settlement, views of the skyline and views into and out of the conservation area.	No HRA implications. This is a development management policy relating to conservation areas. There are no linking impact pathways present.

Policy	Description	HRA Implications
	2. Within a conservation area, development proposals which involve the total or substantial demolition of buildings or structures will only be permitted where it is sufficiently demonstrated that: a) the current buildings or structures make no positive contribution to the special architectural or historic interest, character or appearance of the conservation area; and b) the replacement would make an equal or greater contribution to the character and appearance of the conservation area.	
Development Management Policy SD16: Archaeology	1. Development proposals will be permitted where they do not cause harm to archaeological heritage assets and/or their setting. Sufficient information in a Heritage Statement is required to allow an informed assessment of the significance of the archaeological heritage asset and its setting, and the impact of the proposed development on that significance. 2. There will be a presumption in favour of preservation in-situ for Scheduled Monuments and other archaeological heritage assets of equivalent significance. 3. Development proposals that will result in unavoidable harm to, or loss of, an archaeological heritage asset's significance, will only be permitted where there is a clear justification in terms of public benefits arising from the development which outweigh that harm and, in the case of substantial harm/loss, also meet the following requirements: a) there is no less harmful viable option; and b) the amount of harm has been reduced to the minimum possible. In these cases, preservation by record secured through an agreed Written Scheme of Archaeological Investigation will be required.	No HRA implications. This is a development management policy relating to archaeology. There are no linking impact pathways present.
Strategic Policy SD17: Protection of the Water Environment	1. Development proposals that affect groundwater and surface water features and watercourse corridors will not be permitted unless they conserve and enhance, the following: a) water quality and quantity, and help achieve requirements of the European Water Framework Directive, or its replacement; b) Ability of groundwater, surface water features and watercourse corridors to function by natural processes throughout seasonal variations, within the immediate vicinity, and both upstream and downstream of the site of the proposal; and c) Specifically for surface water features and watercourse corridors: i) biodiversity; ii) historic significance; iii) character, appearance, and setting;	No HRA implications. This is a development management policy relating to the protection of the water environment. It provides for the conservation and enhancement of water quality and quantity and biodiversity. It also identifies the need for development to eliminate the risk of pollution to groundwater and surface waters which could harm their ecological and chemical status. This is a positive policy as it will, by definition, aid in the protection of the Arun Valley SPA/SAC/Ramsar site and River Itchen SAC. There are no linking impact pathways present.

Policy	Description	HRA Implications
	iv) public access to and along the waterway for recreational opportunities; and v) ability to function by natural processes throughout seasonal variations, within the immediate vicinity, and both upstream and downstream of the site of the proposal. = 2. Development within Groundwater Source Protection Zones will only be permitted provided that there is no adverse impact on the quality of the groundwater source, and provided there is no risk to its ability to maintain a public water supply. 3. Development proposals must incorporate measures to eliminate risk of pollution to groundwater and surface water features which would harm their ecological and / or chemical status. 4. Development proposals for the provision of agricultural reservoirs that aid demand management, water efficiency and water storage will be permitted where they are compatible with the National Park purposes.	
Strategic Policy SD18: The Open Coast	1. Development proposals within the Sussex Heritage Coast area and the undeveloped coastal zone of the National Park, as defined on the Policies Map, will not be permitted unless they: a) meet one of the two following criteria: (i) are appropriate to the coastal location and conserve and enhance the character of the Heritage Coast / undeveloped National Park coastline; or (ii) are necessary for the operational needs of activities in support of the Heritage Coast; and b) are consistent with the Beachy Head to Selsey Bill Shoreline Management Plan, or its replacement; c) conserve and enhance coastal access to / from the coast and along the coastline; d) cause no adverse impact to the Beachy Head West Marine Conservation Zone or other MCZs that may be designated and should ensure their conservation and, where possible, enhancement.	No HRA implications. This is a positive development management policy relating to development proposals along the open coast. There are no linking impact pathways present.
Strategic Policy SD19: Transport and Accessibility	1. Development proposals will be permitted provided that they are located and designed to minimise the need to travel or promote the use of sustainable modes of transport. 2. Development proposals that are likely to generate a significant number of journeys must be located near existing town and village centres, public transport routes, main roads and, where relevant, the cycle network. Such developments will be required to provide a transport assessment or transport statement.	No HRA implications This policy does not outline any specific new development relating to transport. It is essentially a policy that seeks to manage development rather than allocating development and one that promotes sustainable transport and designing development to limit journey requirements or

Policy	Description	HRA Implications
	3. Development proposals must demonstrate the continued safe and efficient operation of the strategic and local road networks. 4. The following improvements to public transport infrastructure will be supported: a) Public transport waiting facilities, particularly those with reliable and accessible information; b) Infrastructure supporting the transfer of freight from road to rail and water; c) Improvements to walking, cycling and bus connectivity at all transport interchanges; d) Improvements to the quality and provision of cycle parking at railway stations and key bus stops. 5. In town and village centres, development will be permitted which appropriately provides for improved footways and cycle routes, cycle parking, and measures to restrict the impact of heavy goods vehicles and other traffic on historic streets.	promote sustainable transport. It promotes the use of sustainable transport methods such as walking, cycling and bus connectivity and use. This has potential to limit the Plan's contribution to atmospheric pollution. As such there are no impact pathways present.
Strategic Policy SD20: Walking, Cycling and Equestrian Routes	1. Development proposals will be permitted provided they contribute to a network of attractive and functional non-motorised travel routes, with appropriate signage, throughout the National Park. 2. The following disused railway line routes within the National Park, as shown on the Policies Map, are safeguarded for existing, and potential future use as non-motorised travel routes. Development proposals that facilitate such use will be permitted. Development proposals that adversely affect their future potential as non-motorised transport routes will be refused: a) Bordon to Bentley, b) Petersfield to Pulborough (via Midhurst), c) Chichester to Midhurst (Centurion Way) d) Wickham to Alton (Meon Valley Trail), e) Guildford to Shoreham-by-Sea (Downs Link), f) Liss to Bordon (via Longmoor) g) Devil's Dyke Route and h) New Alresford to Kingsworthy. 3. The following corridors, as shown on the Policies Map, are safeguarded for future restoration to their respective historic uses. Development proposals will not be permitted where they would their future potential for such restoration. Proposals for restoration to their historic uses will be supported: a) the original course of the former Lewes-Uckfield railway line; b) the Wey and Arun Canal.	Potential HRA implications The development of the Chichester –Midhurst disused railway line has potential to impact upon Singleton & Cocking Tunnels SAC designated for barbastelle and Bechstein's bats as this line passes through both of these tunnels. Impact pathways include: • Direct disturbance to roosting bats • Changes in humidity These are therefore discussed in the main report. However supporting text to the policy states that: '6.18 *Development of a recreational transport route within the Singleton and Cocking Tunnels SAC will not be permitted and this section is left out of the safeguarding of the Chichester to Midhurst railway line route*.' In addition, restoration of the Wey and Arun Canal is unlikely to lead to significant effects upon the Arun Valley internationally designated sites as the Canal itself is not actually joined to the River Arun. Paragraph 6.17 of the supporting text states : '*In*

Policy	Description	HRA Implications
	4. Development proposals will be permitted provided they protect and enhance existing crossings provided for non-motorised travel routes across major roads, railways and watercourses. Proposals for sensitively designed new crossings, and proposals to upgrade the safety of existing crossings, will be supported. 5. Development proposals will be permitted provided they incorporate attractive, accessible public links through the site, which are suitable for pedestrians, cyclists and equestrians as appropriate, which connect to the nearest convenient point on the public rights of way network and/or local footway network. 6. Development proposals will be permitted provided that they a) maintain existing public rights of way, and b) conserve and enhance the amenity value and tranquillity of, and views from, non-motorised travel routes and access land.	*instances where the line passes in or close to designated wildlife sites or where a survey reveals protected species, regard must be had to relevant policies in the development plan particularly policy SD12: Biodiversity and Geodiversity. A diversionary route may prove to be more appropriate.'* This acknowledges the need to for this policy to comply with Policy SD9: Biodiversity and Geodiversity which provides explicit protection for European designated sites. The Liss to Bordon (via Longmoor) route passes immediately adjacent to the Wealden Heaths Phase II SPA and provides potential for increased access to the SPA. As such this policy remains screened in for the following impact pathway: • Recreational pressure **While recreational pressure has not been identified as a specific concern for this SPA given levels of growth in the current plan period, it will be necessary as part of the detailed design of the route to ensure it does not make access to the SPA materially easier. This recommendation could be included in the supporting text. See paragraph 4.6.10 for full details.**
Development Management Policy SD21: Public Realm, Highway Design and Public Art	1. Development proposals will be permitted provided that they protect and enhance highway safety and follow the principles set out in the document, Roads in the South Downs, or any future replacement. 2. Development will not be permitted where it would reduce the biodiversity, landscape and amenity value and character of historic rural roads. Particular attention will be given to new access points and other physical alterations to roads, and to the impacts of additional traffic. 3. Site layout must be designed to protect the safety and amenity of all road users. The design and layout of new development must give priority to the needs of pedestrians, users of mobility aids, cyclists and equestrians. Movement through the site must be a safe, legible and attractive experience for all users, with roads and surfaces that contribute to the experience rather than dominate it.	No HRA implications. This is a development management policy for public realm, highway design and public art. Whilst the design of a highway could have potential to alter atmospheric contributions, this policy does not identify any type, location or extent of development. There are no linking impact pathways present.

Policy	Description	HRA Implications
	4. Street design and management proposals must be context-sensitive, responding to the specific character, activities, heritage, built form and layout, materials and street furniture of the location. Highway design must pay particular attention to the role and location of buildings, doors and entry points. 5. Appropriately designed and located new public art will be supported, in particular within settlements. New public art should be site specific, reflecting and respecting the site and its context.	
Development Management Policy SD22: Parking Provision	1. Development proposals for new, extended or re-located public parking will be permitted provided that they are located in or adjacent to the settlements listed in Policy SD25: Development Strategy, or have a strong functional link to an established cultural, heritage or landscape visitor attraction, provided that: a) there is evidence that overriding traffic management or recreation management benefits can be achieved; and b) it is a component of a strategic traffic management scheme which gives precedence to sustainable transport; and c) the site is close to and easily accessible from main roads by appropriate routes, and well connected to the public rights of way network. 2. Development proposals will be permitted if they provide an appropriate level of private cycle and vehicle parking to serve the needs of that development in accordance with the relevant adopted parking standards for the locality. Wherever feasible, electric vehicle charging facilities must also be provided. 3. All new private and public parking provision will: a) be of a location, scale and design that reflects its context; d) incorporate appropriate sustainable drainage systems. 4. All new public parking provision will comply with the following: a) Wherever feasible, electric vehicle charging facilities must be provided. Where located with potential for onward travel by mobility scooter, this should include charging facilities for such scooters; b) where located with good accessibility to the bridleway network, include provision for horse box parking.	No HRA implications. This is a development management policy relating to parking provision. It is a positive policy as it provides for connections to allow vehicle charging, thus encouraging the use of electric vehicles which has the potential to reduce atmospheric pollution contributions. There are no linking impact pathways present.
Strategic Policy SD23: Sustainable Tourism	1. Development proposals for visitor accommodation, visitor attractions and recreation facilities will be permitted where it is demonstrated that: a) the proposals will provide opportunities for visitors to increase their awareness, understanding and enjoyment of the special qualities; b) the design and location of the development minimises the need for travel by private car and encourages access and/or subsequent travel by sustainable means, including public transport, walking, cycling or horse	Potential HRA implications. Increased tourism facilities and the local economy present the following potential impact pathways that are discussed in the main report: • Recreational pressure • Atmospheric pollution • Water quality

Policy	Description	HRA Implications
	riding; c) development proposals will not detract from the experience of visitors or adversely affect the character, historical significance, appearance or amenity of the area; d) development proposals make use of existing buildings, and, if no suitable existing buildings are available, the design of any new buildings are sensitive to the character and setting; e) ancillary facilities are not disproportionately large in relation to the rest of the visitor facilities; f) any proposal does not have an adverse impact on the vitality and viability of town or village centres or assets of community value; and g) where proposals are located outside settlement policy boundaries as defined on the Policies Map, they: i) positively contributes to Purpose 1; and ii) are closely associated with other attractions/established tourism uses, including the public rights of way network; or iii) are part of farm diversification schemes or whole estate plans. 2. Development proposals that would result in the loss of visitor accommodation, visitor attractions and recreation facilities will not be permitted unless: a) Evidence is provided that the current use is financially unviable and a robust marketing campaign of at least 12 months has been carried out that clearly demonstrates that there is no market demand for the existing use or an equivalent tourism use; or b) the current use or related development harms the special qualities. 3. The Authority will support a year-round visitor economy, while ensuring the facility remains for visitor use only. 4. Development proposals, on their own or cumulatively with other development uses, must not prejudice or disadvantage people's enjoyment of other existing and appropriate tourism and recreation activities. Development proposals that generate significant additional pressure upon the surrounding rights of way network will be required to mitigate these impacts. Details of the marketing requirements are set out in appendix 3.	• Water quantity It is noted that this policy is not so much intended to promote tourism as to ensure that any tourism related development is sustainable. By definition, sustainable tourism would not result in likely significant effects upon a designated site. Moreover, Policy SD1 (Sustainable Tourism) makes it clear that any tension between the National Parks twin objectives i) to conserve and enhance the natural beauty, wildlife and cultural heritage of the area; and ii) to promote opportunities for the understanding and enjoyment of the special qualities of the national park by the public, would be decided in favour of the first objective. Policy SD23 states that 'Development proposals that generate significant additional pressure upon the surrounding rights of way network will be required to mitigate these impacts' and this would also apply to those rights of way through internationally important wildlife sites, as would the requirement in Policy SD9 to avoid adverse effects on those sites. Given that no specific schemes are proposed as part of this policy the overarching protections discussed above will enable adverse effects on integrity from tourism development to be avoided. Policy SD23 also aims to reduce the need to travel by car and encourages travel by public transport and sustainable travel methods.
Development Management Policy SD24: Equestrian Uses	1. Development proposals for equestrian development will be permitted where they: a) are of a scale and/or an intensity of equestrian use compatible with the landscape and its special qualities; b) demonstrate good design which is well located and responds to local	No HRA implications. It is acknowledged that equestrian activity within a designated site has the potential to result in likely significant effect through increased nutrient inputs, habitat abrasion and disturbance to features.

<table>
<tr><th>Policy</th><th>Description</th><th>HRA Implications</th></tr>
<tr><td></td><td>character and distinctiveness;
c) re-use existing buildings wherever feasible and viable;
d) locate new buildings, stables, yard areas and facilities adjacent to existing buildings provided they respect the amenities and activities of surrounding properties and uses;
e) are well located to existing utilities and transport infrastructure, including vehicular and field accesses, tracks and bridleways;
f) provide new or supplementary landscape features including hard and soft treatments and planting, consistent with local character; and
g) demonstrate a conservation based land management approach.</td><td>However, this is a development management policy that does not provide for any location of development and specifies that the scale and intensity of use needs to be compatible with the landscape and its special qualities.
There are no linking impact pathways present.</td></tr>
<tr><td>Strategic Policy SD25: Development Strategy</td><td>1. The principle of development within the following settlements, as defined on the Policies Map, will be supported, provided that development:
a) is of a scale and nature appropriate to the character and function of the settlement;
b) makes best use of suitable and available previously developed land in the settlement; and
c) makes efficient and appropriate use of land.
<table><tr><th>Coastal Plain</th><th>Western Weald</th></tr><tr><td>Funtington</td><td>Binsted</td></tr><tr><td>Lavant (including Mid Lavant and East</td><td>Easebourne</td></tr><tr><td>Lavant)</td><td>Fernhurst</td></tr><tr><td>Dip Slope</td><td>Fittleworth</td></tr><tr><td>Compton</td><td>Greatham</td></tr><tr><td>Corhampton and Meonstoke</td><td>Liss (including Liss Forest and West Liss)</td></tr><tr><td>Droxford</td><td>Lodsworth</td></tr><tr><td>East Dean and Friston</td><td>Midhurst</td></tr><tr><td>Findon</td><td>Milland</td></tr><tr><td>Hambledon</td><td>Northchapel</td></tr><tr><td>Owslebury</td><td>Petersfield</td></tr><tr><td>Pyecombe</td><td>Petworth</td></tr><tr><td>Singleton</td><td>Rogate</td></tr><tr><td>Slindon</td><td>Sheet</td></tr></table></td><td>HRA implications
This policy provides for development in principle within settlements identified within this policy. Whilst it does not explicitly provide for type, extent or specific location it can be assumed that residential development will be permitted within the settlements identified in Point 1.
Potential impact pathways:
• Water quality (absence of nutrient enrichment)
• Water quantity (abstraction)
• Recreational pressure
• Loss of supporting habitat
• Air quality
• Urbanisation

This is therefore the main policy discussed in the body of the report, via consideration of the settlements identified and the quantum of development expected at site allocations (particularly) and through windfall. It is noted that the total quantum of residential development to be achieved has changed relatively little since the Preferred Options HRA, from 4,596 dwellings between 2014 and 2032, to 4,750 dwellings between 2014 and 2033 i.e. a further 154 dwellings partly to account for the additional year.</td></tr>
</table>

Policy	Description		HRA Implications
	Twyford	South Harting	
	Scarp Slope	Stedham	
	Buriton	**River Valley (Arun)**	
	Bury	Amberley	
	Cocking	Coldwaltham	
	Ditchling	Watersfield	
	East Meon	**River Valley (Cuckmere)**	
	Graffham	Alfriston	
	Poynings	**River Valley (Ouse)**	
	Selborne	Kingston near Lewes	
	Steep	Rodmell	
	Washington	Lewes	
	West Meon		
	Western Downs		
	Chawton		
	Cheriton		
	Itchen Abbas		
	Farringdons (Lower and Upper)		
	Stroud		

2. Exceptionally, development will be permitted outside of settlement boundaries, where it complies with relevant policies in this Local Plan, responds to the context of the relevant broad area or river corridor, and:

a) It is allocated for development or safeguarded for the use proposed as part of the Development Plan, or

b) There is an essential need for a countryside location, or

c) In the case of community infrastructure, there is a proven need for the development that demonstrably cannot be met elsewhere, or

d) It is an appropriate reuse of a previously developed site which conserves or enhances the special qualities of the National Park.

<table>
<tr><th>Policy</th><th>Description</th><th>HRA Implications</th></tr>
<tr><td></td><td>3. In considering development proposals outside settlement boundaries within rural estates and large farms, positive regard will be had to the following:

a) The development proposals are part of a Whole Estate Plan or Large Farm Plan that has been endorsed by the Authority; and

b) The development proposals deliver multiple benefits in line with the purposes and the special qualities of the National Park and in regard to ecosystem services.</td><td></td></tr>
<tr><td>Strategic Policy SD26: Supply of Homes</td><td>1. The National Park Authority will make overall provision for approximately 4,750 net additional homes over a 19 year period between 2014 and 2033.
2. These will be delivered through:
(i) the development of strategic sites and the allocation of land for housing in the Local Plan and neighbourhood development plans;
(ii) the implementation of planning permissions; and
(iii) the development of land previously unallocated or identified (windfall).
3. Sites will be allocated in this Local Plan or in Neighbourhood Development Plans to accommodate approximately the following levels of housing in addition to extant planning permissions granted prior to 1st April 2015, and windfalls:

<table><tr><th>Settlement</th><th>Housing target</th></tr><tr><td>Alfriston</td><td>15</td></tr><tr><td>Amberley</td><td>6</td></tr><tr><td>Binsted</td><td>11</td></tr><tr><td>Buriton</td><td>10</td></tr><tr><td>Bury</td><td>6</td></tr><tr><td>Cheriton</td><td>14</td></tr><tr><td>Coldwaltham</td><td>38</td></tr><tr><td>Corhampton and Meonstoke</td><td>18</td></tr><tr><td>Ditchling</td><td>15</td></tr><tr><td>Droxford</td><td>30</td></tr><tr><td>Easebourne</td><td>50</td></tr><tr><td>East Dean and Friston (East Sussex)</td><td>11</td></tr></table></td><td>HRA implications
The delivery of strategic housing allocations at some of the settlements outlined within this policy has potential for likely significant effects upon internationally designated sites. See Appendix B Table 1 (Site Allocations Screening Table) or more detail.
The following impact pathways exist:
• Disturbance from increased recreational pressure
• Water quality
• Water quantity
• Urbanisation (fires/ invasive species)
• Loss of supporting habitat
• Air quality

This is therefore the main policy discussed in the body of the report, via consideration of the settlements identified and the quantum of development expected at site allocations (particularly) and through windfall. It is noted that the total quantum of residential development to be achieved has changed relatively little since the Preferred Options HRA, from 4,596 dwellings between 2014 and 2032, to 4,750 dwellings between 2014 and 2033 i.e. a further 154 dwellings partly to account for the additional year.

In summary, a total of seven allocated residential sites have been removed since the Preferred Options, while ten allocated sites have had their housing numbers changed since the preferred</td></tr>
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Policy	Description		HRA Implications
	East Meon	17	options. The greatest change is the amendment of Land at Old Malling Farm (Lewes) from c.200 dwellings to 240 dwellings but this was already included in the adopted Lewes Joint Core Strategy and had been subject to discussion at the Examination in Public into that plan. All other retained allocations have had their numbers altered by 10 dwellings or less. To balance the deletions, a further twenty-three sites have been allocated. Most of these are allocated for between 10 and 20 dwellings, although two of the new sites (both at Midhurst) have been allocated for 160 dwellings between them. The allocation at Liss (150 dwellings) is identical to that in the East Hampshire Joint Core Strategy, the Preferred Options South Downs Local Plan and the Liss Neighbourhood Plan. The total housing at Lewes is in line with the Lewes Joint Core Strategy. Petersfield is outside the relevant catchment of any sensitive European sites.
	Fernhurst (including Syngenta)	220	
	Findon	30	
	Fittleworth	6	
	Greatham (Hampshire)	38	
	Itchen Abbas	9	
	Kingston near Lewes	11	
	Lavant (including Mid Lavant and East Lavant)	20	
	Lewes (including North Street Quarter)	875	
	Liss (including West Liss and Liss Forest)	150	
	Midhurst	175	
	Petersfield	805	
	Petworth	150	
	Pyecombe	8	
	Rogate	11	
	Selborne	6	
	Sheet	31	
	South Harting	13	
	Stedham	18	
	Steep	10	
	Stroud	28	
	Twyford	20	
	West Ashling	19	
	West Meon	11	

Policy	Description	HRA Implications
	4. Neighbourhood Development Plans that accommodate higher levels of housing than is set out above will be supported by the National Park Authority providing that they meet local housing need and is in general conformity with the strategic policies of the development plan.	
Strategic Policy SD27: Mix of Homes	1. Planning permission will be granted for residential development that delivers a balanced mix of housing to meet projected future household needs for the local area. Proposals shall provide numbers of dwellings of sizes to accord with the relevant broad mix. a) Proposals for affordable housing delivered as part of a market housing scheme will provide the following approximate mix of units: 1 bedroom dwellings: 35%* 2 bedroom dwellings: 35% 3 bedroom dwellings: 25% 4 bedroom dwellings: 5% b) Proposals for market housing will provide the following mix of units: 1 bedroom dwellings: at least 10% 2 bedroom dwellings: at least 40% 3 bedroom dwellings: at least 40% 4+ bedroom dwellings: up to 10% 2. Planning permission will be granted for an alternative mix provided that: a) Robust evidence of local housing need demonstrates that a different mix of dwellings is required to meet local or strategic needs, or b) It is shown that site-specific considerations necessitate a different mix to ensure National Park Purpose 1 is met 3. Development proposals will be permitted for residential development that provides flexible and adaptable accommodation to meet the needs of people who are less mobile, or have adult homecare requirements. Development proposals of 5 or more homes will be permitted where it is clearly demonstrated that evidence of local need for older people's or specialist housing is reflected in the types of homes proposed. *1 bedroom affordable dwellings may be substituted with 2 bedroom affordable dwellings	No HRA implications. This is a development management policy relating to the mix of homes that are to be provided. There are no linking impact pathways present.
Strategic Policy SD28: Affordable Homes	1. Development proposals for new residential development will be permitted that maximise the delivery of affordable housing to meet local need, and provided that, as a minimum, the following are met: a) On sites with capacity to provide 11 or more homes, a minimum of 50% of new homes created will be provided as affordable homes on-site,	No HRA implications. This is a development management policy relating to the provision of affordable housing. There are no linking impact pathways present.

<table>
<tr><th>Policy</th><th>Description</th><th>HRA Implications</th></tr>
<tr><td></td><td>of which a minimum 75% will provide a rented affordable tenure*.
b) On sites with capacity to provide between 3 and 10 homes, a proportion of affordable homes will be provided in accordance with the following sliding scale, applied to new homes created:
<table><tr><th>3 homes</th><th>Meaningful financial contribution to be negotiated case by case</th></tr><tr><td>4-5 homes</td><td>1 affordable home</td></tr><tr><td>6-7 homes</td><td>2 affordable homes, at least 1 of which is a rented affordable tenure*</td></tr><tr><td>8 homes</td><td>3 affordable homes, at least 1 of which is a rented affordable tenure*</td></tr><tr><td>9 homes</td><td>3 affordable homes, at least 2 of which is a rented affordable tenure*</td></tr><tr><td>10 homes</td><td>4 affordable homes, at least 2 of which is a rented affordable tenure*</td></tr></table>Development proposals of 3 to 10 net dwellings will provide affordable housing on-site.
Exceptionally, at the discretion of the Authority, financial contributions in lieu will be accepted.
2. Where, exceptionally, provision of affordable housing which complies with the above is shown to be financially unviable, priority will be given to achieving the target number of on-site affordable homes over other requirements set out in this policy
3. Development proposals will be permitted provided that affordable housing units are integrated throughout the development, are indistinguishable in design and materials from the market housing on the site, and where feasible will remain affordable in perpetuity.
4. Occupancy conditions and local connection criteria will be applied to affordable housing to ensure local needs are met. Specific criteria will be determined by the Authority, in close partnership with established community-led and legally constituted organisations or CLTs where applicable.
5. Developers may not circumvent this policy by artificially subdividing sites.</td><td></td></tr>
<tr><td>Strategic Policy SD29: Rural Exception sites</td><td>1. Proposals for new residential development of 100 per cent affordable housing outside of settlement boundaries as shown on the Policies Map will be permitted, provided that the following are met:
a) affordable housing is provided in perpetuity where feasible;</td><td>No HRA implications.
This is a policy that seeks to manage development rather than allocating development. Whilst it encourages new residential development, there are</td></tr>
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Policy	Description	HRA Implications
	b) the site selection process has considered all reasonable options, and the most suitable available site in terms of landscape, ecosystem services and overall functionality has been chosen; c) the scale and location relates well to the existing settlement and landscape character; and d) it is shown that effective community engagement has fed into the design, layout and types of dwellings proposed. 2. The size (number of bedrooms), type and tenure, (for example, social and affordable rented, intermediate, shared ownership or older people's housing) of affordable homes for each proposal will be based on robust and up-to-date evidence of local community aspirations and need. 3. Occupancy conditions and local connection criteria will be applied to affordable housing to ensure local needs are met. Specific criteria will be determined by the Authority, in close partnership with established community-led and legally constituted organisations or CLTs where applicable.	no specific locations or quantities mentioned. This policy incudes reference to development complying 'with other relevant policies'. As such there are no linking impact pathways present.
Development Management Policy SD30: Replacement Dwellings	1. Development proposals for replacement residential dwellings outside settlement boundaries, as defined on the Policies Map, will be permitted where: a) The structure, constituting all new and existing development, does not result in a net increase of more than 30% compared with the gross internal area of the existing dwelling; and b) The replacement dwelling is not overbearing or of a form which would be detrimental to the amenity of nearby residents by virtue of loss of light and / or privacy. 2. Development proposals for the replacement of one residential dwelling with two or more separate residential dwellings will be permitted where: a) Criteria 1(a) and (b) are satisfied; b) The replacement dwellings are 'small' and designed with appropriate layouts and internal arrangements; and c) There is sufficient scope within the existing dwelling and its curtilage to provide satisfactory private amenity space, landscaping, boundary treatments, external storage and vehicular parking for each dwelling. 3. Where permission is granted future extensions may be controlled by the removal of permitted development rights.	Potential HRA implications. This is a development management policy. This policy potentially allows for an increase in population size of an individual dwelling. However this policy does state that development will only be permitted where '*replacement dwellings are 'small'* thus reducing the extent of the increase in the population at that dwelling. Whilst this policy does have potential to lead to an increase in floor space per dwelling, the expected population increase is expected to be small. As such, this policy is screened out. Furthermore, if a replacement dwelling was located within a catchment of a European designated site (as identified in Strategic Policy SD10: International Sites), it would be required to adhere to avoidance measure also identified in Strategic Policy SD10: International Sites.
Development Management Policy SD31: Extensions to existing dwellings, and provision of annexes and	1. Development proposals for extensions to existing dwellings, and the provision of annexes and outbuildings will be permitted where: a) The proposal does not increase the floorspace of the existing dwelling by more than 30% unless there are exceptional circumstances; b) The proposal respects the established character of the local area; and	Potential HRA implications. This is a development management policy. This policy potentially allows for an increase in population size of an individual dwelling. However this policy does state that development will only be

Policy	Description	HRA Implications
outbuildings	c) The proposal is not overbearing or of a form which would be detrimental to the amenity of nearby residents by virtue of loss of light and/or privacy 2. Proposals for annexes should demonstrate the functional and physical dependency on the host dwelling. 3. Proposals for outbuildings should demonstrate that they are required for purposes incidental to the use of the host dwelling. 4. Where permission is granted future extensions may be controlled by the removal of permitted development rights.	permitted to increase floor space by *'no more than 30%"* thus reducing the extent of the increase in the population at that dwelling. Whilst this policy does have potential to lead to an increase in floor space per dwelling and thus population size, the expected population increase is expected to be small. As such, this policy is screened out. Furthermore, if an extension was located within a catchment of a European designated site (as identified in Strategic Policy SD10: International Sites), it would be required to adhere to avoidance measure also identified in Strategic Policy SD10: International Sites.
Development Management Policy SD32: New Agricultural and Forestry Workers' Dwellings	1. Development proposals for agricultural and forestry workers' dwellings will be permitted where it has been demonstrated that the nature and demand of the work concerned make it essential for one or more people engaged in agricultural and forestry enterprises to live at, or very close to, the site of their work. 2. Applications for new agricultural and forestry workers' dwellings will need to demonstrate that: a) The agricultural or forestry enterprise is established, extensive, viable and contributes to the special qualities of the National Park; b) There is an essential functional need for the agricultural and forestry dwelling that could not be fulfilled either by another residential dwelling on the enterprise or existing residential accommodation in the local area which is suitable and available for occupation by the workers concerned; c) No other residential dwellings either on or closely connected to the enterprise have been sold off separately or alienated from it in the past five years unless the reason for separation is justified through robust evidence; d) Full consideration has first been given to the conversion of an existing building within the enterprise; and e) The proposed agricultural or forestry dwelling should be well-related in terms of siting to existing buildings or dwellings within the enterprise, result in a total habitable floor space not exceeding 120m² and be sensitively designed 3. Applications for the removal of occupancy conditions will not be permitted unless it can be demonstrated through robust evidence that there is no longer a current or possible renewed need for the dwelling for the authorised use for the foreseeable future, and will only be made available on the open market when it	No HRA implications This is a development management policy providing dwellings for forestry and agricultural workers. Whilst this policy does allow for an increase in residential dwellings, these will be in low numbers (e.g. a single dwelling). Furthermore, if a dwelling was located within a catchment of a European designated site (as identified in Strategic Policy SD10: International Sites), it would be required to adhere to avoidance measure also identified in Strategic Policy SD10: International Sites. As such it is considered that there are no impact pathways present.

Policy	Description	HRA Implications
	has been robustly demonstrated that its use as an affordable dwelling would be unviable or unsuitable or unnecessary. 4. Temporary dwellings for agricultural and forestry workers will be permitted where they are essential to support the agricultural or forestry enterprise, whether new or established, provided that it is demonstrated that: a) There is a firm intention and ability to develop the enterprise; b) There is a clear functional need to support the enterprise; c) The enterprise has been planned on a sound financial basis; d) The location would be suitable for a permanent agricultural or forestry worker's dwelling; and e) It is easily dismantled and/or taken away 5. Where permission is granted for new dwellings under this policy, future extensions may be controlled by the removal of permitted development rights.	
Strategic Policy SD33: Gypsies and Travellers and Travelling Showpeople	1. Lawful permanent sites for Gypsies, Travellers and Travelling Showpeople will be safeguarded from alternative development, unless acceptable replacement accommodation can be provided or the site is no longer required to meet any identified need. 2. The SDNPA will seek to meet the need of Gypsies, Travellers and Travelling Showpeople up to 2027 / 28, by the allocation of permanent pitches and the granting of planning permission on currently unidentified sites for approximately: a) 13 pitches in that part of the National Park located in Brighton & Hove; b) 8 pitches in that part of the National Park located in Lewes District; c) 11 pitches in that part of the National Park located in East Hampshire and Winchester Districts. 3. Development proposals to meet the needs of the Gyspy, Traveller and Travelling Showpeople community (as defined in Planning Policy for Traveller Sites (2015) or any subsequent policy) will be permitted where they: a) can demonstrate a local connection; b) can demonstrate that there is no alternative available pitch which could be used in the locality; c) do not result in sites being over-concentrated in any one location or disproportionate in size to nearby communities; d) are capable of being provided with infrastructure such as power, water supply, foul water drainage and recycling/waste management without harm to the special qualities of the National Park; e) provide sufficient amenity space for residents; f) do not cause, and are not subject to, unacceptable harm to the amenities of neighbouring uses and occupiers;	HRA implications This policy provides for safeguarding of sites for Gypsies, Travellers and Travelling Showpeople. It also provides figures for a broad quantum of pitches for Gypsies and Travellers and plots for Travelling Showpeople within Brighton & Hove, Lewes District and East Hampshire and Winchester Districts, which the National Park will seek to meet through the allocation of permanent pitches and by granting planning permission on currently unidentified sites. In addition, it sets out criteria for which development proposals for plots or pitches should be considered. Some of the quanta set out is provided for in the allocations chapter of the Local Plan. In general, provision of additional gypsy and traveller pitches does not necessarily correlate with an increase in the gypsy and traveller population of an area as large as the South Downs National Park but is more related to replacing existing unofficial pitches with official pitches that are correctly serviced. Some population growth is expected due to natural population change, it is recognised that this growth is expected to be so minor across the whole National Park as to be effectively *de minimis*.

Policy	Description	HRA Implications
	g) have a safe vehicular and pedestrian access from the public highway and adequate provision for parking, turning and safe manoeuvring of vehicles within the site; and h) restrict any permanent built structures in rural locations to essential facilities. 4. Proposals for sites accommodating Travelling Showpeople should allow for a mixed use yard with areas for the storage and maintenance of equipment.	There is a net restriction on new dwellings (including gypsy & traveller sites) within 400m of the Wealden Heaths Phase 2 SPA that has been agreed between Natural England, East Hampshire District Council and the South Downs National Park Authority and this therefore inherently limits the number of traveller sites that could be delivered in that area. This is discussed in paragraph 5.95 of the Local Plan '*To avoid likely significant effect upon the SPA, the National Park Authority will monitor all development within the 400m zone in liaison with East Hampshire District Council, Waverley District Council and Natural England. The National Park Authority has worked with East Hampshire District Council on the preparation of a Supplementary Planning Document (SPD) that provides guidance to applicants where development proposals in East Hampshire District, including the area that falls within the South Downs National Park, will result in a net increase in residential development within 400m of the Wealden Heaths Phase II SPA'.* This policy does not provide for sufficient detail to be assessed in any detail but locations where there is growth in gypsy and traveller pitches or travelling showpeople plots will operate cumulatively with growth in other forms of housing.
Strategic Policy SD34: Sustaining the Local Economy	1. Development proposals that foster the economic and social well-being of local communities within the National Park will be permitted provided that they meet one or more of the following: a) promote and protect businesses linked to the National Park's key sectors of farming forestry and tourism; b) promote and protect green businesses linked to ecosystem services; c) support rural supply chains across the National Park and its environs and encourage closer ties between rural businesses; d) provide for and support small and micro businesses through the provision of small, flexible, start-up and move-on business units including incubator uses; e) provide flexibility for established businesses to secure future resilience	HRA implications This policy promotes and encourages tourism and the visitor economy. An increase in these activities has potential to have likely significant effects upon internationally designated sites and this is discussed in the main report. Impact pathways present: • Disturbance from increased recreational pressure • Water quality • Water quantity • Urbanisation (fires/ invasive species)

Policy	Description	HRA Implications
	and protect local jobs; f) intensify the commercial use of an employment site and make a more efficient use of brownfield land; and g) promote smart economic growth and advances in information and communications technologies, particularly superfast broadband.	• Loss of supporting habitat • Air quality However, since this policy is (intentionally) not very spatially specific, only a broad impact assessment of the implications can be undertaken. Since it does not specify particular sites it will be possible for this policy to be implemented without an adverse effect on European sites.
Strategic Policy SD35: Employment Land	1. The SDNPA will make overall provision for the following amounts of new employment land between 2014 and 2033: • Office (B1a/b): approximately 5. 3 hectares. • Industrial (B1c/B2): 1.8ha • small-scale warehousing (B8): 3.2ha 2. Development proposals for the change of use of redundant B2 premises and land to accommodate the need for new offices and/or warehousing will be permitted provided that there would not be a potentially adverse impact on the landscape and other special qualities of the National Park including by reason of traffic, noise or pollution. 3. The Authority will safeguard all existing employment sites and allocations that are fit for purpose from development proposals for non-employment uses. Change of use applications that would result in a loss of employment land will only be permitted provided that evidence of a robust marketing campaign of at least 12 months clearly demonstrates that there is no market demand for the business premises. 4. The principal and local employment sites are shown on the Policies Map, to which further protection applies as follows: a) On principal employment sites: B class employment uses will be safeguarded from development proposals for non-B class uses and evidence of a robust marketing campaign of at least 18 months will be required. b) On local employment sites: commercial uses will be safeguarded from development proposals for non-commercial uses and evidence of a robust marketing campaign of at least 18 months will be required. Details of marketing requirements are set out in Appendix 3.	HRA implications This is a development control policy for employment land, and does not provide any locations or extent of employment land. However, dependant on the location, and extent of the employment land there is potential for likely significant effects. This is therefore discussed in the main report. Impact pathways present include: • Water quality • Water quantity • Air pollution However, since this policy is (intentionally) not very spatially specific, only a broad impact assessment of the implications can be undertaken. Since it does not specify particular sites it will be possible for this policy to be implemented without an adverse effect on European sites. Where actual site allocations are made, these are assessed in Appendix B Table 1.
Strategic Policy SD36: Town and Village Centres	1. Development proposals for town centre development will be permitted where they promote or protect the following hierarchy of identified centres as defined on the policies map a) Market Town Centres: Petersfield, Midhurst, Petworth and Lewes;	No HRA implications This is a policy that seeks to manage development in town and village centres rather than allocating development. It does not provide any locations or

Policy	Description	HRA Implications
	b) Larger Village Centre: Liss; c) Smaller Village Centres: Alfriston, Ditchling, Fernhurst and Findon 2. Within the smaller village centres, development proposals for retail purposes will be permitted where they are compatible with its historic nature and of a scale appropriate to the community they sit within. Such development should be well related to any existing shops and services within the village unless it can be demonstrated that this is not feasible or practicable. 3. The loss of units in Use Class A that are fit for purpose will not be permitted within smaller village centres unless evidence of a marketing campaign of at least 24 months demonstrates that there is no market demand for the premises, and that its continued use for retail purposes is not viable. Details of marketing requirements are set out in Appendix 6.	extent of employment land. There are no linking impact pathways present.
Development Management Policy SD37: Development in Town and Village Centres	1. Within the town and larger village centres as shown on the Policies Map, development proposals for main town centre uses will be permitted providing they do not harm the retail function of the centre, and are compatible with its scale and historic nature. 2. Within the defined primary shopping frontages as shown on the Policies Map, the loss of units in Use Class A will not be permitted. 3. Planning permission will be granted for non-retail main town centre uses within the secondary shopping frontage as shown on the Policies Map. 4. Development that supports the evening economy within the defined town and larger village centre, particularly for visitors/tourists, will be permitted provided the use would not result in adverse impacts on the amenity of residents and businesses. 5. Within the smaller village centres, development proposals for retail purposes will be permitted where they are compatible with its historic nature and of a scale appropriate to the community they sit within. Such development should be well related to any existing shops and services within the village unless it can be demonstrated that this is not feasible or practicable. 6. The loss of units in Use Class A that are fit for purpose will not be permitted within smaller village centres unless evidence of a marketing campaign of at least 24 months demonstrates that there is no market demand for the premises, and that its continued use for retail purposes is not viable.	No HRA implications. This policy does not explicitly provide for development, but merely management of the development. There are no linking impact pathways present
Development Management Policy SD38: Shops outside Centres	1) Development proposals for small convenience stores will be permitted where they: a) have a net sales area less than 150m^2; and b) are to meet the everyday shopping needs of the local community.	No HRA implications. This is a development management policy and does not specify any location or quantity of development.

Policy	Description	HRA Implications
	2) The loss of units in Use Class A that are fit for purpose will not be permitted unless evidence of a marketing campaign for at least 18 months demonstrates that there is no market demand for the premises, and that its continued use for retail purposes is not viable. Details of marketing requirements are set out in Appendix 6. 3) Development proposals for new farm shops or extensions to existing farm shops will be permitted provided that: a) the scale and scope would not harm the retail offer in the immediate area. Such shops should aim to sell: i) at least 40 per cent of goods that are own produce plus local foods; ii) 40 per cent of goods that are regional; and iii) 20 per cent are from elsewhere. b) the proposal has re-used or replaced existing buildings, unless it is demonstrated that this is not feasible. 4) Development proposals for new garden centres, or extensions to existing garden centres, will be permitted where: a) it is demonstrated that the primary purpose of the centre is, and will remain, the sale of plants and gardening related produces; b) the scale of operations is appropriate to the location; c) it is demonstrated that the use proposed is directly related to the supply chain of local horticultural businesses; d) the proposal has re-used or replaced existing buildings, unless it is demonstrated that this is not feasible, in which case it should be related physically and functionally to existing buildings associated with the business. 5) A retail impact assessment will be required for retail development outside of the defined Market Town and Larger Village Centre boundaries but within the settlement policy boundaries, where the proposal exceeds the following thresholds for retail floorspace: a) Market Town: 750 m^2 b) Larger Village: 500 m^2 6) A retail impact assessment will be required for retail development outside of Market Town and Larger Village settlement policy boundaries where the proposal exceeds 150m^2. 7) All retail development outside centres should consider and take opportunities to increase people's awareness, understanding and enjoyment of the special qualities of the National Park.	There are no impact pathways present.

Policy	Description	HRA Implications
Development Management Policy SD39: Agriculture and Forestry	1. Development proposals for new buildings or structures for the purposes of agriculture or forestry will be permitted where: a) there is an agricultural or forestry need for the development within the National Park and its scale is commensurate with that need; b) it has been demonstrated that available alternative sites which might better protect and enhance the special qualities of the National Park have been considered, and are unsuitable to meet the need; c) the buildings are in keeping with local character, and of a design that reflects the proposed agricultural or forestry use; d) the proposals include structure planting to integrate the development into the existing local landscape framework; e) the development re-uses or replaces existing buildings where feasible. Where this is not feasible, the development should be related physically and functionally to existing buildings associated with the enterprise, unless there are exceptional circumstances relating to agricultural or forestry necessity for a more isolated location; f) A building has not been disposed of at the property holding in the past three years, which could have met the need of the development proposed; and g) existing buildings which have a negative landscape impact are removed, unless demonstrated that this is not feasible. 2. Development proposals for new or improved access tracks for forestry or agriculture will be permitted where: a) the proposal is essential for the sustainable management of the land; b) it has been demonstrated that it is not feasible to accommodate the proposed traffic using existing accesses; c) the layout and design is located to minimise impacts on the special qualities of the National Park; and d) Where appropriate, the track is opened as a path for permissive public usage.	No HRA implications. This is a development management policy relating to agriculture and forestry. There are no linking impact pathways present.
Development Management Policy SD40: Farm and Forestry Diversification	1. Development proposals relating to farm and forestry diversification projects will be permitted where: a) A diversification plan is submitted, which demonstrates that: i) the proposed development(s) would contribute to the first purpose of the National Park by providing long-term benefit to the farming or forestry business as an agricultural/forestry operation;	No HRA implications. Farm diversification could result in adverse effects on European sites depending on what is proposed. However, this policy does not promote, or seek to achieve, diversification but is a development management policy intended to manage diversification of farms and forestry and ensure it is compatible with the objectives of the National Park

Policy	Description	HRA Implications
	ii) diversification activities remain subsidiary to the farming or forestry operation, in terms of physical scale and income stream; and iii) the proposed development does not cause severance or disruption to the agricultural holding. and b) The development re-uses or replaces existing buildings where feasible. Where this is not feasible, the development should be related physically and functionally to existing buildings , be of an appropriate scale, and retain agricultural character; c) Any outdoor storage is provided as a minor ancillary element of other uses.	(and, explicitly, its first objective to conserve and enhance the natural beauty, wildlife and cultural heritage of the area). There are no impact pathways present.
Development Management Policy SD41: Conversion of Redundant Agricultural or Forestry Buildings	1. The conversion of redundant agricultural or forestry buildings outside of defined settlement boundaries to an alternative use will be permitted where: a) the location is sufficiently well related to existing infrastructure, amenities and services; b) the existing vehicular access is suitable in landscape terms for the use proposed; c) the original building is structurally sound, is not derelict and of an appropriate design and scale for conversion to the proposed new use, without the need for substantial reconstruction, significant extensions or ancillary buildings; d) conversion will not result in the need for another agricultural or forestry building on the holding; e) if the building proposed for conversion is not a traditional one, there are no redundant traditional buildings within the holding capable of being re-used in the first instance; and f) there is no adverse impact on the character of the building and its setting. g) for residential uses, the proposed development is restricted to occupation by agricultural and forestry workers. 2. The conversion of redundant agricultural or forestry buildings outside of defined settlement boundaries identified as heritage assets will be permitted where: a) part 1 of this policy is complied with; b) the optimal viable use is proposed to conserve and enhance its architectural and historic significance and setting; c) wherever possible, essential utilities and other functional requirements do not harm significant internal or external fabric;	No HRA implications. This is a development management policy relating to the conversion of agricultural buildings. It does not outline any type or location of development. There are no linking impact pathways present.

Policy	Description	HRA Implications
	d) existing historic fabric and features of architectural or historic significance are retained.	
Strategic Policy SD42: Infrastructure	1. Development proposals for new or improved infrastructure and supporting infrastructure for major projects will only be permitted where: a) It represents the least environmentally harmful option reasonably available also having regard to the operational requirements and technical limitations of the proposed infrastructure; and b) The design minimises the impact on the landscape, character, features of natural beauty, wildlife, cultural heritage and the general amenity of communities; and 2. Development proposals will only be permitted where appropriate, necessary and reasonable infrastructure investment has been secured either in the form of suitable on-site or off-site works, and/or financial contributions to mitigate its impact. 3. Infrastructure delivery should be integrated with development phasing to ensure timely provision. Financial contributions towards future infrastructure maintenance will, where necessary, be secured by means of a legal agreement.	No HRA implications This is a development management policy relating to the provision of infrastructure. The policy does not specifically promote infrastructure but sets out the requirements that any infrastructure proposal must meet in order to be deemed acceptable. No type, extent or location of infrastructure is identified. There are no linking impact pathways present.
Development Management Policy SD43: New and Existing Community Facilities	1. Development proposals for new and/or expanded community facility infrastructure will be permitted where: a) they demonstrate a local need; b) the scale of the proposed infrastructure is proportionate to the local area; c) there has been prior local community engagement; d) they are accessible and inclusive to the local communities they serve; and e) appropriate consideration has been given to the shared use, re-use and/or redevelopment of existing buildings in the host community. 2. Development proposals that would result in the loss of, or have an unacceptable adverse impact upon, an existing community facility, will not be permitted unless: a) For commercially run community facilities, evidence is provided of a robust marketing campaign of at least 12 months that clearly demonstrates there is no market demand for the existing use or an equivalent community use; or b) For community- or publicly-owned or managed facilities, it can be robustly demonstrated that there is a lack of need for the existing facility, or an equivalent community use, or c) Alternative community facilities are provided that are accessible, inclusive and available without causing unreasonable reduction or	No HRA implications This is a development management policy relating new and existing community facilities. There are no linking impact pathways present.

Policy	Description	HRA Implications
	shortfall in the local service provision. Details of the marketing requirements are set out in Appendix 3.	
Development Management Policy SD44: Telecommunications and Utilities Infrastructure	1. Development proposals for new telecommunications and/or utilities infrastructure will be permitted where: a) the identified need cannot be met using existing infrastructure or other appropriate structures; b) they are of an appropriate design that would not have an adverse impact on the special qualities of the National Park; c) they make use of all available technologies and suitable mitigation designed to minimise the impact on the landscape and general amenity; d) they minimise other relevant environmental impacts; and e) they remove, reduce in prominence, or move underground related existing infrastructure, where feasible. 2. All new residential dwellings should be served by a superfast broadband connection, or an equivalent alternative technology, installed on an open access basis. All other non-residential buildings proposed to be regularly occupied must also be provided with this standard of connection when available, unless it can be demonstrated through consultation with relevant service providers that this would not be deliverable.	No HRA implications. This is a positive policy in that with improved telecommunications the need to travel by car can be reduced, thus reducing air pollution from vehicles. There are no impact pathways present.
Strategic Policy SD45: Green Infrastructure	1. Development proposals will be permitted where they demonstrate that they: a) maintain or enhance green infrastructure assets, green infrastructure links and that of the overall green infrastructure network; and b) provide new green infrastructure, or improvements to existing green assets and green linkages, which are integrated into the development design, that meets the needs of communities both within and beyond the site's boundaries. 2. Green Infrastructure proposals must contribute to multifunctional landscapes which: a) strengthen connectivity and resilience of ecological networks; b) incorporate green infrastructure measures that are appropriate to the type and context of the development proposal as part of an overall landscape design; c) maximise opportunities to mitigate, adapt and improve resilience to climate change; d) maximise opportunities for cycling and walking and, where possible, facilitate circular routes; and e) support health and wellbeing and improve opportunities for understanding and enjoyment of the National Park and its special	No HRA implications. This is a development management policy relating to green infrastructure. It does not provide for increased access to, or promote specific elements of, green infrastructure and there are many green infrastructure opportunities for recreation through the National Park, other than internationally important wildlife sites. This policy is directed towards securing improved green infrastructure. There are no linking impact pathways present.

Policy	Description	HRA Implications
	qualities. 3. Development proposals that will harm the green infrastructure network must incorporate measures that sufficiently mitigate or offset their effects. 4. Where appropriate, the Authority will seek to secure via planning condition or legal agreement provision for the future management and/or maintenance of green infrastructure.	
Development Management Policy SD46: Provision and Protection of Open Space, Sport and Recreational Facilities and Burial Grounds/Cemeteries	1. Residential development will be required to provide open space on site or within proximity to the site, in line with the Authority's adopted standards as set out in Figure 7.8, or their replacements. Development proposals for open space should demonstrate how they: a) are of a type determined by the scale and type of development and the needs of the area; b) are of high quality design which reflects the landscape character and setting; c) are safe and accessible for all members of the community; and d) include provision for the long-term management and maintenance of any recreation or open space facilities provided. 2. Development proposals for new buildings that provide local sport and recreational facilities should be located within settlement boundaries as defined on the Policies Map. Outside of settlement boundaries new buildings for local sport and recreational facilities will be limited to those ancillary to and essential for the use of the land for outdoor sport and recreation. Robust evidence of a sequential search for sites and the ancillary nature of the building will need to be provided and agreed with the Authority. Development proposals for new or improved playing surfaces should be located within or close to settlement boundaries as defined on the Policies Map. 3. Development proposals will be refused where they would result in the loss of open space unless like for- like provision of a similar quantity, quality and accessibility is made in close proximity to the existing open space. Robust evidence must be provided to demonstrate the following: a) alternative provision is available in the vicinity without causing an unreasonable reduction or shortfall in meeting the local need; b) it has been demonstrated that the land cannot reasonably be converted to another form of open space provision for which there is an identified deficit; and c) the development will provide alternative, sports, recreation or open space facilities, the need for which clearly outweighs the loss of the open space.	No HRA implications. This is a positive policy. It provides for provision and protection of green space and sports and recreational facilities. These facilities have potential to divert recreational pressure away from sensitive European designated sites. There are no linking impact pathways present.

<table>
<tr><th>Policy</th><th>Description</th><th>HRA Implications</th></tr>
<tr><td></td><td>4. Development proposals for new cemeteries and burial grounds will be permitted where they are:
a) appropriately sited with regard to impact on local amenity;
b) designed to make the most of opportunities to improve and/or create new biodiversity, habitats and green infrastructure; and
c) will have no adverse impact on controlled waters including groundwater and surface water.</td><td></td></tr>
<tr><td>Development Management Policy SD47: Local Green Spaces</td><td>The following green areas, as defined on the Policies Map, are designated and protected as Local Green Spaces, in line with the National Planning Policy Framework:
<table>
<tr><th>Brighton and Hove</th><th>Midhurst</th></tr>
<tr><td>Green Ridge</td><td>South Pond and associated green space</td></tr>
<tr><td>Buriton</td><td>Half Moon Covert</td></tr>
<tr><td>The Links</td><td>Carron Lane Recreation Area</td></tr>
<tr><td>Buriton Recreation Ground</td><td>Holmbush Recreation Area</td></tr>
<tr><td>Village Pond/War Memorial</td><td>St Margaret’s development community garden</td></tr>
<tr><td>Sheep Dip and Pond Green</td><td>Jubilee Path and associated green space</td></tr>
<tr><td>Sumner Road Green Spaces</td><td>Poynings</td></tr>
<tr><td>Pickle Lane (Weston)</td><td>Poynings Playing Field</td></tr>
<tr><td>Budds Orchard (Weston)</td><td>Poynings Allotments</td></tr>
<tr><td>Cheriton</td><td>Seaford</td></tr>
<tr><td>Yard Lane</td><td>The Village Green, Bishopstone</td></tr>
<tr><td>Corhampton and Meonstoke</td><td>Tide Mills, Mill Drove</td></tr>
<tr><td>Church Green, Meonstoke</td><td>Selborne</td></tr>
<tr><td>Droxford</td><td>Burlands Field or Culverscroft</td></tr>
<tr><td>Droxford Parish Green</td><td>Dowlings Little Mead and Church Meadow</td></tr>
<tr><td>East Dean, East Sussex</td><td>Selborne Recreation ground</td></tr>
<tr><td>The Horsefield</td><td>Slindon</td></tr>
<tr><td>Went Way Allotments</td><td>Slindon Common Recreation Ground</td></tr>
<tr><td>East Worldham</td><td>Top Playing Field</td></tr>
</table></td><td>No HRA implications.
This is a positive policy. It provides for protection of local green spaces. These have potential to divert recreational pressure away from sensitive European designated sites.
There are no linking impact pathways present.</td></tr>
</table>

Policy	Description		HRA Implications
	East Worldham Playground	Meadsway	
	Fulking	The Forge Field	
	North Town Field	Jubilee Orchard	
	Hambledon	The Allotments	
	Speltham Down	The Copse	
	The Glebe Land	Stedham	
	The Donkey Field	Stedham Sports Ground	
		Stedham Recreation Ground (Village Green)	
		Land at Common View (Allotment Gardens)	
		Playing Field – land at Common View	
		Wannock, Polegate	
		Wannock Coppice	
Strategic Policy SD48: Climate Change and Sustainable Use of Resources	1. The Authority will encourage all new development to incorporate sustainable design features, as appropriate to the scale and type of development. 2. All development proposals will be required to achieve the minimum standards as set out below unless it can be demonstrated that doing so is not technically feasible, or would make the scheme unviable: Residential: i. Energy: 19% carbon reduction improvement against Part L (2013) and; ii. Water: Consumption of no more than 110 litres per person per day. Non-Residential: i. Major: BREEAM Very Good 3. All development proposals, including retrofitting, will be required to demonstrate, proportionately, how the development addresses climate change mitigation and adaptation through the on-site use of zero and/or low carbon technologies, sustainable design and construction, and low carbon materials. 4. Major development proposals should also include an energy assessment to demonstrate how carbon dioxide emissions are to be minimised on-site.		No HRA implications. This is a positive policy in that it promotes sustainable development, which has potential to reduce greenhouse gas emissions, and thus theoretically improve air quality. There are no linking impact pathways present.
Strategic Policy SD49: Flood Risk Management	1. Development proposals will be permitted that seek to reduce the impact and extent of all types of flooding through: a) steering development away from areas of flood risk as identified by the Environment Agency and the Strategic Flood Risk Assessment. Development in areas of flood risk will, where relevant, be required to		No HRA Implications. This is a positive policy in that it ensures that development will not impact upon flooding at that location or elsewhere and where possible is reduced. A site specific Flood Risk Assessment is

Policy	Description	HRA Implications
	meet the national Sequential and Exception tests; b) not increasing the risk of flooding elsewhere and, wherever possible, reducing overall flood risk; c) flood protection, mitigation and adaptation measures necessary and appropriate to the specific requirements of the proposal, the development site and other areas potentially impacted; and d) ensuring that the integrity of coastal and river flood defences are not undermined. 2. Development proposals should, where required by national policy and guidance, be accompanied by a site specific Flood Risk Assessment (FRA). 3. Proposed flood protection, mitigation and adaptation measures should be supported with a management schedule, the identification of the body responsible for maintenance, and evidence of funding and maintenance in perpetuity.	required and must demonstrate that the development will not negatively impact upon water quality of surface water and ground water. There are no linking impact pathways present.
Development Management Policy SD50: Sustainable Drainage Systems	1. Development proposals will be permitted where they ensure that there is no net increase in surface water run-off, taking account of climate change. 2. Proposals for major development will be permitted where they provide suitable sustainable drainage systems, unless it is demonstrated to be inappropriate. All other development proposals must provide suitable sustainable drainage systems where required by the Lead Local Flood Authority (LLFA). 3. Sustainable drainage systems, where feasible, must support the provision of open space, public amenity areas and enhancing biodiversity and other public benefits as appropriate. 4. Where sustainable drainage systems are provided, arrangements must be put in place for their whole life management and maintenance.	No HRA implications This is a positive policy in that it encourages the use of SuDS, reducing runoff that could have a detrimental effect upon internationally designated sites. There are no linking impact pathways present
Development Management Policy SD51: Renewable Energy	1. Development proposals for all renewable energy schemes, except those specifically addressed in criterion 2 below, that assist in contributing towards reducing greenhouse gas emissions and moving towards a carbon neutral National Park will be permitted where it is demonstrated through suitable site specific analysis that the proposal: a) makes provision for the removal of the facilities and reinstatement of the site, should it cease to be operational; b) ensures existing public access is not impeded; and c) does not result in the loss in use of Grades 1, 2 or 3a agricultural land. 2. Development proposals for small-scale individual wind turbines and freestanding solar arrays serving individual properties or small groups of properties will be permitted where: a) they are suitably sited and screened and clearly associated with the buildings or properties that they are intended to serve;	No HRA implications This is a positive policy in that it seeks to contribute to reducing greenhouse gas emissions, thus improving air quality. This policy does not identify type, location or extent of any development. Dependant on the development, there is potential for likely significant effects, however, this policy ensures for the protection of wildlife. Any wind-turbine renewable energy proposals would need to have due regard to the proximity of European sites designated for bats and birds. There are no linking impact pathways present

Policy	Description	HRA Implications
	b) they are appropriate in scale to the property being served,; and c) there is no unacceptable adverse impact on tranquillity, amenity or conflict with public safety	
Development Management Policy SD52: Shop Fronts	1. Development proposals for new, or changes to existing, shop fronts will be permitted where they: a) relate well to the building in which they are situated, giving regard to upper floors, in terms of scale, proportion, vertical alignment, architectural style and materials; b) retain and restore where possible significant historic features of any original shop front; c) are based upon a traditional approach to shopfront design; d) take account of good architectural features of neighbouring shopfronts so that the development will fit in well with the street scene particularly if located within a conservation area or on a listed building; and, e) use materials which respect the street scene. 2. If a single shop front is to be created by joining two or more units, it should reflect and show the original divisions that existed, particularly in the case of historic properties. 3. There will be a presumption against internally illuminated signage/logos as well as solid shutters or any other feature which obscures window displays, unless this is a traditional feature of a historic premises. 4. External lighting is only normally appropriate for businesses operating in the evening. If required, it should be kept to a minimum, be discreetly positioned and incorporated into the design.	No HRA implications. This is a development management policy relating to shop fronts. There are no impact pathways present.
Development Management Policy SD53: Adverts	1. Advertisement consent will be granted where: a) the location, size, scale, proportions, design and materials of the advert respects the character and appearance of the host building (including any historic significance), site and area; b) the number of adverts is kept to a minimum to ensure that there is no harmful cumulative impact on the host building and/or the amenity of the area; and c) there is no harmful impact to public safety. 2. There will be a presumption against internally illuminated advertisements. 3. Externally lit adverts are normally only appropriate for businesses operating in the evening. If required, they should be kept to a minimum, be discreetly positioned and incorporated into the design of the building.	No HRA implications. This is a development management policy relating to adverts. There are no impact pathways present.

Policy	Description	HRA Implications
Development Management Policy SD54: Pollution and Air Quality	1. Development proposals will be permitted provided that levels of air, noise, vibration, light, water, odour or other pollutants do not have a significant negative affect on people and the natural environment now or in the foreseeable future, taking into account cumulative impacts and any mitigation. 2. Development proposals that by virtue of their location, nature or scale could impact on an existing AQMA, as shown on the Policies Map, will be required to: a) have regard to any relevant Air Quality Action Plan (AQAP) and to seek improvements in air quality through implementation of measures in the AQAP; and b) provide mitigation measures where the development and/or associated traffic would adversely affect any declared AQMA. 3. Development proposals will be required to provide mitigation measures where the development and/or its associated traffic could lead to a declaration of a new or extended AQMA. 4. Development proposals will be permitted where they follow best practice methods to reduce levels of dust and other pollutants arising during a development from demolition through to completion.	No HRA implications. This is a positive management policy that aims to manage atmospheric pollution by ensuring that development proposal will not have a significant adverse effect on the natural environment, now or in the foreseeable future. There are no linking impact pathways present.
Development Management Policy SD55: Contaminated Land	1. Development proposals for sites with either known or suspected contamination or the potential to contaminate land either on site or in the vicinity, will require the submission of robust evidence regarding investigations and remedial measures sufficient to ensure that any unacceptable risk to health or environmental health is removed prior to development proceeding.	No HRA implications. A management policy relating to contaminated land. There are no linking impact pathways present.

Table 3. Screening of the South Downs Local Plan Pre-Submission Strategic Site and Allocation Policies

Full policy details are only provided for Strategic Site Policies. Site Allocations screening only provides a summary of the type of development, size and quantum of development. If the policy wording does include any text that is relevant to the HRA, then this is also included. Note that these assessment tables only focus on site-specific issues. Therefore strategic issues (i.e. those in which the net quantum of development is more important than specific locations such as public water supply or air quality) are not discussed below unless it is considered that they could influence a specific allocation.

Site allocation	Description	HRA Implications
Strategic Site Policy SD56: Shoreham Cement Works	1. Shoreham Cement Works, as identified on the Policies Map, is an area of significant opportunity for an exemplar sustainable mixed use development, which delivers a substantially enhanced landscape and uses that are compatible with the purposes of the National Park. To help achieve this the National Park Authority will prepare an Area Action Plan (AAP) with the overall aims of:	No HRA implications This outlines key points required for the development of this site. One of the principle objectives is *'conserving, enhancing and providing opportunities for understanding the biodiversity, geodiversity, historic significance and cultural*

Site allocation	Description	HRA Implications
	a) enhancing the visual impact of the site from both the nearby and distant public viewpoints; b) conserving, enhancing and providing opportunities for understanding the biodiversity, geodiversity, historic significance and cultural heritage of the site; c) ensuring the delivery of Ecosystems Services, and d) ensuring that the design of any development is of the highest quality and appropriate to its setting within a National Park. 2. The National Park Authority would support development proposals for a) sustainable tourism / visitor based recreation activities and leisure development directly related to the understanding and enjoyment of the National Park; b) B2 and B8 business uses to support the local economy, with a focus on environmentally sustainable activities, supporting local communities and providing opportunities for entrepreneurship, and c) further types of development that would enable the environmentally-led restoration of the site, provided that the proposals can clearly demonstrate how they would deliver the key considerations set out in 1 above and d) improves accessibility and helps to create sustainable patterns of travel; e) provides renewable energy generation to serve any development on the site; f) provides realistic proposals for the relocation of existing employment and storage uses that are not appropriate to a National Park setting, and g) ensures that any adverse impacts (either alone or in combination) are avoided, or, if unavoidable, minimised through mitigation with any residual impacts being compensated for. 3. The National Park Authority will resist more development than is necessary to secure and deliver the environmentally-led restoration of the site. 4. The National Park Authority wants to see a comprehensive redevelopment of the whole site consistent with the AAP. However, if any planning applications come forward separately and prior to the adoption of the AAP, then they would have to clearly demonstrate how the proposals would accord with the key considerations set out above.	*heritage of the site*'. Whilst the use of this site for sustainable tourism/ leisure development and business use to support the local economy has potential to impact upon internationally designated sites (increases in recreational pressure, water quality and water quantity issues), at its closest it is located 16.3km from Castle Hill SAC and 16.8km from the Arun Valley SAC/ Ramsar site. Due to the distances involved this policy can be screened out. As such there are no impact pathways present.
Strategic Site Policy SD57:	1. Proposals for the sustainable mixed-use development of approximately 9	HRA implications.

Site allocation	Description	HRA Implications
North Street Quarter and adjacent Eastgate area, Lewes	hectares of land at North Street and the neighbouring part of Eastgate, as shown on the Policies Map, will be permitted provided they comply with the criteria below. 2. The development would create a new neighbourhood for the town of Lewes. Therefore, any proposals should be based on the following uses and broad quantum of development: a) approximately 415 residential units, predominantly focused towards the northern part of the site; b) at least 5,000 square metres of B1a office and / or B1c light industrial floorspace, subject to market needs and general viability; c) the redevelopment or relocation of the existing A1 food supermarket; d) other uses that are deemed to aid in the successful delivery of a new neighbourhood, whilst not undermining the wider function of Lewes town centre (this could include A1 Shops, A2 Financial and Professional Services, A3 Restaurants and Cafes, A4 Drinking Establishments, A5 Hot Food Takeaways, C1 hotel, D2 Assembly and Leisure uses and community floorspace); e) C2 nursing / care home (self-contained units will be counted as residential within the above figure); f) D1 non-residential institutions such as medical and health services, crèches, exhibition and training space, and g) new floorspace for other cultural, artistic and artisan uses not covered by the uses stated above. 3. In addition, any proposal will need to demonstrate: a) it includes the early provision of flood defences to an appropriate standard and to the approval of the Environment Agency; b) it facilitates improved linkages across Phoenix Causeway and Eastgate Street and a better balance between the use of the private car and other modes of transport, in order to enable the safe flow of pedestrians and the improved integration of the area to the north of Phoenix Causeway with the wider town centre; c) it delivers enhancements to vehicular access and off-site highway improvements, arising from and related to the development and its phasing; d) it respects and enhances the character of the town and achieves a high standard of design, recognising the high quality built environment, on and within the vicinity of the site, and the site's	This policy outlines residential development for 415 new dwellings, of B1a office and / or B1c light industrial floorspace, a food supermarket and other uses. At its closest it is approximately 500m from Lewes Downs SAC. Impact pathways present: • Disturbance – recreational pressure • Air quality This allocation is carried over from the adopted Lewes Joint Core Strategy, which was itself subject to HRA and Examination in Public and planning permission has already been granted for most of this site. The recreational pressure analysis can therefore be carried over from the HRA of the Joint Core Strategy, as can the air quality analysis with regard to Lewes Downs SAC. In both instances the conclusion based on all growth in Lewes District was one of no likely significant effect. Air quality with regard to Ashdown Forest SAC/SPA has been analysed strategically regarding development across Lewes District and the South Downs National Park, and in combination with growth in other authorities surrounding the SAC. The analysis is detailed in full in the main body of the HRA report but the overall conclusion is that no adverse effects will arise due to growth in the National Park and Lewes District due to a combination of a forecast net improvement in air quality over the plan period and the very small contribution to change in air quality that growth in the National Park and Lewes District is expected to make.

Site allocation	Description	HRA Implications
	setting within the South Downs National Park and adjacent to a Conservation Area; e) it is subject to an analysis and appropriate recognition of the site's (or phase of the site) cultural heritage and a programme of archaeological work, including, where applicable, desk-based assessment, geophysical survey, geo-archaeological survey and trial trenching to inform design and appropriate mitigation; f) it conserves and enhances biodiversity and the green infrastructure network in and around the area; g) it incorporates a riverside shared foot / cycle route along the western bank of the River Ouse to extend the town's riverside focus and contribute to its character and quality, and provides additional pedestrian and cycling routes to link the site (or phase of the site) to the rest of the town, improves permeability within the site (or phase of the site) and provides views out of the site (or phase of the site); h) it provides an appropriate level of public car parking provision; i) any retail uses are incorporated into the designated town centre boundary as far as possible and the amount of retail provision is informed by a Retail Impact Assessment, if necessary; j) alternative uses on the bus station site are subject to the facility being replaced by an operationally satisfactory and accessible site elsewhere; k) it makes contributions towards off-site infrastructure improvements arising from, and related to, the development; l) it provides a connection to the sewerage and water supply systems at the nearest point of adequate capacity, as advised by Southern Water, and ensures future access to the existing sewerage and water supply infrastructure for maintenance and upsizing purposes; m) it incorporates sustainable surface water management systems, and n) it ensures that any adverse impacts (either alone or in combination) are avoided, or, if unavoidable, minimised through mitigation with any residual impacts being compensated for. 4. Whilst the National Park Authority wants to see a comprehensive redevelopment of the whole site, it recognises that planning applications may come forward separately or in phases. Therefore, those applications would have to clearly demonstrate how the proposals would accord with the	

Site allocation	Description	HRA Implications
	key considerations set out above and are consistent with other planning permissions granted or emerging proposals.	
Allocation Policy SD58: Former Allotments, Alfriston	0.4ha. 5 to 10 residential dwellings (class C3 use).	No HRA implications Due to the distances involved (8.5km to the nearest European site, the Pevensey Levels SAC), there are no linking impact pathways present.
Allocation Policy SD59: Kings Ride, Alfriston	0.32ha 6 to 8 residential dwellings (class C3 use).	No HRA implications Due to the distances involved (8.5km to the nearest European site, the Pevensey Levels SAC), there are no linking impact pathways present.
Allocation Policy SD60: Land at Clements Close, Binsted	0.5ha. 10 to 12 residential dwellings (class C3 use) 1. a) Appropriate mitigation of the impact of the development on the Wealden Heath Special Protection Area, which should be informed by a Project Level Habitats Regulation Assessment; 1. c) Existing mature trees and hedgerows to be retained	Potential HRA implications This site is located 3km from the Wealden Heaths Phase II SPA. Impact pathways include: • Recreational pressure This is discussed in the main body of the report. However, this matter was analysed in detail for the East Hampshire Joint Core Strategy. it is understood that the total quantum of net residential development (including traveller pitches) in South Downs National Park within 5km of the Wealden Heaths Phase 2 SPA remains broadly in line with that assumed when the Joint Core Strategy HRA was undertaken, notwithstanding the Local Plan period being 2014-2033 (as opposed to 2011-2028 for the Joint Core Strategy). The overall conclusion of the Joint Core Strategy analysis was agreed with Natural England and has been reaffirmed through several Examination's in Public. The conclusion is that no adverse effect on integrity is expected even without a strategic mitigation solution and development can thus be considered on a case-by-case basis related to its proximity to the site and quantum of development.
Allocation Policy SD61: New Barn Stables, The Street, Binsted	0.15ha 1 additional permanent Gypsy and Traveller pitch	Potential HRA implications This site is located 3km from the Wealden Heaths Phase II SPA.

Site allocation	Description	HRA Implications
		Impact pathways include: • Recreational pressure This is discussed in the main body of the report. However, this matter was analysed in detail for the East Hampshire Joint Core Strategy. it is understood that the total quantum of net residential development (including traveller pitches) in South Downs National Park within 5km of the Wealden Heaths Phase 2 SPA remains broadly in line with that assumed when the Joint Core Strategy HRA was undertaken, notwithstanding the Local Plan period being 2014-2033 (as opposed to 2011-2028 for the Joint Core Strategy). The overall conclusion of the Joint Core Strategy analysis was agreed with Natural England and has been reaffirmed through several Examination's in Public. The conclusion is that no adverse effect on integrity is expected even without a strategic mitigation solution and development can thus be considered on a case-by-case basis related to its proximity to the site and quantum of development. Given the distance from the site, the precedent set by the adopted East Hampshire Site Allocations plan and the small number of pitches involved it is considered that no site-specific mitigation requirement exists.
Allocation Policy SD62: Land at Greenway Lane, Buriton	0.5ha 8 to 10 residential dwellings (class C3 use)	No HRA implications. This site is 1.3km from Butser Hill SAC, and 5.0km from East Hampshire Hangers SAC. Due to the topography and isolated location of these sites they are not considered vulnerable to recreational pressure resulting from the SDNPA Local Plan. There are no impact pathways present, although air quality on the A3 past Butser Hill has been investigated and is reported in the main body of the HRA report. No adverse effects are expected and in any event that is a strategic matter and would not

Site allocation	Description	HRA Implications
		affect this specific allocation of 8 to 10 dwellings.
Allocation Policy SD63: Land South of the A272 at Hinton Marsh, Cheriton	0.85ha 12 to 15 residential dwellings (class C3 use). 1. a) To demonstrate that there would be no likely significant effect on the River Itchen SSSI & SAC through development of the site for residential use; 1. c) Development should include a suitable area of public open space within the site;	Potential HRA implications. The River Itchen SAC is located 180m west of the site. Potential impact pathways present include hydrological changes due to construction-related effects on water supply, depending on how the site is delivered. This policy provides for the need for this site allocation to have no significant impact upon the SAC and given its small size and the fact that it is separated from the River itchen by other properties it is likely it can be constructed in such a way that no impacts would arise. There are no other linking impact pathways present.
Allocation Policy SD64: Land South of London Road, Coldwaltham	8.1ha 25 to 30 residential dwellings (class C3 use). Class A1 (Shop) unit with a net sales floorspace up to a maximum of 280m². The remainder of the allocation site should be publicly accessible open space and a small area of vehicular parking for users of the open space. 2. a) To demonstrate that there would be no likely significant effect on the Waltham Brooks Site of Special Scientific Interest (SSSI), the Amberley Wild Brooks SSSI, and the Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site and that suitable mitigation, where deemed necessary, will be secured through planning obligations and/or planning conditions;	HRA implications This site is located 95m from Arun Valley Ramsar and SPA, and abuts the SAC. In addition it is 3.5km from Duncton to Bignor Escarpment SAC, and 5.5km from The Mens SAC. Potential impact pathways discussed in the main report: • Loss of supporting habitat (commuting routes) for barbastelle bats of The Mens SAC (see SD10) • Loss of supporting habitat for Bewicks Swan (see SD10) • Water quality However, it is noted that, in response to the Preferred Options HRA, a requirement has been inserted that any application must '*demonstrate that there would be no likely significant effect on … the Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site'*. The size of the site (8.1ha) is such that, given the number of dwellings to be delivered (25-30) it can be delivered in such a way that the development occupies the land furthest from the SAC, with publically accessible open space between the two. Recreational pressure is not identified as an issue for

Site allocation	Description	HRA Implications
		this site in Natural England's Site Improvement Plan, although water quality from treated sewage effluent is a known issue. See the main body of a report for a discussion of this issue. However, provided that the 30 dwellings planned for this site can be accommodated within the existing licence headroom of the nearby WwTW, there is no reason to expect this site to be undeliverable due to conflicts with the Arun Valley SAC, SPA or Ramsar site. Commuting routes for barbastelle bats can be preserved through careful physical and lighting design of the development. With regard to supporting habitat for Bewick's Swan, Policy SD10: (International Sites), Point 3 includes the following text: '*Development proposals on greenfield sites within 5km of the Arun Valley SPA should undertake an appraisal as to whether the land is suitable for wintering Bewick swan. If it is then survey should be undertaken to determine whether the fields are of importance to the SPA population. If so, appropriate alternative habitat would be required before development could proceed.'* It should be noted that unless the site is obviously unsuitable (i.e. hardstanding or tall grassland and scrub or woodland) then it could require several years of survey to determine use by Bewick swan.
Allocation Policy SD65: Land East Of Warnford Road, Corhampton	0.73 Up to 18 residential dwellings (Class C3 use)	No HRA implications. This site is 9.4km from Butser Hill SAC. Due to the distances involved there are no linking impact pathways present
Allocation Policy SD66: Land at Park Lane, Droxford	1.04ha 26 to 32 residential dwellings (class C3 use)	No HRA implications. This site is 9.4km from the River Itchen SAC. Due to the distances involved there are no linking impact pathways present
Allocation Policy SD67: Cowdray Works Yard,	0.9ha Mixed use development including 16 to 20 residential dwellings (Class C3	No HRA implications. Although this site is located within 5km of Singleton

Site allocation	Description	HRA Implications
Easebourne	use) and commercial buildings for Class A1, A3 and B1 up to 1,500 square metres.	and Cocking Tunnels SAC, the site does not contain any mature and/ or connected linear features that could support commuting bats from the SAC. As such this site can be screened out. There are no impact pathways present.
Allocation Policy SD68: Land at Egmont Road, Easebourne	0.7ha 16 to 20 residential dwellings (class C3 use).	No HRA implications. Although this site is located within 5km of Singleton and Cocking Tunnels SAC, the site is located in an existing urban setting and does not contain any mature and/ or connected linear features that could support commuting bats from the SAC. As such this site can be screened out. There are no impact pathways present.
Allocation Policy SD69: Former Easebourne School, Easebourne	2.1ha 16 to 20 residential dwellings (class C3 use).	No HRA implications. Although this site is located within 5km of Singleton and Cocking Tunnels SAC, the site is located on the boundary of urban and arable habitats. From reviewing freely available aerial photography, the site does not contain any mature and/ or connected linear features that could support commuting bats from the SAC. As such this site can be screened out. There are no impact pathways present.
Allocation Policy SD70: Land Behind the Fridays, East Dean (East Sussex)	0.54ha Up to 11 residential dwellings (Class C3 use)	No HRA implications. Located more than 10km from Pevensey Levels SAC. Due to the distances involved, there are no linking impact pathways present.
Allocation Policy HA71: Land at Elm Rise, Findon	0.7ha 15 and 20 residential dwellings (class C3 use).	No HRA implications. Located more 9.3km from the Arun Valley SPA, SAC and Ramsar site. Due to the distances involved, there are no linking impact pathways present.
Allocation Policy HA72: Soldiers Field House, Findon	0.6ha 10 to 12 residential dwellings (class C3 use).	No HRA implications. Located more 9.6km from the Arun Valley SPA, SAC and Ramsar site. Due to the distances involved, there are no linking impact pathways present.

Site allocation	Description	HRA Implications
Allocation Policy SD73: Land at Petersfield Road, Greatham	2.4ha 35 to 40 residential dwellings (class C3 use) and associated open space. Class A1 (Shop) unit with a net sales floorspace up to a maximum of 280m². 2. c) Provide suitable mitigation towards the Wealden Heaths Special Protection Area (SPA), which should be informed by a project level Habitat Regulations Assessment;	Potential HRA implications This site was allocated in the Preferred Options and discussed in its HRA. However, the quantum of development has increased from 30 dwellings to 35-40 dwellings. It is located 600m from Wealden Heaths Phase II SPA, 1.4km from Woolmer Forest SAC, 1.5km from East Hampshire Hangers SAC and 5.2km from Shortheath Common SAC. Potential impact pathways are investigated in the main report: • Recreational pressure (bird breeding season) and habitats • Water quality • Water quantity However, this policy provides for specific protection of the SPA, thus allowing for mitigation to be delivered if a planning application HRA deems it necessary. It should in any case be noted that the specific issue of recreational pressure on Wealden Heaths Phase 2 SPA/Woolmer Forest was analysed in detail for the East Hampshire Joint Core Strategy. it is understood that the total quantum of net residential development (including traveller pitches) in South Downs National Park within 5km of the Wealden Heaths Phase 2 SPA remains broadly in line with that assumed when the Joint Core Strategy HRA was undertaken, notwithstanding the Local Plan period being 2014-2033 (as opposed to 2011-2028 for the Joint Core Strategy). The overall conclusion of the Joint Core Strategy analysis was agreed with Natural England and has been reaffirmed through several Examination's in Public. The conclusion is that no adverse effect on integrity is expected even without a strategic mitigation solution and development can thus be considered on a case-by-case basis related to its proximity to the site and quantum of development.

Site allocation	Description	HRA Implications
		Given the relatively small quantum of development and taking into account the precedent set by the adopted East Hampshire Site Allocations plan it is entirely possible that a project-level HRA would conclude that no mitigation would be necessary. There are no other linking impact pathways present; recreational impacts on East Hampshire Hangers SAC and Shortheath Common SAC were ruled out in the Preferred Options HRA.
Allocation Policy SD74: Land at Fern Farm, Greatham	The southern part of the Land at Fern Farm, Greatham is allocated for the development of 4 (total) permanent Gypsy and Traveller pitches. There is a requirement outlined in the introductory text for a project-level Habitat Regulations Assessment.	Potential HRA implications. This site is located 190m from Wealden Heaths Phase II SPA. Potential impact pathways present include: • Urbanisation • Recreational pressure The recreational pressure conclusion is as per allocation SD73. With regard to urbanisation, Natural England, East Hampshire District Council and South Downs National Park Authority have an agreed quantum of net new residential development (including gypsy & traveller pitches) that can be delivered within 400m of the Wealden Heaths Phase 2 SPA over the Local Plan period, which cannot be exceeded. This is reflected in paragraph 5.95 of the Local Plan '*To avoid likely significant effect upon the SPA, the National Park Authority will monitor all development within the 400m zone in liaison with East Hampshire District Council, Waverley District Council and Natural England. The National Park Authority has worked with East Hampshire District Council on the preparation of a Supplementary Planning Document (SPD) that provides guidance to applicants where development proposals in East Hampshire District, including the area that falls within the South Downs National Park, will result in a net increase in residential development within 400m of the Wealden*

Site allocation	Description	HRA Implications
		Heaths Phase II SPA'. Therefore, either this allocation must count towards the agreed limit, or the site must be designed such that the four net new pitches all lie more than 400m from the Wealden Heaths Phase 2 SPA.
Allocation Policy SD75 Half Acre, Hawkley	0.24ha 3 permanent Gypsy and Traveller pitches. There is a requirement outlined in the introductory text for a project-level Habitat Regulations Assessment.	HRA implications This site is located 313m from the East Hampshire Hangers SAC, 2.5km from Woolmer Forest SAC and 2.4km from Wealden Heaths Phase ii SPA. Due to the topography and isolated location of East Hampshire Hangers SAC it is not considered vulnerable to recreational pressure resulting from the SDNPA Local Plan. However, due to the site's proximity to Wealden Heaths Phase II SPA, the following impact pathway could not be screened out and is discussed in the main report: • Recreational pressure This matter was analysed in detail for the East Hampshire Joint Core Strategy. it is understood that the total quantum of net residential development (including traveller pitches) in South Downs National Park within 5km of the Wealden Heaths Phase 2 SPA remains broadly in line with that assumed when the Joint Core Strategy HRA was undertaken, notwithstanding the Local Plan period being 2014-2033 (as opposed to 2011-2028 for the Joint Core Strategy). The overall conclusion of the Joint Core Strategy analysis was agreed with Natural England and has been reaffirmed through several Examination's in Public. The conclusion is that no adverse effect on integrity is expected even without a strategic mitigation solution and development can thus be considered on a case-by-case basis related to its proximity to the site and quantum of development.

Site allocation	Description	HRA Implications
Allocation Policy SD76: Land at Itchen Abbas House, Itchen Abbas	0.66ha 8 to 10 residential dwellings (class C3 use). a)… Detailed proposals that meet the following site specific development requirements will be permitted: To demonstrate that there would be no likely significant effect on the River Itchen Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC);	Potential HRA implications This allocation was present in the Preferred Options HRA and was assessed at that time, although the number of dwellings has increased from 8 dwellings to 10 dwellings. This site is located within 50m of the River Itchen SAC, separated from the SAC by the B3047 and a 30m deep block of woodland: Impact pathways present: • Water quantity (maintenance of flows) • Water quality (siltation and low nutrient inputs) • In both cases this could be due to construction-related effects on water supply, depending on how the site is delivered. This policy provides for the need for this site allocation to have no significant impact upon the SAC and given its small size it is likely it can be constructed in such a way that no impacts would arise. On balance, water quality in this stretch of the River Itchen is likely to be much more affected by the fish farms present in this area. The development is likely to be served by a Waste water Treatment Works (WwTW) which discharges into the River Itchen SAC. However, there are only 10 new dwellings involved and it would not be served by the two works that have the biggest impact on Itchen water quality (Chickenhall WwTW and Harestock WwTW). It is therefore likely that it could be accommodated within existing residual headroom of the relevant local wastewater treatment works. There is thus no reason to expect this site to be undeliverable due to conflicts with the River Itchen SAC. There are no other linking impact pathways present.
Allocation Policy SD77: Castelmer Fruit Farm, Kingston near Lewes	0.72ha 10 to 12 residential dwellings (class C3 use).	HRA implications Located 2.1km from Castle Hill SAC, and 3.4km from Lewes Downs SAC. It is not anticipated that Castle Hill

Site allocation	Description	HRA Implications
		SAC is vulnerable to increased recreational pressure[104]. However, due to the site's proximity to Lewes Downs SAC, the following in combination impact pathways are present and are thus discussed in the main report: • Air quality • Recreational pressure Although this specific site was not allocated in that document, the quantum of growth expected within the National Park in Lewes District is in line with that assessed in the HRA of the Lewes Joint Core Strategy, which was itself subject to HRA and Examination in Public. The recreational pressure analysis (which concluded no likely significant effect) can therefore be carried over from the HRA of the Joint Core Strategy, as can the air quality analysis with regard to Lewes Downs SAC. Air quality with regard to Ashdown Forest SAC/SPA has been analysed strategically regarding development across Lewes District and the South Downs National Park, and in combination with growth in other authorities surrounding the SAC. The analysis is detailed in full in the main body of the HRA report but the overall conclusion is that no adverse effects will arise due to growth in the National Park and Lewes District due to a combination of a forecast net improvement in air quality over the plan period and the very small contribution to change in air quality that growth in the National Park and Lewes District is expected to make.
Allocation Policy SD78: The Pump House, Kingston	0.03ha 1 (total) permanent Gypsy and Traveller pitch.	HRA implications Located 2.2km from Castle Hill SAC, and 4.1km from Lewes Downs SAC. It is not anticipated that Castle Hill SAC will be vulnerable to increased recreational pressure for the reasons given for allocation SD77. However, due to the site's proximity to Lewes Downs

[104] Both the Lewes Joint Core Strategy HRA and the Brighton & Hove City Plan HRA screened out recreational pressure impacts on this SAC and the Natural England Site Improvement Plan does not identify recreational pressure as a concern

Site allocation	Description	HRA Implications
		SAC, the following in combination impact pathways are present and are thus discussed in the main report: • Air quality • Recreational pressure Although this specific site was not allocated in that document, the quantum of growth expected within the National Park in Lewes District is in line with that assessed in the HRA of the Lewes Joint Core Strategy, which was itself subject to HRA and Examination in Public. The recreational pressure analysis (which concluded no likely significant effect) can therefore be carried over from the HRA of the Joint Core Strategy, as can the air quality analysis with regard to Lewes Downs SAC. Air quality with regard to Ashdown Forest SAC/SPA has been analysed strategically regarding development across Lewes District and the South Downs National Park, and in combination with growth in other authorities surrounding the SAC. The analysis is detailed in full in the main body of the HRA report but the overall conclusion is that no adverse effects will arise due to growth in the National Park and Lewes District due to a combination of a forecast net improvement in air quality over the plan period and the very small contribution to change in air quality that growth in the National Park and Lewes District is expected to make.
Allocation Policy SD77: Land at Old Malling Farm, Lewes	10.0ha Between 220 and 240 residential dwellings (class C3 use). Policy includes a requirement for Provision of suitable pedestrian and cycle links to the adjacent countryside and to the existing rights of way network.	Potential HRA implications This site is 1km from Lewes Down SAC. There is potential for LSE in-combination with other projects and/ or plans. Impact pathways present are discussed in the main report: • Air quality • Recreational pressure This allocation is carried over from the adopted Lewes Joint Core Strategy, which was itself subject to

Site allocation	Description	HRA Implications
		HRA and Examination in Public. The recreational pressure analysis can therefore be carried over from the HRA of the Joint Core Strategy, as can the air quality analysis with regard to Lewes Downs SAC. In both instances the conclusion based on all growth in Lewes District was one of no likely significant effect. Air quality with regard to Ashdown Forest SAC/SPA has been analysed strategically regarding development across Lewes District and the South Downs National Park, and in combination with growth in other authorities surrounding the SAC. The analysis is detailed in full in the main body of the HRA report but the overall conclusion is that no adverse effects will arise due to growth in the National Park and Lewes District due to a combination of a forecast net improvement in air quality over the plan period and the very small contribution to change in air quality that growth in the National Park and Lewes District is expected to make.
Allocation Policy SD80 Malling Brooks, Lewes	2.67ha 7,040m^2 of B1/B2/B8 employment uses and appropriate landscaping.	Potential HRA implications. This site is located approximately 100m from Lewes Downs SAC. As an employment allocation potential impact pathways present include: • Air quality. Although not specifically allocated as a site in the Lewes Joint Core Strategy the delivery of employment development at Malling Brooks was discussed in that document and the total quantum of expected employment development in Lewes District was factored into the air quality assessment of Lewes Downs SAC that was contained within the HRA of the Joint Core Strategy. The conclusion based on all growth in Lewes District was one of no likely significant effect. This conclusion can therefore be carried over from the Joint Core Strategy HRA. Air quality with regard to Ashdown Forest SAC/SPA has been analysed strategically regarding development across Lewes District and the South

Site allocation	Description	HRA Implications
		Downs National Park, and in combination with growth in other authorities surrounding the SAC. The analysis is detailed in full in the main body of the HRA report but the overall conclusion is that no adverse effects will arise due to growth in the National Park and Lewes District due to a combination of a forecast net improvement in air quality over the plan period and the very small contribution to change in air quality that growth in the National Park and Lewes District is expected to make.
Strategic Allocation Policy SD81: West Sussex County Council Depot and former Brickworks site, Midhurst	1. The West Sussex County Council Depot and former Brickworks site is allocated for a residential-led development (class C3 use). A masterplan for the whole site should be submitted as part of any Outline or Full planning application. Development for between approximately 65 to 90 dwellings will be permitted. Development for other complementary uses will be permitted where such uses are justified through the whole-site masterplan, and are shown to meet a local need. Planning permission will not be granted for any other uses. Planning permission will not be granted for any proposals which prejudice the whole of the site being bought forward for development. Detailed proposals that meet the following site specific development requirements will be permitted: 2. a) Deliver an ecosystem services-led solution to mitigate the sensitive interface with Midhurst Common, and provide positive enhancements to wildlife habitats within and surrounding the site; b) To demonstrate that there would be no likely significant effect on the Singleton and Cocking Tunnels Special Area of Conservation; c) Provide wildlife corridors within the site as part of a site-specific Wildlife Management and Enhancement Plan; d) Provide high-quality pedestrian links through the site linking into Midhurst Common and hence the long distance Serpent Trail; e) Retain, or relocate to an appropriate location to be approved by the Authority, the Household Recycling Facility ensuring an equivalent standard and capacity of provision; f) Safeguard a suitable vehicular access route through the Depot site to allow for vehicular access to the former Brickworks site direct from Bepton Road; g) Provide a pedestrian/cycle/emergency vehicle access to the former Brickworks site from Station Road; and h) Provide suitable on-site surface water drainage; and	Potential HRA implications Located 3.9km from Singleton and Cocking Tunnels SAC, 6.0km from Rook Clift SAC, and 9.1km from Duncton to Bignor Escarpment SAC. Due to its proximity to Singleton and Cocking Tunnels SAC potential impact pathways are present. This site is surrounded by wooded areas located between Midhurst and Minsted which could be used by bat species. In addition, the boundary of the site contains limited linear features that could be used by commuting barbastelle bats. It should be noted that this site is already a developed site. Policy SD10: (International Sites), Point 2 includes the following text with regard to Singleton and Cocking Tunnels SAC: '*… Suitable commuting and foraging habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development'.* Whilst this is sufficient to enable this allocation to be

Site allocation	Description	HRA Implications
	i) The location of new housing and access roads to have regard to localised areas of potential surface water flood risk. 3. In order for the development to have an overall positive impact on the ability of the natural environment to contribute ecosystem services, development proposals should address the following: a) Provision of suitable pedestrian and cycle links to the adjacent countryside and to the existing rights of way network; b) Protect and enhance trees within the site where possible, and where trees are lost, provide at least the equivalent in new tree planting on site. Trees on the site boundary should be retained and new tree planting should be undertaken; c) Retain suitable existing habitat for pollinating species where possible. New planting should be suitable for pollinating species; and d) Minimise hard surfaced areas on site, and use permeable surfaces and soft landscaping where possible to maximise infiltration of water and reduce surface water run-off 4. The National Park Authority will prepare a Development Brief to assist the delivery of the site. Development proposals in broad conformity with the Development Brief will be permitted.	screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. The mechanism for this will be through a project-level HRA which is a specific requirement cited in the introductory text of the policy.
Strategic Allocation Policy SD82: Holmbush Caravan Park, Midhurst	1. Holmbush Caravan Park, Midhurst is allocated for the development of 50 to 70 residential dwellings (class C3 use). Planning permission will not be granted for any other uses. A masterplan for the whole site should be submitted as part of any Outline or Full planning application. Detailed proposals that meet the following site specific development requirements will be permitted: To provide positive enhancements to the treescape, waterbodies, wildlife corridors and habitats within the site; b) To demonstrate that there would be no likely significant effect on the Singleton and Cocking Tunnels Special Area of Conservation; c) Built development to be located sequentially only within those parts of the site outside Fluvial Flood Zones 2 and 3 as defined by the Environment Agency; d) Floor levels of habitable areas, where appropriate and proven to be necessary, to be designed to take into account flood risk and climate change; e) Incorporation of suitable flood risk mitigation measures; f) Incorporation of suitable site boundary treatments; g) Provision of pedestrian routes through the site linking into	Potential HRA implications Located 3.5km from Singleton and Cocking Tunnels SAC, 6.4km from Rook Clift SAC, and 8.3km from Duncton to Bignor Escarpment SAC. Due to its proximity to Singleton and Cocking Tunnels SAC potential impact pathways are present. Whilst the site is located in an urban setting, it offers potential commuting and foraging opportunities in the form of mature treelines, a lake and the site is adjacent to riverine habitats. It should be noted that this site is already a developed site. Policy SD10: (International Sites), Point 2 includes the following text with regard to Singleton and Cocking Tunnels SAC: '*… Suitable commuting and foraging habitat for the site that lies within or in close*

Site allocation	Description	HRA Implications
	adjacent open spaces; and h) Retention and improvement of, where necessary, the existing vehicular access 2. In order for the development to have an overall positive impact on the ability of the natural environment to contribute ecosystem services, development proposals must address the following: a) Protect and enhance trees within the site where possible. Trees on the site boundary should be retained and new tree planting should be undertaken; b) Retain suitable existing habitat for pollinating species where possible. New planting should be suitable for pollinating species; and c) Minimise hard surfaced areas on site, and use permeable surfaces and soft landscaping where possible to maximise infiltration of water and reduce surface water run-off 3. The National Park Authority will prepare a Development Brief to assist the delivery of the site. Development proposals in broad conformity with the Development Brief will be permitted.	*proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development'.* Whilst this is sufficient to enable this allocation to be screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. The mechanism for this will be through a project-level HRA which is a specific requirement cited in the introductory text of the policy.
Allocation Policy SD83: Land at the Fairway, Midhurst	0.1ha 8 to 10 residential dwellings (class C3 use). Policy includes requirement to demonstrate To demonstrate that there would be no likely significant effect on the Singleton and Cocking Tunnels Special Area of Conservation.	Potential HRA implications Located 3.6km from Singleton and Cocking Tunnels SAC, 6.5km from Rook Clift SAC, and 8.2km from Duncton to Bignor Escarpment SAC. Due to its proximity to Singleton and Cocking Tunnels SAC potential impact pathways are present. Whilst the site is located in an urban setting, it offers potential commuting and foraging opportunities in the form of mature treelines. It should be noted that this site is already a developed site. Policy SD10: (International Sites), Point 2 includes the following text with regard to Singleton and Cocking Tunnels SAC: '*… Suitable commuting and foraging*

Site allocation	Description	HRA Implications
		habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development'. Whilst this is sufficient to enable this allocation to be screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. The mechanism for this will be through a project-level HRA which is a specific requirement cited in the introductory text of the policy.
Allocation Policy SD84: Land at Lamberts Lane, Midhurst	0.4ha Approximately 20 residential dwellings (class C3 use). Policy includes requirement to demonstrate To demonstrate that there would be no likely significant effect on the Singleton and Cocking Tunnels Special Area of Conservation.	Potential HRA implications This site is located 5km from Singleton and Cocking Tunnels SAC. The site contains limited linear features that could be used by commuting barbastelle bats. It should be noted that this site is already a developed site, located in an existing urban setting. Policy SD10: (International Sites), Point 2 includes the following text with regard to Singleton and Cocking Tunnels SAC: '*… Suitable commuting and foraging habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or*

Site allocation	Description	HRA Implications
		severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development'. Whilst this is sufficient to enable this allocation to be screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. The mechanism for this will be through a project-level HRA which is a specific requirement cited in the introductory text of the policy.
Allocation Policy SD85: Land at Park Crescent, Midhurst	0.3ha Between 8 and 12 residential dwellings (class C3 use). Policy includes requirement to demonstrate To demonstrate that there would be no likely significant effect on the Singleton and Cocking Tunnels Special Area of Conservation.	Potential HRA implications Located 4.8km from Singleton and Cocking Tunnels SAC. Due to its proximity to Singleton and Cocking Tunnels SAC potential impact pathways are present. Whilst the site is located in an urban setting, it offers potential commuting and foraging opportunities in the form of mature treelines. It should be noted that this site is already a developed site. Policy SD10: (International Sites), Point 2 includes the following text with regard to Singleton and Cocking Tunnels SAC: '*… Suitable commuting and foraging habitat for the site that lies within or in close proximity to any proposed development needs to be retained, in addition to a suitable buffer to safeguard against disturbance. This will ensure no loss or*

Site allocation	Description	HRA Implications
		severance of existing commuting and foraging routes occurs either from direct land take or disturbances from lighting, noise and vibrations both during construction and operational phase of any development'. Whilst this is sufficient to enable this allocation to be screened out at a strategic Local Plan-level (as it is an impact that is easily avoided and cannot be investigated in more detail without detailed design of the development), the possible impacts of the development on bats in general and barbastelle bats in particular should be taken into account as part of the development control process. If mature hedgerows/treelines and foraging opportunities can be preserved it is likely that no issues will arise. The mechanism for this will be through a project-level HRA which is a specific requirement cited in the introductory text of the policy.
Allocation Policy SD86: Offham Barns, Offham	0.3ha Four permanent Gypsy and Traveller pitches	Potential HRA implications. Located 2.9km from Lewes Downs SAC. Potential linking impact pathways present, and thus discussed in the main report, include: • Disturbance – recreational pressure • Air quality Although not specifically allocated as a site in the Lewes Joint Core Strategy the delivery of gypsy and traveller accommodation was discussed in that document and all growth in Lewes District over the Joint Core Strategy period was factored into the air quality assessment of Lewes Downs SAC contained within the HRA of the Joint Core Strategy. The conclusion based on all growth in Lewes District was one of no likely significant effect. This conclusion can therefore be carried over from the Joint Core Strategy HRA.

Site allocation	Description	HRA Implications
Allocation Policy SD87: Land at Church Lane, Pyecombe	1ha Up to 8 residential dwellings (C3 use).	No HRA implications. Castle Hill SAC is 9.15km from the site. Due to the large distance from the SAC, there are realistic no impact pathways present.
Allocation Policy SD88: Land at Ketchers Field, Selborne	0.2ha 5 to 6 residential dwellings (class C3 use). Policy includes requirement for Appropriate mitigation for the impact of development on the Wealden Heath SPA which should be informed by a project-level Habitats Regulations Assessment;	Potential HRA implications. The site is located 290m from East Hampshire Hangers SAC, and 3.9km from Wealden Heaths Phase II SPA/ SAC and 4.0km from Shortheath Common SAC. Potential linking impact pathways present include: • Recreational pressure The specific issue of recreational pressure on Wealden Heaths Phase 2 SPA was analysed in detail for the East Hampshire Joint Core Strategy. it is understood that the total quantum of net residential development (including traveller pitches) in South Downs National Park within 5km of the Wealden Heaths Phase 2 SPA remains broadly in line with that assumed when the Joint Core Strategy HRA was undertaken, notwithstanding the Local Plan period being 2014-2033 (as opposed to 2011-2028 for the Joint Core Strategy). The overall conclusion of the Joint Core Strategy analysis was agreed with Natural England and has been reaffirmed through several Examination's in Public. The conclusion is that no adverse effect on integrity is expected even without a strategic mitigation solution and development can thus be considered on a case-by-case basis related to its proximity to the site and quantum of development. Given the relatively small quantum of development, the distances involved and taking into account the precedent set by the adopted East Hampshire Site Allocations plan it is considered that the allocation of this site will not alter the conclusion of the Joint Core Strategy assessment.

Site allocation	Description	HRA Implications
		There are no other linking impact pathways present; recreational impacts on East Hampshire Hangers SAC and Shortheath Common SAC were ruled out in the Preferred Options HRA.
Policy SD89: Land at Pulens Lane, Sheet	3.6ha 30 to 32 residential dwellings (class C3 use) and publicly accessible open space	No HRA implications. This site is located 3.2km from East Hampshire Hangers, 4.8km from Butser Hill SAC and 5.5km from Wealden Heaths Phase II SPA. Due to the topography and isolated location of these sites they are not vulnerable to impact pathways resulting from the SDNPA Local Plan. There are no impact pathways present.
Allocation Policy SD90: Land at Loppers Ash, South Harting	0.6ha 6 to 8 residential dwellings (class C3 use).	No HRA implications Rook Clift SAC is the located 3km from the site, Wealden Heaths Phase II SPA is located 10.2km from the site and Singleton and Cocking Tunnels is located 8.7km from the site. Due to the small number of houses identified, and the distances involved, there are no realistic impact pathways present.
Allocation Policy SD91: Land North of the Forge, South Harting	0.1ha 5 to 6 residential dwellings (class C3 use).	No HRA implications Rook Clift SAC is the located 2.9km from the site, Wealden Heaths Phase II SPA is located 10km from the site and Singleton and Cocking Tunnels is located 8.7km from the site. Due to the small number of houses identified, and the distances involved, there are no realistic impact pathways present.
Allocation Policy SD92: Stedham Sawmill, Stedham	1.3ha Mixed-use development for between 16 and 20 residential dwellings (class C3 use), and employment buildings (class B1 Business use) providing a maximum overall floorspace of 3,000m².	No HRA implications Located 5.2km from Singleton and Cocking Tunnels SAC and Rook Clift SAC, and 9.1km from Wealden Heaths Phase II SPA. Due to the distances involved, there are no realistic impact pathways present.
Allocation Policy SD93: Land South of Church Road, Steep	0.7ha Between 8 and 12 residential dwellings (class C3 use).	No HRA implications Located 745m from East Hampshire Hangers SAC and

Site allocation	Description	HRA Implications
		4.6km from Butser Hill SAC. Due to the topography of the site, no realistic impact pathways are present. Whilst at its closest the settlement of Steep is located within 5km of the Wealden Heaths Phase II SPA, this site allocation is located 5.6km from Wealden Heaths Phase II SPA. Due to the distances involved, there are no linking impact pathways present.
Allocation Policy SD94: Land at Ramsdean Road, Stroud	1.4ha 26 to 30 residential dwellings (class C3 use) and a community building (class D1 use).	No HRA implications Located 1.9km from East Hampshire Hangers SAC, 2.3km from Butser Hill and 5.2km from Wealden Heaths Phase II SPA. Due to the topography of the SAC sites and the distance to the SPA, it can be considered that there is no realistic linking impact pathway present.
Allocation Policy SD95: Land South of Heather Close, West Ashling	0.7ha Between 18 and 20 residential dwellings (class C3 use). Policy requires *'Provide suitable mitigation towards the Solent Special Protection Areas (SPA)'*	HRA implications Located 2.1km from Chichester and Langstone Harbours SPA and Ramsar site and Solent Maritime SAC, 2.9km from Kingley Vale SAC and 9.2km from Singleton and Cocking Tunnels SAC. Due to the distances involved impacts upon the SAC sites can be screened out. However, due to the proximity of the site to the SPA and Ramsar site, potential linking impact pathways present are: • Recreational pressure This is therefore discussed in the main report. However, Policy SD10 states in point 5 that '*Development proposals resulting in a net increase in residential units, within the Solent Coast Special Protection Area's (SPA) (Chichester & Langstone Harbours SPA, Portsmouth Harbour SPA and Solent & Southampton Water SPA) zone of influence shown on the Policies Map, defined as 5.6km from the boundary of these sites, may be permitted where 'in combination' effects of recreation on the Solent Coastal Special Protection Areas are satisfactorily*

Site allocation	Description	HRA Implications
		mitigated through the provision of an appropriate financial contribution to the delivery of strategic mitigation. In the absence of a financial contribution toward mitigation, an appropriate assessment may be required to demonstrate that any 'in combination' negative effects can be avoided or can be satisfactorily mitigated through a developer-provided package of measures'. This requirement is explicitly referenced in this policy. Since this is the agreed mitigation approach for these European sites, a conclusion of no likely significant effect can be reached.
Allocation Policy SD96: Land at Long Priors, West Meon	0.5ha Between 10 and 12 residential dwellings (class C3 use).	No HRA implications. Butser Hill SAC is located 6.9km from the site. There are no impact pathways present.

Appendix C.Air Quality Impact Assessment and Traffic Modelling

Traffic Modelling

Link		Measured Baseline, from traffic counts			2033 Without South Downs Local Plan but including growth in other authorities (Do Nothing)			2033 With the South Downs Local Plan (Do Something)		
ID	Link	AADT	%HDV	Speed (kph)	AADT	%HDV	Speed (kph)	AADT	%HDV	Speed (kph)
1	B3335 North of Colden Common	3338	3.37	67	3880	3.37	67	3852	3.35	67
2	A3 Butser Hill	47107	19.90	107	54762	19.90	107	54187	19.85	107
3	B2141 South of Chilgrove	3435	4.54	97	3993	4.54	97	5062	3.54	97
4	A287 South of Frensham	6089	4.84	87	7078	4.84	87	6991	4.84	87
5	A3 Witley Common	39297	16.86	113	45683	16.86	113	49043	15.50	113
6	A325 Woolmer Forest	12342	14.92	77	14348	14.92	77	14165	14.92	77
7	A3 Woolmer Forest	34177	17.97	116	39730	17.97	116	41856	16.84	116
8	A283 Ebernoe Common	6386	6.54	87	7423	6.54	87	7672	6.25	87
9	A272 The Mews	5357	7.10	76	6227	7.10	76	7371	5.92	76
10	A285 Duncton Hanger	5216	8.37	75	6063	8.37	75	6224	8.05	75

Air Quality Impact Assessment

N.B. Where numbers are identical between Do Minimum and Do Something this does not necessarily mean that the South Downs Local Plan literally makes no contribution but does mean that any contribution is too small to affect the reported data. Air quality data is never reported beyond the second decimal place (at most) as this implies a spurious level of accuracy.

In all the tables below BL means 2017 baseline, DN means Do Nothing scenario and DS means Do Something scenario.

Link 1_River Itchen SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
40	17.7	14.1	14.1	17.69	15.67	15.67	1.21	1.21	1.21
45	17.7	14.1	14.1	17.69	15.66	15.66	1.21	1.21	1.21
50	17.6	14.0	14.0	17.69	15.66	15.66	1.21	1.21	1.21
55	17.6	14.0	14.0	17.68	15.66	15.66	1.21	1.21	1.21
60	17.5	14.0	14.0	17.68	15.66	15.66	1.21	1.21	1.21
70	17.5	13.9	13.9	17.68	15.66	15.66	1.21	1.21	1.21
80	17.4	13.9	13.9	17.68	15.65	15.65	1.21	1.21	1.21
90	17.4	13.9	13.9	17.67	15.65	15.65	1.21	1.21	1.21
100	17.4	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
110	17.3	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
120	17.3	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
130	17.3	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
140	17.3	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
165	17.2	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
190	17.2	13.8	13.8	17.67	15.65	15.65	1.21	1.21	1.21
215	17.2	13.7	13.7	17.66	15.65	15.65	1.21	1.21	1.21

Link2_Butser Hill SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	BL	DN	DS	BL	DN	DS	BL	DN	DS
23	38.9	25.4	25.3	19.35	16.77	16.76	1.43	1.38	1.38
28	36.6	24.0	23.9	19.24	16.70	16.69	1.42	1.37	1.37
33	34.7	22.9	22.7	19.14	16.64	16.63	1.41	1.37	1.37
38	33.0	21.9	21.8	19.06	16.59	16.58	1.40	1.36	1.36
43	31.7	21.1	21.0	18.99	16.55	16.54	1.40	1.36	1.36
53	29.4	19.8	19.7	18.87	16.48	16.47	1.38	1.35	1.35
63	27.8	18.8	18.8	18.79	16.43	16.42	1.38	1.34	1.34
73	26.4	18.0	18.0	18.72	16.38	16.38	1.37	1.34	1.34
83	25.3	17.4	17.3	18.66	16.35	16.35	1.36	1.34	1.34
93	24.4	16.9	16.8	18.61	16.32	16.32	1.36	1.33	1.33
103	23.6	16.4	16.3	18.57	16.30	16.29	1.35	1.33	1.33
113	22.9	16.0	15.9	18.54	16.27	16.27	1.35	1.33	1.33
123	22.3	15.6	15.6	18.50	16.26	16.25	1.35	1.33	1.33
148	21.1	14.9	14.9	18.44	16.22	16.22	1.34	1.32	1.32
173	19.2	13.7	13.7	18.39	16.19	16.19	1.33	1.32	1.32
198	18.4	13.3	13.2	18.35	16.17	16.16	1.33	1.32	1.32
223	17.8	12.9	12.9	18.32	16.15	16.14	1.33	1.32	1.32

Link3_Kingley Vale SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	BL	DN	DS	BL	DN	DS	BL	DN	DS
125	11.1	8.9	8.9	27.56	24.41	24.41	1.56	1.56	1.56
130	11.1	8.9	8.9	27.56	24.41	24.41	1.56	1.56	1.56
135	11.1	8.8	8.9	27.56	24.41	24.41	1.56	1.56	1.56
140	11.1	8.8	8.9	27.56	24.41	24.41	1.56	1.56	1.56
145	11.1	8.8	8.9	27.56	24.41	24.41	1.56	1.56	1.56

155	11.0	8.8	8.9	27.56	24.41	24.41	1.56	1.56	1.56
165	11.0	8.8	8.9	27.56	24.41	24.41	1.56	1.56	1.56
175	11.0	8.8	8.8	27.55	24.41	24.41	1.56	1.56	1.56
185	11.0	8.8	8.8	27.55	24.41	24.41	1.56	1.56	1.56
195	11.0	8.8	8.8	27.55	24.40	24.41	1.56	1.56	1.56
205	11.0	8.8	8.8	27.55	24.40	24.41	1.56	1.56	1.56

Link4_Thursley1_ Thursley, Ash, Pirbright & Cobham SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	BL	DN	DS	BL	DN	DS	BL	DN	DS
0	25.6	18.8	18.7	15.88	13.91	13.91	1.05	1.03	1.03
5	20.5	15.4	15.3	15.60	13.73	13.72	1.03	1.01	1.01
10	18.2	13.9	13.8	15.49	13.65	13.65	1.01	1.00	1.00
15	17.0	13.0	13.0	15.42	13.60	13.60	1.01	1.00	1.00
20	16.1	12.4	12.4	15.37	13.57	13.57	1.00	1.00	1.00
30	15.1	11.7	11.7	15.32	13.53	13.53	1.00	0.99	0.99
40	14.5	11.3	11.3	15.28	13.51	13.51	0.99	0.99	0.99
50	14.1	11.1	11.1	15.26	13.50	13.50	0.99	0.99	0.99
60	13.9	10.9	10.9	15.25	13.49	13.49	0.99	0.99	0.99
70	13.3	10.5	10.5	15.24	13.48	13.48	0.99	0.99	0.99
80	13.2	10.4	10.4	15.23	13.47	13.47	0.99	0.99	0.99
90	13.1	10.3	10.3	15.22	13.47	13.47	0.99	0.98	0.98
100	12.9	10.3	10.3	15.22	13.46	13.46	0.99	0.98	0.98
125	12.8	10.1	10.1	15.20	13.46	13.46	0.99	0.98	0.98
150	12.6	10.0	10.0	15.20	13.45	13.45	0.98	0.98	0.98
175	12.5	10.0	10.0	15.19	13.45	13.45	0.98	0.98	0.98
200	12.4	9.9	9.9	15.19	13.45	13.45	0.98	0.98	0.98

Link4_Thursley2_ Thursley, Ash, Pirbright & Cobham SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	22.0	16.4	16.3	15.69	13.78	13.78	1.03	1.02	1.02
5	18.0	13.7	13.7	15.47	13.64	13.64	1.01	1.00	1.00
10	16.4	12.6	12.6	15.39	13.58	13.58	1.00	1.00	1.00
15	15.5	12.0	12.0	15.34	13.55	13.55	1.00	0.99	0.99
20	15.0	11.6	11.6	15.31	13.53	13.53	1.00	0.99	0.99
30	14.3	11.1	11.1	15.27	13.50	13.50	0.99	0.99	0.99
40	13.8	10.9	10.8	15.25	13.49	13.48	0.99	0.99	0.99
50	13.6	10.7	10.7	15.23	13.48	13.47	0.99	0.99	0.99
60	13.4	10.5	10.5	15.22	13.47	13.47	0.99	0.98	0.98
70	13.2	10.4	10.4	15.21	13.46	13.46	0.99	0.98	0.98
80	13.1	10.4	10.4	15.21	13.46	13.46	0.99	0.98	0.98
90	13.0	10.3	10.3	15.20	13.46	13.45	0.98	0.98	0.98
100	13.0	10.3	10.3	15.20	13.45	13.45	0.98	0.98	0.98
125	12.8	10.2	10.2	15.19	13.45	13.45	0.98	0.98	0.98
150	12.7	10.1	10.1	15.18	13.44	13.44	0.98	0.98	0.98
175	12.7	10.1	10.1	15.18	13.44	13.44	0.98	0.98	0.98
200	12.6	10.0	10.0	15.18	13.44	13.44	0.98	0.98	0.98

Link5_Thursley1 Thursley, Ash, Pirbright & Cobham SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	94.6	61.1	64.4	18.86	15.86	16.00	1.36	1.23	1.25
5	70.3	45.8	48.2	17.86	15.17	15.28	1.26	1.16	1.17
10	58.0	38.2	40.0	17.32	14.81	14.89	1.20	1.12	1.13
15	50.5	33.5	35.0	16.98	14.58	14.65	1.17	1.10	1.11

20	45.3	30.2	31.6	16.73	14.42	14.48	1.14	1.08	1.09
30	38.4	26.0	27.1	16.40	14.20	14.26	1.11	1.06	1.07
40	34.2	23.3	24.2	16.19	14.06	14.11	1.09	1.05	1.05
50	31.2	21.5	22.2	16.03	13.97	14.01	1.07	1.04	1.04
60	29.0	20.2	20.8	15.92	13.90	13.93	1.06	1.03	1.03
70	27.3	19.1	19.7	15.84	13.84	13.87	1.05	1.02	1.03
80	26.0	18.3	18.8	15.77	13.80	13.83	1.04	1.02	1.02
90	24.9	17.7	18.1	15.71	13.77	13.79	1.04	1.02	1.02
100	24.1	17.1	17.5	15.67	13.74	13.76	1.03	1.01	1.01
125	22.4	16.1	16.4	15.58	13.68	13.70	1.02	1.01	1.01
150	21.2	15.4	15.7	15.52	13.64	13.66	1.02	1.00	1.00
175	20.3	14.8	15.1	15.47	13.62	13.63	1.01	1.00	1.00
200	19.6	14.4	14.6	15.43	13.59	13.60	1.01	1.00	1.00

Link5_Thursley2 Thursley, Ash, Pirbright & Cobham SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	84.9	55.0	57.8	18.47	15.59	15.71	1.32	1.20	1.22
5	64.2	41.9	44.0	17.60	14.99	15.09	1.23	1.14	1.15
10	53.7	35.3	37.0	17.12	14.67	14.75	1.18	1.11	1.12
15	46.9	31.3	32.6	16.81	14.47	14.54	1.15	1.09	1.09
20	42.3	28.4	29.5	16.59	14.32	14.38	1.13	1.07	1.08
30	36.1	24.6	25.5	16.28	14.13	14.18	1.10	1.05	1.06
40	32.4	22.2	23.0	16.10	14.01	14.05	1.08	1.04	1.04
50	29.7	20.5	21.2	15.96	13.92	13.95	1.06	1.03	1.03
60	27.7	19.3	19.9	15.86	13.85	13.88	1.05	1.02	1.03
70	26.2	18.4	18.9	15.78	13.81	13.83	1.04	1.02	1.02
80	25.0	17.7	18.1	15.71	13.77	13.79	1.04	1.02	1.02
90	24.0	17.1	17.5	15.66	13.74	13.76	1.03	1.01	1.01
100	23.2	16.6	16.9	15.62	13.71	13.73	1.03	1.01	1.01

125	21.6	15.6	16.0	15.54	13.66	13.68	1.02	1.00	1.01
150	20.6	15.0	15.2	15.48	13.62	13.64	1.01	1.00	1.00
175	19.8	14.5	14.7	15.44	13.60	13.61	1.01	1.00	1.00
200	19.1	14.1	14.3	15.40	13.58	13.59	1.01	1.00	1.00

Link6_Woolmer Forest SAC

	Annual Mean Nox Conc. (ug/m3)			**Annual Mean N Dep (k N/ha/yr)**			**Annual Mean A Dep (keq/ha/yr)**		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	38.2	24.8	24.7	17.51	15.14	15.13	1.29	1.24	1.24
5	30.1	20.1	20.0	17.11	14.89	14.88	1.25	1.21	1.21
10	26.1	17.7	17.6	16.90	14.76	14.76	1.23	1.20	1.20
15	23.5	16.2	16.1	16.77	14.69	14.68	1.22	1.19	1.19
20	21.8	15.2	15.2	16.68	14.63	14.63	1.21	1.19	1.19
30	19.7	14.0	13.9	16.57	14.57	14.56	1.20	1.18	1.18
40	18.4	13.2	13.2	16.49	14.52	14.52	1.19	1.18	1.18
50	17.5	12.7	12.7	16.45	14.50	14.49	1.18	1.17	1.17
60	16.9	12.3	12.3	16.41	14.48	14.47	1.18	1.17	1.17
70	16.4	12.0	12.0	16.39	14.46	14.46	1.18	1.17	1.17
80	16.0	11.8	11.8	16.36	14.45	14.45	1.18	1.17	1.17
90	15.7	11.6	11.6	16.35	14.44	14.44	1.17	1.17	1.17
100	15.4	11.5	11.5	16.33	14.43	14.43	1.17	1.17	1.17
125	15.0	11.2	11.2	16.31	14.42	14.42	1.17	1.17	1.17
150	14.7	11.1	11.1	16.29	14.41	14.41	1.17	1.17	1.17
175	14.4	10.9	10.9	16.28	14.40	14.40	1.17	1.16	1.16
200	14.3	10.8	10.8	16.27	14.39	14.39	1.17	1.16	1.16

Link7_Woolmer Forest SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	BL	DN	DS	BL	DN	DS	BL	DN	DS
0	79.8	51.3	53.4	19.36	16.40	16.49	1.48	1.37	1.38
5	60.7	39.5	41.0	18.55	15.85	15.92	1.40	1.31	1.32
10	50.8	33.5	34.5	18.09	15.55	15.61	1.35	1.28	1.29
15	44.5	29.6	30.5	17.80	15.36	15.40	1.32	1.26	1.27
20	40.2	26.7	27.6	17.59	15.21	15.26	1.30	1.25	1.25
30	34.3	23.2	23.8	17.30	15.04	15.07	1.27	1.23	1.23
40	30.7	21.0	21.5	17.11	14.92	14.94	1.25	1.22	1.22
50	28.2	19.4	19.8	16.98	14.84	14.86	1.24	1.21	1.21
60	26.3	18.3	18.6	16.89	14.77	14.80	1.23	1.20	1.21
70	24.9	17.4	17.7	16.81	14.73	14.75	1.22	1.20	1.20
80	23.7	16.7	17.0	16.75	14.69	14.71	1.22	1.19	1.20
90	22.8	16.1	16.4	16.70	14.66	14.67	1.21	1.19	1.19
100	22.0	15.6	15.9	16.66	14.63	14.65	1.21	1.19	1.19
125	20.6	14.7	15.0	16.58	14.59	14.60	1.20	1.18	1.18
150	19.5	14.1	14.3	16.53	14.55	14.56	1.19	1.18	1.18
175	18.8	13.6	13.8	16.49	14.53	14.54	1.19	1.18	1.18
200	18.2	13.3	13.4	16.46	14.51	14.51	1.19	1.18	1.18

Link8_Ebernoe Common SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	BL	DN	DS	BL	DN	DS	BL	DN	DS
0	23.1	16.7	16.9	22.44	19.72	19.73	1.72	1.70	1.70
5	18.5	13.7	13.8	22.20	19.56	19.57	1.70	1.68	1.68
10	16.4	12.3	12.4	22.08	19.48	19.49	1.68	1.67	1.67
15	15.2	11.4	11.5	22.01	19.44	19.45	1.68	1.67	1.67
20	14.3	10.9	11.0	21.97	19.41	19.41	1.67	1.67	1.67

30	13.3	10.2	10.3	21.91	19.37	19.38	1.67	1.66	1.66
40	12.7	9.8	9.8	21.88	19.35	19.35	1.66	1.66	1.66
50	12.3	9.5	9.6	21.86	19.34	19.34	1.66	1.66	1.66
60	12.0	9.3	9.4	21.84	19.32	19.33	1.66	1.66	1.66
70	11.8	9.2	9.2	21.83	19.32	19.32	1.66	1.66	1.66
80	11.6	9.1	9.1	21.82	19.31	19.31	1.66	1.66	1.66
90	11.5	9.0	9.0	21.81	19.31	19.31	1.66	1.65	1.65
100	11.4	8.9	8.9	21.81	19.30	19.30	1.66	1.65	1.65
125	11.2	8.8	8.8	21.79	19.29	19.30	1.66	1.65	1.65
150	11.0	8.7	8.7	21.79	19.29	19.29	1.65	1.65	1.65
175	10.9	8.6	8.6	21.78	19.29	19.29	1.65	1.65	1.65
200	10.8	8.6	8.6	21.78	19.28	19.28	1.65	1.65	1.65

Link9_The Mens SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	22.5	16.1	17.4	26.08	22.95	23.02	1.91	1.88	1.89
5	17.9	13.1	13.9	25.84	22.79	22.84	1.88	1.87	1.87
10	15.9	11.9	12.5	25.74	22.72	22.76	1.87	1.86	1.86
15	14.8	11.1	11.6	25.67	22.68	22.71	1.86	1.86	1.86
20	14.0	10.6	11.0	25.63	22.66	22.68	1.86	1.85	1.86
30	13.1	10.0	10.3	25.58	22.62	22.64	1.86	1.85	1.85
40	12.5	9.7	9.9	25.55	22.60	22.62	1.85	1.85	1.85
50	12.2	9.4	9.6	25.53	22.59	22.60	1.85	1.85	1.85
60	11.9	9.3	9.4	25.51	22.58	22.59	1.85	1.85	1.85
70	11.7	9.1	9.3	25.50	22.57	22.58	1.85	1.84	1.85
80	11.5	9.0	9.1	25.49	22.57	22.57	1.85	1.84	1.84
90	11.4	8.9	9.0	25.49	22.56	22.57	1.85	1.84	1.84
100	11.3	8.9	9.0	25.48	22.56	22.57	1.85	1.84	1.84
125	11.1	8.7	8.8	25.47	22.55	22.56	1.84	1.84	1.84

150	11.0	8.7	8.7	25.46	22.55	22.55	1.84	1.84	1.84
175	10.9	8.6	8.7	25.46	22.55	22.55	1.84	1.84	1.84
200	10.8	8.6	8.6	25.45	22.54	22.55	1.84	1.84	1.84

Link10 Duncton to Bignor Escarpment SAC

	Annual Mean Nox Conc. (ug/m3)			Annual Mean N Dep (k N/ha/yr)			Annual Mean A Dep (keq/ha/yr)		
Distance from road (m)	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**	**BL**	**DN**	**DS**
0	20.4	14.6	14.8	22.66	19.94	19.95	1.72	1.70	1.70
5	16.8	12.3	12.4	22.46	19.82	19.82	1.70	1.69	1.69
10	15.2	11.3	11.4	22.38	19.76	19.76	1.69	1.69	1.69
15	14.3	10.7	10.8	22.33	19.73	19.73	1.69	1.68	1.68
20	13.7	10.4	10.4	22.29	19.71	19.71	1.69	1.68	1.68
30	12.9	9.9	9.9	22.25	19.68	19.68	1.68	1.68	1.68
40	12.5	9.6	9.6	22.23	19.67	19.67	1.68	1.68	1.68
50	12.2	9.4	9.5	22.21	19.66	19.66	1.68	1.67	1.67
60	12.0	9.3	9.3	22.20	19.65	19.65	1.68	1.67	1.67
70	11.8	9.2	9.2	22.19	19.65	19.65	1.68	1.67	1.67
80	11.7	9.1	9.2	22.19	19.64	19.64	1.68	1.67	1.67
90	11.6	9.1	9.1	22.18	19.64	19.64	1.67	1.67	1.67
100	11.5	9.0	9.0	22.18	19.63	19.64	1.67	1.67	1.67
125	11.4	8.9	8.9	22.17	19.63	19.63	1.67	1.67	1.67

Lewes Downs SAC (from Lewes/South Downs Joint Core Strategy HRA)

In 2015, traffic modelling and air quality calculations were undertaken for the Lewes and South Downs Joint Core Strategy regarding Lewes Downs SAC. Although these calculations ran to 2030 (rather than 2033) the scale of expected growth in the Lewes part of the National Park (and Lewes district outside the National Park) by 2030 has not significantly changed since these calculations were undertaken and the addition of a further three years will not alter the trends and magnitudes depicted in the modelling. The DS trends shown for 2030 can be expected to continue to 2033.

Defra backgrounds and emission factors for the year 2013 have been used. This presents the most conservative scenario, assuming no improvement in background concentrations and emission factors. Whilst the 'base year' for traffic flow is 2011, the most recent Defra background and emission factors are for 2013, and the earliest year of data available. The analysis also uses updated vehicle emission factors and (in line with that undertaken for the rest of the analyses for South Downs Local Plan) allows for a 2% improvement in background deposition rates until 2023 with no improvement in background thereafter. The traffic data are identical to that from the 2015 analysis. Although the air quality data have therefore slightly changed, the trends in these data are identical to those presented in the original analysis and thus support the same conclusion. Note that where there is no apparent difference between Do Something and Do Nothing this does not literally mean there is no difference but that the contribution of the Joint Core Strategy only affects the second (or for nitrogen deposition, third) decimal place and is thus too small to show in the model.

NO_x Concentrations at Lewes Downs SSSI; adjacent to A26 and B2192 junction

Distance from named link (m)	Annual Mean NO_x (μgm^{-3})		
	Base	DN	DS
172	18.1	11.8	11.8
200	17.9	11.7	11.7

NO_x Concentrations at Lewes Downs SSSI; adjacent to A26

Distance from named link (m)	Annual Mean NO_x (μgm^{-3})		
	Base	DN	DS
6.5	41.6	22.8	23.2
26.5	29.2	17.2	17.4
46.5	25.1	15.3	15.4
66.5	23.2	14.5	14.6
86.5	22.0	13.9	14.0
106.5	21.2	13.6	13.7
118	20.8	13.4	13.5

NO_x Concentrations at Lewes Downs SSSI; adjacent to B2192

Distance from named link (m)	Annual Mean NO_x (μgm^{-3})		
	Base	DN	DS
61.1	18.8	12.0	12.1
81.1	18.2	11.8	11.9
101.1	17.8	11.6	11.6
121.1	17.5	11.5	11.5
141.1	17.3	11.5	11.5
161.1	17.2	11.4	11.4
181.1	17.0	11.3	11.3

Nitrogen Deposition Rates at Lewes Downs SSSI; adjacent to A26 and B2192 junction

Distance from named link (m)	Scenario	Nitrogen deposition rate (kg N/ha/yr)
172	Base	17.13
	DN	13.95
	DS	13.95
200	Base	17.12
	DN	13.94
	DS	13.94

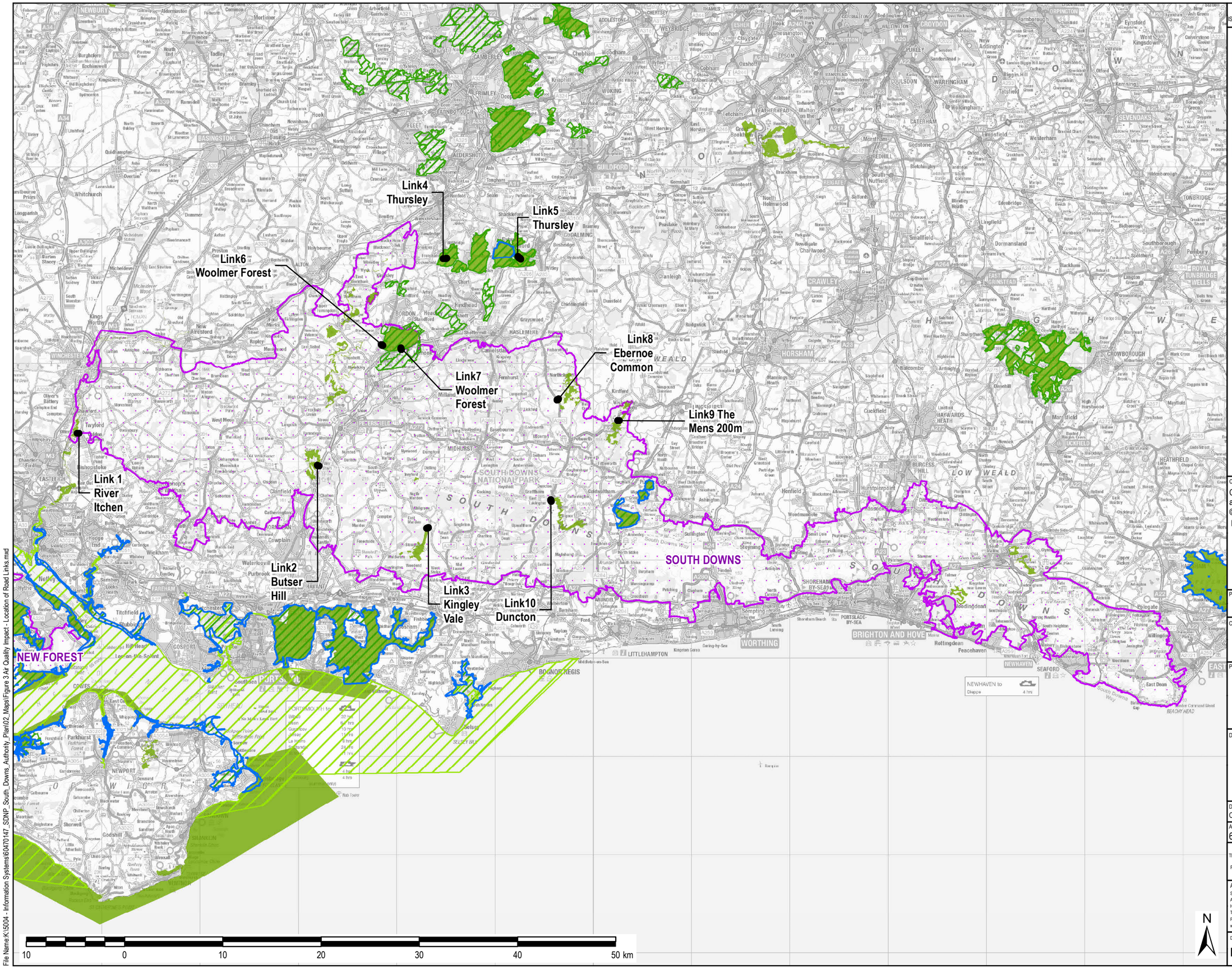
Nitrogen Deposition Rates at Lewes Downs SSSI; adjacent to A26

Distance from named link (m)	Scenario	Nitrogen deposition rate (kg N/ha/yr)
6.5	Base	18.21
	DN	14.47
	DS	14.49
26.5	Base	17.61
	DN	14.18
	DS	14.19
46.5	Base	17.41
	DN	14.08
	DS	14.09
66.5	Base	17.31
	DN	14.03
	DS	14.04
86.5	Base	17.25
	DN	14.00
	DS	14.00
106.5	Base	17.21
	DN	13.99
	DS	13.99
118	Base	17.19

Distance from named link (m)	Scenario	Nitrogen deposition rate (kg N/ha/yr)
	DN	13.98
	DS	13.98

Nitrogen Deposition Rates at Lewes Downs SSSI; adjacent to B2192

Distance from named link* (m)	Scenario	Nitrogen deposition rate (kgN/ha/yr)
61.1	Base	17.17
	DN	14.03
	DS	14.03
81.1	Base	17.14
	DN	13.95
	DS	13.95
101.1	Base	17.12
	DN	13.94
	DS	13.94
121.1	Base	17.11
	DN	13.93
	DS	13.93
141.1	Base	17.10
	DN	13.93
	DS	13.93
161.1	Base	17.09
	DN	13.93
	DS	13.93
181.1	Base	17.08
	DN	13.92
	DS	13.92



File Name:K:\5004 - Information Systems\60470147_SDNP_South_Downs_Authority_Plan\02_Maps\Figure 3 Air Quality Impact - Location of Road Links.mxd

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LEGEND

- National Park
- Potential Special Protection Areas (Marine) (pSPA)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar
- Road Link

Purpose of Issue
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South Downs National Park Authority Local Plan/Lewes Joint Core Strategy Habitats Regulations Assessment Addendum

Traffic-Related Effects on Ashdown Forest SAC

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1 Executive Summary

1.1.1 In March 2017 a High Court judgment against the adopted Lewes/South Downs Joint Core Strategy (JCS)[1] concluded that the method that had been used in the JCS Habitat Regulations Assessment to rule out the potential for 'in combination' air quality effects from their plan on Ashdown Forest SAC was legally flawed, whether or not it complied with advice the Council had been given by Natural England, because it relied entirely on examining the flows arising from the JCS in isolation and took no account of the potential accumulation of growth from multiple authorities all affecting vehicle flows through the SAC, and the role (or not) of the JCS in any cumulative effect. In layman's terms, because the JCS used a shorthand assessment method agreed with Natural England, the HRA of the JCS *asserted* that its contribution was too small to contribute meaningfully to any 'in combination' effect but did not *demonstrate* that conclusion since it did not attempt to quantify the 'in combination' effect or demonstrate what the contribution of the JCS would actually mean in terms of changes in air quality.

1.1.2 AECOM was appointed to address the matter raised by the High Court judgment. That is the purpose of this HRA Addendum. Forecast vehicle flows on roads through Ashdown Forest in 2033 are compared with baseline flows on the same roads in order to ascertain the air quality effect. The relative contribution of growth in South Downs Local Plan/Lewes Joint Core Strategy (JCS) is then separated out from growth in other authorities in order to establish the relative contribution of the South Downs Local Plan/Lewes JCS to any change in air quality by 2033.

1.1.3 Nitrogen oxides (NOx) are the main pollutant emitted by traffic of relevance to vegetation, because they are a source of nitrogen, which is a fertiliser. The analysis shows that for all modelled links NOx concentrations within 200m of the roadside are forecast to be below the critical level (the concentration above which adverse effects may arise) by 2033 due to expected improvements in vehicle emissions and background, notwithstanding the projected increase in traffic on the road. The Lewes JCS/South Downs Local Plan is predicted to retard this improvement slightly (by up to 0.2 μgm^{-3}) within 20m of the A26 and A275. This is the worst-case retardation expected. Since the ecologically significant role of NOx is as a source of nitrogen the next step is to consider what effect this may have on nitrogen deposition rates.

1.1.4 Ashdown Forest SAC is designated for its heathland. The lowest part of the nitrogen Critical Load range for this habitat (the most stringent deposition rate above which adverse effects may occur) is 10 kg/N/ha/yr and as such baseline nitrogen deposition within 200m of the A26, A22 and A275 is above the Critical Load. However, notwithstanding the expected growth in traffic flows, nitrogen deposition is forecast to reduce by up to c. 1.9 kgN/ha/yr by 2033, although it is expected to remain above the critical load. In other words, the improvement in vehicle emission factors and in background nitrogen deposition rates expected over the period to 2033 are forecast to more than offset the increase in nitrogen deposition from an increase in the volume of vehicle movements.

1.1.5 On the A26 and A275 the South Downs Local Plan/Lewes JCS retards this improvement slightly, but only within 5m of the roadside and only by 0.01 kgN/ha/yr. This is so small that it is almost too small to appear in the model and is well within the probable limits of annual variation in background nitrogen deposition. It equates to 0.1% of the critical load or 0.08% of the deposition rate that would otherwise be expected by 2033. It is a sufficiently small amount (a total of 1 milligram of nitrogen[2] deposited per square metre over the course of a year) that it is ecologically insignificant and no retardation of any expected improvement in vegetation would occur. For example, data on lowland heathland[3] indicate that at deposition rates of c. 10-15kgN/ha/yr, an increase of 0.8 - 1.3 kgN/ha/yr would be required to lose one species from the sward. At higher background deposition rates (such as may apply at some parts of Ashdown Forest SAC) even greater additional nitrogen is required to remove one species. Growth stimulation responses that

[1] Wealden District Council vs Secretary of State for Communities and Local Government. Lewes District Council and South Downs National Park Authority and Natural England. [2017] EWHC 351 (Admin)

[2] For ease of comparison, a teaspoon of salt typically weighs 5000-6000 milligrams and a pinch of salt (c. $1/16^{th}$ of a teaspoon) weighs roughly 300 milligrams

[3] Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & Stevens, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

are not sufficiently severe to result in loss of species would occur before this scale of increase was achieved, but the very small magnitude of 0.01 kgN/ha/yr is evident[4]. Since the overall trend to 2033 is expected to be a positive one and will not be retarded to an ecologically significant extent by the South Downs Local Plan and JCS, there is thus not considered to be an adverse effect on the integrity of Ashdown Forest SAC in combination with growth arising from surrounding authorities.

1.1.6 Moreover, the Local Plan and Joint Core Strategy both contain sustainability policies (notably Local Plan policy SD19 (Transport and Accessibility) and Joint Core Strategy policy 13 (Sustainable Travel)) which are not factored into these traffic/air quality calculations and aspects of which have some potential to reduce the need for journeys to work by private vehicle towards Ashdown Forest; thus further reducing the already small contribution to increased vehicle movements on the A26 that is forecast to arise from the Local Plan and JCS.

1.1.7 Although it does not constitute mitigation (and is not presented as such), as a further safeguard the South Downs National Park Authority has also convened an Ashdown Forest Working Group which first met in April 2017. The shared objective of the working group is to ensure that impacts on the Ashdown Forest are properly assessed through HRA and that, if required, a joint action plan is put in place should such a need arise. It should be noted that the absence of any need for 'mitigation' associated with the scale of future growth in a particular authority does not prevent the Ashdown Forest authorities cooperatively working together to do whatever they jointly consider appropriate in reducing traffic and improving nitrogen deposition etc. around the Forest as a matter of general good stewardship, at least until 2040 after which it is likely an improvement in road-related air quality will start to be realised due to the Government's announcement to ban the sale of new petrol and diesel vehicles at that point. The aforementioned working group would be a suitable forum.

[4] To further illustrate the relative magnitude, Section 6.1 of Caporn et al (2016) describes increases in nitrogen deposition of 1-2kg N/ha/yr as '*relatively small increases'*.

2 Introduction

2.1.1 In the HRA of their adopted Joint Core Strategy (JCS), Lewes District Council used a 'change in flow' metric of 1,000 Annual Average Daily Traffic (AADT) as a basis to conclude that likely significant effects on the Ashdown Forest SAC due to changes in air quality would not arise either from their plan alone or their plan in combination with other projects and plans. This was because the expected change in flows due to the JCS on any road within 200m of Ashdown Forest SAC fell well below this metric. However, because this metric was used, no actual air quality calculations were undertaken and therefore no form of quantitative assessment examined the overall 'in combination' air quality effect from housing and employment growth in multiple authorities around the SAC.

2.1.2 In March 2017 a High Court judgment against the adopted Lewes/South Downs Joint Core Strategy[5] concluded that the simple application of the 1,000 AADT threshold as a basis to rule out the potential for 'in combination' effects from a plan in isolation was legally flawed (whether or not it complied with advice the Council had been given by Natural England) because the application of such a threshold to a single Local Plan in isolation explicitly took no account of the potential accumulation of growth. The judge did accept in paragraph 95 of the judgment that in principle there must be a change in flows (and thus air quality) which would make a *de minimis* contribution to an 'in combination' effect[6]. However, he determined that 1,000 AADT was an insufficiently precautionary threshold to be applied to a plan in isolation in the absence of further evidence to support its use in that way and in the absence of any attempt to put the contribution of Lewes JCS within the context of an 'in combination' analysis. In layman's terms, because the JCS used a shorthand assessment method agreed with Natural England, the HRA of the JCS *asserted* that that its contribution was too small to contribute meaningfully to any 'in combination' effect but did not *demonstrate* that conclusion since it did not attempt to quantify the 'in combination' effect or demonstrate what the contribution of the JCS would actually mean in terms of changes in air quality.

2.1.3 AECOM was appointed to address the matter raised by the High Court judgment. That is the purpose of this HRA Addendum. Transport modelling and air quality calculations have been undertaken for the adopted Lewes Joint Core Strategy and the emerging South Downs Local Plan (taken collectively). Due to the way in which such modelling and calculations are undertaken they calculate the expected 'future year' air quality adjacent to a road link as a result of the total cumulative growth in traffic expected from local authorities around Ashdown Forest SAC and further afield. The calculations are therefore inherently 'in combination' by virtue of the fact that they consider traffic growth by 2033 irrespective of point of origin. This therefore addresses the High Court judgement, which was based on the fact that there was no evidence of consideration of the effects of growth from the JCS area cumulatively with growth elsewhere over the same period[7]. The methodology used in this analysis is therefore compliant with the requirement of the Conservation of Habitats and Species Regulations 2010 (as amended) to consider whether an adverse effect on the integrity of a European site will result either alone, or in combination with other plans and projects.

2.1.4 In addition to determining the total cumulative 'in combination' effect on roadside air quality at Ashdown Forest SAC, the calculations presented in this analysis also consider the contribution of the Lewes JCS and South Downs Local Plan to that 'in combination' effect. This is necessary to determine whether the contribution is ecologically material and thus whether mitigation of that contribution is required. This is relevant to determining whether the contribution of the Lewes JCS and South Downs Local Plan to any 'in combination' effect is (to use the words of Justice Jay in paragraph 95 of the High Court judgment) '*very low indeed*'.

[5] Wealden District Council vs Secretary of State for Communities and Local Government. Lewes District Council and South Downs National Park Authority and Natural England. [2017] EWHC 351 (Admin)

[6] *'… I can well see that distinctions may be capable of being drawn in practice because if it is known that specific impacts are very low indeed, or are likely to be such, these can properly be ignored…'*

[7] The HRA of the Lewes Joint Core Strategy also included an analysis of air quality effects on the Lewes Downs SAC. However, the assessment relating to that SAC was not challenged because air quality calculations were undertaken, 'in combination' with growth arising from all sources and the HRA for that European site was therefore legally compliant.

3 Methodology

3.1.1 Vehicle exhaust emissions only have a local effect within a narrow band along the roadside, within 200m of the centreline of the road. Beyond 200m emissions are considered to have dispersed sufficiently that atmospheric concentrations are essentially background levels. The rate of decline is steeply curved rather than linear. In other words concentrations will decline rapidly as one begins to move away from the roadside, slackening to a more gradual decline over the rest of the distance up to 200m.

3.1.2 There are two measures of relevance regarding air quality impacts from vehicle exhausts. The first is the concentration of oxides of nitrogen (known as NOx) in the atmosphere. In extreme cases NOx can be directly toxic to vegetation but its main importance is as a source of nitrogen, which is then deposited on adjacent habitats. The guideline atmospheric concentration advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (μgm^{-3}), known as the Critical Level, as this concentration relates to the growth effects of nitrogen derived from NOx on vegetation.

3.1.3 The second important metric is a measure of the rate of the resulting nitrogen deposition. The addition of nitrogen is a form of fertilization, which can have a negative effect on heathland and other habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic. Unlike NOx in atmosphere, the nitrogen deposition rate below which we are confident effects would not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System (APIS) website (www.apis.ac.uk) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year ($kgNha^{-1}yr^{-1}$).

3.1.4 For completeness, rates of acid deposition have also been calculated. Acid deposition derives from both sulphur and nitrogen. It is expressed in terms of kiloequivalents (keq) per hectare per year. The thresholds against which acid deposition is assessed are referred to as the Critical Load Function. The principle is similar to that for a nitrogen deposition Critical Load but it is calculated very differently.

3.2 Traffic modelling

3.2.1 A series of road links within 200m of Ashdown Forest Special Area of Conservation (SAC) were identified for investigation. These links were chosen as they are all representative points on the busiest roads through the SAC. Traffic data were generated for each of these links for three scenarios:

- Base Case
- Do Nothing (DN)
- Do Something (DS)

3.2.2 The Base Case uses measured flows, percentage Heavy Duty Vehicles (HDVs) and average vehicle speeds on the relevant links, as provided by Wealden District Council (WDC). The Wealden traffic counts were undertaken in 2014. For the purposes of consistency with the other traffic modelling used to inform the Habitat Regulations Assessment (HRA) of the South Downs Local Plan, which use measured traffic counts from 2017, these data were 'grown' by AECOM transport planners to 2017. Since the South Downs Local Plan is backdated to 2014 and the Joint Core Strategy to 2010, this means that housing and employment development that has been delivered and occupied prior to 2017 is allowed for in the measured baseline flows. However, this is also true for all other local authorities, so there is no disparity in treatment of local authorities in the modelling. Development that has been consented but not actually completed/occupied does not appear in the baseline flows.

3.2.3 The Do Nothing scenario shows future flows on the same roads at the end of the South Downs Local Plan period (2033), without consideration of the role of the South Downs Local Plan or of the Lewes Joint Core Strategy. This therefore presents the expected contribution of other plans and projects to flows by 2033. The end of the Local Plan period has been selected for the future scenario as this is the point at which the total emissions due to South Downs Local Plan/JCS

traffic will be at their greatest. The scenario is calculated by extrapolating the observed traffic data. The Do Nothing scenario adds all traffic growth from 2017 to 2033 that will result in additional journeys on the modelled road links.

3.2.4 For the purposes of 'in combination' assessment (i.e. incorporating growth into the model due to multiple Local Plans and Core Strategies for surrounding authorities) it was decided that modelling the adopted Local Plans directly would not reflect actual housing growth in those authorities between 2017 and 2033 because:

1. Since most commence in 2006 they include a large number of allocations that are historic (i.e. already delivered and occupied) and these are already part of the measured base flows.
2. Adopted plans for these authorities may not accurately reflect growth over the period 2017 to 2033 because, with the exception of Lewes Joint Core Strategy, all the adopted plans for the boroughs/districts immediately around Ashdown Forest SAC finish seven years before the South Downs Local Plan, which runs to 2033 whereas the adopted plans (other than the Lewes JCS) all run to 2026 or 2027. This means that there will be 6-7 years of growth which is not covered by most adopted plans.

3.2.5 Expected development in these authorities over the period 2017 to 2033 was therefore included in the model by using the National Trip End Model Presentation Program (TEMPRO). TEMPRO produces a growth factor that is applied to the measured flows. It is based on data for each local authority district in the UK (distributed by statistical Middle Layer Super Output Area[8]) regarding future changes in population, households, workforce and employment (in addition to data such as car ownership) but is not limited to a given period of time. Traffic growth factors are utilised for the statistical Middle Layer Super Output Areas (MSOAs) within which the modelled links are located. TEMPRO has the advantages of being forecastable to 2033 and beyond, using growth assumptions that are regularly updated and distributed to the level of Middle-Layer Super Output Area (of which there are 21 in Wealden District alone) and of being an industry standard database tool across England meaning that modelling exercises that use TEMPRO will have a high degree of consistency.

3.2.6 The authorities immediately surrounding Ashdown Forest are those in which development is most likely to influence annual average daily traffic flows through the SAC. For those authorities (Wealden, Mid-Sussex, Tunbridge Wells, Sevenoaks and Tandridge) scrutiny of the relevant adopted Local Plans or Core Strategies and the associated housing growth rates in TEMPRO resulted in the conclusion that the adopted plans (and TEMPRO) may currently underestimate growth to 2033 and this could in turn materially affect the estimation of 2033 AADT flows on the relevant roads. The decision was therefore made to raise the growth allowances for these authorities to reflect their most recent Objectively Assessed Need (OAN)[9]. The OAN figure was derived from published information released by the Councils themselves or (in the case of Mid-Sussex) by their Local Plan inspector. Although housing growth rates were adjusted upwards, expected broad housing distributions were not altered. Employment growth assumptions in TEMPRO for these authorities were not adjusted. The authorities and their quanta and broad distributions of housing growth as considered in our analysis are as follows:

- **Tunbridge Wells** – The adopted Core Strategy plans for 6,000 additional homes from 2006 to 2026 (300 dwellings per annum) with the majority (70%) in Royal Tunbridge Wells. The new Local Plan is currently in the early stages of development. The most recent Objectively Assessed Need for Tunbridge Wells is 648 dwellings per annum. Since this is a substantial difference from that in the adopted Core Strategy the higher rate was used in the model.

- **Sevenoaks** – The adopted Core Strategy allows for 3,000 dwellings from 2006 to 2026 or 165 dwellings per annum. Distribution is almost 40% in Sevenoaks itself, with 18% in Swanley and 11% in Edenbridge. The new Local Plan is in the early stages of development. The most recent Objectively Assessed Need for Sevenoaks is 620 dwellings per annum. Since this is a substantial difference from that in the adopted Core Strategy the higher rate was used in the model.

[8] Middle Layer Super Output Areas are a geographical hierarchy designed to improve the reporting of small area statistics in England and Wales. They are a series of areas each of which has a minimum population of 5,000 residents. They have a mean population of 7,200 residents.
[9] Note that the Objectively Assessed Need figures are as of June 2017

- **Wealden** – Adopted Local Plan Core Strategy Policy WCS1 specifies delivery of 4,525 dwellings over the period 2010 to 2027 (266 per annum). A new draft Local Plan has been consulted upon but is currently being updated and revised. Growth in Uckfield and Crowborough (as well as smaller settlements around the SAC such as Maresfield) is most likely to affect flows through the SAC, although development across the district is likely to contribute cumulatively. At Uckfield '*The* [adopted] *Local Plan will allow for a redevelopment of the towns retail centre providing some 10,000 m² of new retail space as well as the creation of 12,650 m² of employment space. It limits to 1000 the number of new homes to be built between now and 2027, and identifies Ridgewood as the most sustainable place for the growth needed to support the vibrancy of the town'*.[10] The main focus of growth at Uckfield is an urban extension to the west of the town. At Crowborough: '*Wealden's* [adopted] *Core Strategy Local Plan, approved in 2012, allows for a significant amount of new housing in Crowborough, with supporting office space and commercial premises within the town at appropriate locations. It will see some 450 new houses built in existing settlements across Wealden each year up until 2027… Within Crowborough the Local Plan allows for some 140 new homes to be built in the town at Pine Grove and Jarvis Brook. It also allows for 160 new homes to be built in an urban extension to the south east of the town.'*[11] The most recent Objectively Assessed Need for Wealden is 832 dwellings per annum. Since this is a substantial difference from that in the published Core Strategy the higher rate was used in the model, although it is accepted that this may overestimate the scale of growth that the next iteration of Wealden Local Plan actually proposes for the district.

- **Mid-Sussex** – The submitted Local Plan (2014 – 2031) plans for 13,600 dwellings (800 dwellings per annum). A large part of the housing and employment development is intended to consist of a new strategic development (3,500 dwellings) north of Burgess Hill, 13km south-west of the SAC, as well as existing commitments in that same settlement. The submitted plan also proposes 600 dwellings at Pease Pottage, 12km west of the SAC and smaller levels of growth elsewhere. Housing in East Grinstead (and to a lesser extent Haywards Heath) is most likely to be relevant to flows through Ashdown Forest as East Grinstead lies on the A22 approximately 4km north of the SAC. These are both Category 1 settlements in the Local Plan's hierarchy and can therefore be expected to take a sizeable proportion of the dwellings expected to be allocated 'elsewhere in the district' over the plan period according to policy DP5. During the plan's Examination in Public, the Inspector identified in February 2017 that he was minded to increase the growth rate from 800 per annum to 1,026 per annum. Although it is now understood that number may be reduced, the 1,026 figure has been used in this analysis to be precautionary.

- **Tandridge** – The adopted Core Strategy expects 2,500 dwellings from 2006 to 2026 at an average rate of 125 dwellings per annum. The majority of development will take place within the existing built up areas of Caterham, Warlingham, Whyteleafe, Oxted and Hurst Green. The new Local Plan is in the early stages of development (broad strategy published in March 2017 but no information on detailed scale or location of growth) with a forthcoming Garden Village consultation in autumn 2017. The most recent Objectively Assessed Need for Tandridge is 470 dwellings per annum. Since this is a substantial difference from that in the published Core Strategy the higher rate was used in the model as a precaution, although it is accepted that the level of growth in the final Local Plan for Tandridge may be less than this number.

3.2.7 The Do Nothing (and thus Do Something) Scenario is therefore intentionally precautionary and allows for growth over the period to 2033 beyond that in adopted (or even published draft) Local Plans in those authorities immediately surrounding Ashdown Forest SAC.

3.2.8 The Do Something scenario reflects the combined role of the South Downs Local Plan, Lewes Joint Core Strategy and subsidiary Neighbourhood Plans by 2033, in addition to growth in other authorities. Detailed modelling of Local Plan/Neighbourhood Plan growth locations undertaken by the AECOM transport planning team was added to the adjusted TEMPRO growth for all other

[10] http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Policy/CoreStrategy/Planning_Core_Strategy_Uckfield.aspx (accessed 05/09/17)

[11] http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Policy/CoreStrategy/Planning_Core_Strategy_Crowborough.aspx (accessed 05/09/17)

authorities. To build the Local Plan model, housing and employment sites in Lewes District and the National Park (allocations in the Local Plan, Joint Core Strategy, allocations in Neighbourhood Plans, unimplemented planning permissions and windfall) were geographically assigned to 'distribution groups' across the National Park and Lewes District using GIS software. The distribution of each of these groups was calculated using Census 2011 journey to work data, and the trips associated with each distribution group then manually assigned across the network.

3.2.9 The 'in combination' growth scenario is therefore the Do Something flows, as these include existing traffic, all future journeys arising from within the South Downs National Park and Lewes District due to the Local Plan, Joint Core Strategy or Neighbourhood Plan proposals (from AECOM's model), and future traffic arising from all other authorities (from TEMPRO, adjusted for expected higher growth rates in some authorities). The difference between the Do Something scenario and the Do Nothing scenario illustrates the role of the Local Plan/Joint Core Strategy (and Neighbourhood Plans) in changing future flows compared to what would be expected without the Local Plan/Joint Core Strategy proposals. Some links see increases compared to Do Nothing (where trips are concentrated due to the scale and location of development in the Local Plan/Joint Core Strategy) and some see slight decreases[12].

3.3 Air quality calculations

3.3.1 Using these scenarios and information on average vehicle speeds and percentage Heavy Duty Vehicles (both of which influence the emissions profile), AECOM air quality specialists calculated expected NOx concentrations, nitrogen deposition rates and acid deposition rates for all modelled road links. The predictions are based on the assessment methodology presented in Annex F of the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1 (HA207/07)[13] for the assessment of impacts on sensitive designated ecosystems due to highways works. Background data were sourced from the Department of Environment, Food and Rural Affairs (Defra) background maps[14] [15].

3.3.2 Given that the assessment year (2033) is a considerable distance into the future, it is important for the air quality calculations to take account of improvements in background air quality and vehicle emissions that are expected nationally over the plan period. Making an allowance for a realistic improvement in background concentrations and deposition rates is in line with the Institute of Air Quality Management (IAQM) position[16] as well as that of central government. Background nitrogen deposition rates were sourced from the Air Pollution Information System (APIS) website[17]. Although in recent years improvements have not kept pace with predictions, the general long-term trend for NOx has been one of improvement (particularly since 1990) despite an increase in vehicles on the roads[18]. The current DMRB guidance for ecological assessment suggests reducing nitrogen deposition rates by 2% each year between the base year and assessment year. However, due to some uncertainty as to the rate with which projected future vehicle emission rates and background pollution concentrations are improving, the precautionary assumption has been made in this assessment that not all improvements projected by Defra will occur. Therefore, the air quality calculations assume that conditions in 2023 (an approximate midpoint between the base year and the year of assessment) are representative of conditions in 2033 (the year of assessment). This approach is accepted within the professional air quality community and accounts for known recent improvements in vehicle technologies (new standard Euro 6/VI vehicles), whilst excluding the more distant and therefore more uncertain projections on the evolution of the vehicle fleet. No discussion is made in this analysis of the UK Government's recent decision to ban the sale of new petrol and diesel vehicles from 2040 since it

[12] Note that these 'decreases' simply indicate lower flows than the Do Nothing forecasts and are essentially a modelling artefact due to the slightly different ways that TEMPRO and the AECOM model assign journeys to the network; compared to measured base flows there is always a net increase

[13] Design Manual for Roads and Bridges, HA207/07, Highways Agency

[14] Air Quality Archive Background Maps. Available from: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

[15] It is understood that measured data exists for Ashdown Forest but they were not available at the time this analysis was undertaken. The use of any measurement data for Ashdown Forest would likely change the absolute concentrations and deposition rates presented in this analysis but not the overall trends or conclusions with regard to the South Downs Local Plan/Lewes Joint Core Strategy

[16] http://www.iaqm.co.uk/text/position_statements/vehicle_NOx_emission_factors.pdf

[17] Air Pollution Information System (APIS) www.apis.ac.uk

[18] Emissions of nitrogen oxides fell by 69% between 1970 and 2015. Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/579200/Emissions_airpollutants_statisticalrelease_2016_final.pdf [accessed 08/06/17]

would not affect the time period under consideration, but that announcement illustrates the general long-term direction of travel for roadside air quality in the UK and underlines that allowing for improvements in both vehicle emissions factors and background rates of deposition over long timescales is both appropriate and realistic.

3.3.3 Annual mean concentrations of NOx were calculated at varied intervals back from each road link, with the closest distance being the closest point of the designated site to the road. Predictions were made using the latest version of ADMS-Roads using emission rates derived from the Defra Emission Factor Toolkit (version 6.0.2) which utilises traffic data in the form of 24-hour Annual Average Daily Traffic (AADT), detailed vehicle fleet composition and average speed. The tables in Appendix A present the calculated changes in NOx concentration, nitrogen deposition and acid deposition 'in combination' (i.e. the difference between Do Something and the 2017 Base case) and the role played by Local Plan/Joint Core Strategy development compared to that which would occur in any case over the plan period (i.e. the difference between Do Something and Do Nothing).

4 Results

4.1 Traffic modelling

4.1.1 The flows forecast by 2033, and how these differ between Do Nothing (without the Local Plan/JCS) and Do Something (including the Local Plan and JCS) are presented below.

A	B	C	D	E	F	G	H	I
Link ID	**Link Description**	**Wealden Model Base 2014 AADT**	**2017 Base AADT**	**2033 DN AADT**	**2033 DS AADT**	**Difference between 2017 Base and DS (all traffic growth)**	**Difference between 2017 DN and DS (contribution of South Downs Local Plan/JCS)[19]**	**Percentage growth from 2017-2033 attributable to South Downs Local Plan/JCS**
6	A22 Royal Ashdown Forest Golf Course	11,480	11,509	13,474	13,581	2,072	107	5%
33	A22 Wych Cross	12,340	12,371	14,483	14,460	2,089	-23	0%
34	A22 Nutley	11,360	11,389	13,333	13,317	1,928	-16	0%
37	A275 Wych Cross	4,530	4,542	5,317	5,515	973	198	20%
38	A26 Poundgate	16,150	16,191	18,955	19,215	3,024	260	9%

4.1.2 All links are forecast to experience an increase in traffic flows between 2017 and 2033 when all expected traffic growth sources (including the South Downs Local Plan/Lewes JCS) are taken into account (columns E and F). The increase including the South Downs Local Plan/Lewes JCS (column G) varies from c. 1,000 AADT on the A275 to c. 3,000 AADT on the A26. Although the busiest link is the A26, 'busy' is a relative term. The total measured 2014 flows on this part of the A26 (column C) are not particularly high in themselves. For comparison, traffic counts in 2017 have identified that the A3 in the west of the South Downs National Park has base flows of 47,000 AADT.

4.1.3 The contribution of the Local Plan/Joint Core Strategy growth to this change (column H) is small, ranging from effectively zero (links 33 and 34) to a further 260 journeys per day on the A26 by 2033. The greatest change in flows is forecast to occur on the A26, while the A275 is the link on which the Lewes JCS/South Downs Local Plan is forecast to make their greatest proportional contribution to the expected change in flows (20%). However, this is also the modelled link with the lowest overall traffic flows, having total flows in 2014 of just 4,530 AADT. The small contribution of growth in the South Downs and Lewes District is most likely to be a function of the distance between the population centres in Lewes District/South Downs National Park and the modelled links, and thus the small role these links play in daily journeys to work for residents of these areas.

4.2 Air quality calculations

4.2.1 Based on background mapping, adjusted for the effect of the road, the air quality calculations provided in Appendix A show that the baseline NOx concentrations are above the 30 μgm^{-3} general Critical Level for vegetation up to 20m from the roadside along the A26 at Poundgate (link 38) and the A275 at Wych Cross (link 37) and on one of the modelled transects along the A22 within the vicinity of Royal Ashdown Forest Golf Course (link 6). For all other links, NOx

[19] NB. For reasons already explained, a slight negative result essentially denotes no expected effect on the modelled road from the DS scenario compared to the DN scenario.

concentrations are currently identified as being below the critical level even at the roadside. Such a result would be unsurprising given the modest measured traffic flows on even the busiest road (the A26) and the essentially rural location of Ashdown Forest.

4.2.2 Under the DN scenario (without the Local Plan/Joint Core Strategy), concentrations are forecast to reduce to below the critical level on all three of these links by 2033 due to changes in vehicle emissions, notwithstanding the projected increase in traffic on the road. On the A26 and A275, this improvement in NOx concentrations is forecast to be retarded slightly by up to 0.2 μgm^{-3} within 20m of the roadside when Local Plan/JCS growth is taken into account, while a nominal retardation of 0.1 μgm^{-3} at the roadside is forecast from some of the transects along the A22 at Royal Ashdown Forest Golf Course (link 6). However, concentrations are forecast to remain below the critical level in all cases. Since the ecologically significant role of NOx is as a source of nitrogen the next step is to consider what effect the slight retardation of improvement may have on nitrogen deposition rates[20].

4.2.3 Ashdown Forest SAC is designated for its heathland. It has been assumed for the purposes of this analysis that functional heathland is present (or could be present with suitable management) throughout any or all of the 200m transects modelled in this analysis. In practice this is unlikely to be the case due to other factors associated with the presence of the road e.g. presence/retention of dense tree planting as a screen from the road, effects of salt deposition, or changes to local geology and hydrology when the road was constructed or re-surfaced, or where roadside services or drainage have been installed. However those potential factors have not been included in this analysis, which assumes pristine heathland. It is therefore an inherently precautionary assessment. Critical loads are always presented as a range, which for heathland is 10 kgN/ha/yr to 20 kgN/ha/yr[21]. The lowest part of the nitrogen Critical Load range has been used in this assessment as that is the most precautionary stance to take, although it is possible that the actual critical load could be a higher figure. That also makes the analysis reported in this document a precautionary assessment (as does the assumption of higher housing growth rates than contained in adopted Local Plans as reported earlier). The baseline for nitrogen deposition within 200m of the A26, A22 and A275 is above the Critical Load at c.14-15 kgN/ha/yr. Under both the DN and DS scenarios nitrogen deposition is expected to remain above the critical load, but is forecast to reduce by up to c. 1.9 kgN/ha/yr to 2033 notwithstanding overall growth in flows on the road. In other words, the improvement in vehicle emission factors and in background nitrogen deposition rates expected over the period to 2033 are forecast to more than offset the increase in nitrogen deposition from an increase in the volume of vehicle movements.

4.2.4 For the A26 and A275 the DS scenario (factoring in the Local Plan/JCS) retards this improvement slightly but only within 5m of the roadside and only by 0.01kgN/ha/yr[22]. If the contribution were only slightly smaller it would not appear in the model at all. It equates to 0.1% of the critical load or 0.08% of the forecast 2033 DN deposition rate and is likely to be well within the normal limits of annual variation in deposition rates. It is a sufficiently small amount (a total of 1 milligram of nitrogen[23] deposited per square metre over the course of a year) that it is ecologically insignificant and no retardation of any expected improvement in vegetation would occur, given that no habitats that have been studied to date are responsive to such very small incremental changes in nitrogen deposition. For example, data on dose response relationships in lowland heathland[24] indicate that at deposition rates of c. 10-15kgN/ha/yr (representative of current and forecast future deposition rates in this area using background mapping of deposition

[20] Acid deposition rates for all transects on all modelled links are expected to improve over the plan period and the contribution of the South Downs Local Plan/JCS to any retardation of that improvement is zero, in that any contribution is too small to show in the model (i.e. it would affect the third decimal place or beyond, which are never reported in modelling). Acid deposition is therefore not discussed further in this document.

[21] APIS advises to use the high end of the range with high precipitation and the low end of the range with low precipitation and to use the low end of the range for systems with a low water table, and the high end of the range for systems with a high water table.

[22] There is always an element of uncertainty in the modelling of future traffic flows, as with any form of forecasting. However, the assessment is based on the best available data, with traffic projections based on current methodologies. The worst-case predicted impact of the change in traffic flows on nitrogen deposition due to growth to 2033 in Lewes District and the South Downs National Park is so low (0.01 KgN/ha/yr) that variations in future predicted traffic flows would not materially affect the conclusions of this assessment. For example, even if the 2033 nitrogen deposition due to the Lewes JCS/South Downs Local Plan proved to be double that forecast in this analysis (0.02 KgN/ha/yr) it would remain a very small contribution and would not affect the interpretation and conclusions presented in this report.

[23] For ease of comparison, a teaspoon of salt typically weighs 5000-6000 milligrams and a pinch of salt (c. $1/16^{th}$ of a teaspoon) weighs roughly 300 milligrams

[24] Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & Stevens, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.

rates) an increase of 0.8 - 1.3 kgN/ha/yr would be required to lose one species from the sward (Appendix B). An even greater increase would be required if actual measured deposition rates are shown to be substantially higher than those extrapolated from Defra mapping; for example, at background deposition rates of 30 kgN/ha/yr an additional 2.4 kgN/ha/yr would be required to reduce the average species richness of the sward by one species. Growth stimulation responses that are not sufficiently severe to result in loss of species would occur at some point before this scale of increase was achieved, but the very small magnitude of 0.01 kgN/ha/yr is evident.

4.2.5 Even in the very unlikely event that there was no improvement in either background nitrogen deposition rates or vehicle emission factors by 2033 (and was thus a net deterioration in deposition rates once total traffic growth over the same period was included) the relative contribution of the additional traffic on the network due to the Lewes Joint Core Strategy and South Downs Local Plan taken together would be essentially identical to that discussed above[25] and thus the conclusion regarding the ecological importance of the contribution to any overall effect 'in combination' would remain the same.

4.2.6 The development of nitrogen dose-response relationships for various habitats clarifies the rate of additional nitrogen deposition required to achieve a measurable effect on heathland vegetation (defined in available metrics as whether or not it will result in the loss of at least one species from the sward). This in turn makes it possible to gauge whether a given plan is not just of small magnitude (in which event it could still contribute meaningfully to an effect 'in combination') but of such small magnitude that its contribution would exist in theory (in the second decimal place of the air quality model), but not in practice (on the ground). Such a plan would be one in which one could say with confidence that a) there would not be a measurable difference in the vegetation whether or not that plan proceeded and b) there would not be a measureable effect on the vegetation (and thus protection conveyed to the European site) whether or not the contribution of that plan was 'mitigated' (i.e. reduced to such an extent that it did not appear in the model at all). It would clearly be unreasonable to claim that such a plan caused an adverse effect 'in combination' or that it should be mitigated. The contribution of the Lewes Joint Core Strategy and South Downs Local Plan falls well within those parameters.

4.2.7 Since the overall trend to 2033 is expected to be a positive one and will not be retarded to an ecologically significant extent by the South Downs Local Plan and JCS, there is thus not considered to be an adverse effect on the integrity of Ashdown Forest SAC in combination with growth arising from surrounding authorities. Moreover, the Local Plan and Joint Core Strategy both contain sustainability policies (notably Local Plan policy SD19 (Transport and Accessibility) and Joint Core Strategy policy 13 (Sustainable Travel)) which are not factored into these traffic/air quality calculations and aspects of which have some potential to reduce the need for journeys to work by private vehicle towards Ashdown Forest; thus further reducing the already small contribution to increased vehicle movements on the A26 that is forecast to arise from the Local Plan and JCS. For information, these policies are presented in Appendix C.

4.2.8 Although it does not constitute mitigation (and is not presented as such), as a further safeguard the SDNPA has also led on convening an Ashdown Forest working group which first met in April 2017. The shared objective of the working group is to ensure that impacts on the Ashdown Forest are properly assessed through HRA and that, if required, a joint action plan is put in place should such a need arise. It should be noted that the absence of any need for 'mitigation' associated with future growth in a particular authority does not prevent the various Ashdown Forest authorities cooperatively working together to do whatever they jointly consider appropriate in reducing traffic and improving nitrogen deposition etc. around the Forest as a matter of general good stewardship, at least until 2040 after which it is likely an improvement in road-related air quality will start to be realised due to the Government's announcement to ban the sale of new petrol and diesel vehicles at that point. This would also enable future trends in air quality to be tracked and the modelling (and responses to that modelling) to be updated as necessary. The aforementioned working group would be a suitable forum for this cooperative working.

[25] Modelling of a 'no improvement' scenario indicates that the worst-case contribution of the JCS/Lewes Local Plan to nitrogen deposition on the A26 by 2033 would rise slightly (due to the assumption of no improvement in emission factors) from 0.01 KgN/ha/yr to 0.02 KgN/ha/yr at the same location.

5 Conclusion

5.1.1 It can therefore be concluded that no adverse effect upon the integrity of Ashdown Forest SAC is expected to result from development provided by the South Downs Local Plan and Lewes Joint Core Strategy, even in combination with other plans and projects. This is due to a combination of a) an expected net improvement in air quality over the Local Plan period and b) the fact that, whether or not that improvement occurs to the extent forecast, the contribution of the South Downs Local Plan and Lewes Joint Core Strategy to changes in roadside air quality is demonstrably ecologically negligible due to the very small magnitude. In the words of Mr. Justice Jay in his judgement regarding the Joint Core Strategy Judicial Review when discussing when a *de minimis* conclusion would be appropriate: '*…if it is known that specific impacts are very low indeed, or are likely to be such, these can properly be ignored…'*[26]. This therefore supports the original conclusion of the HRA of the Lewes JCS.

[26] Wealden District Council vs Secretary of State for Communities and Local Government. Lewes District Council and South Downs National Park Authority and Natural England. [2017] EWHC 351 (Admin). Paragraph 95 of the judgment

Appendix A. Detailed Modelling Results

Receptor 38: the A26 at Poundgate

Lookup ID	Road Link	Distance From Road (m)	Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
			BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
1	38_0m	0	35.7	25.5	25.7	0.2	-9.9	14.23	12.34	12.35	0.01	-1.87	1.12	1.07	1.07	0.00	-0.04
2	38_5m	5	25.8	18.9	19.0	0.1	-6.8	13.72	12.00	12.00	0.01	-1.72	1.06	1.04	1.04	0.00	-0.03
3	38_10m	10	21.5	15.9	16.0	0.1	-5.5	13.50	11.84	11.85	0.00	-1.65	1.04	1.02	1.02	0.00	-0.02
4	38_15m	15	19.2	14.4	14.4	0.1	-4.7	13.37	11.76	11.76	0.00	-1.62	1.03	1.01	1.01	0.00	-0.01
5	38_20m	20	17.7	13.3	13.4	0.1	-4.3	13.29	11.70	11.70	0.00	-1.59	1.02	1.01	1.01	0.00	-0.01
6	38_30m	30	15.8	12.1	12.1	0.0	-3.7	13.20	11.63	11.64	0.00	-1.56	1.01	1.00	1.00	0.00	-0.01
7	38_40m	40	14.8	11.4	11.4	0.0	-3.4	13.14	11.59	11.60	0.00	-1.54	1.00	1.00	1.00	0.00	-0.01
8	38_50m	50	14.1	10.9	10.9	0.0	-3.2	13.10	11.57	11.57	0.00	-1.53	1.00	0.99	0.99	0.00	-0.01
9	38_60m	60	13.6	10.5	10.6	0.0	-3.0	13.07	11.55	11.55	0.00	-1.52	1.00	0.99	0.99	0.00	0.00
10	38_70m	70	13.2	10.3	10.3	0.0	-2.9	13.05	11.53	11.54	0.00	-1.52	0.99	0.99	0.99	0.00	0.00
11	38_80m	80	12.9	10.1	10.1	0.0	-2.8	13.03	11.52	11.52	0.00	-1.51	0.99	0.99	0.99	0.00	0.00
12	38_90m	90	12.7	9.9	9.9	0.0	-2.7	13.02	11.51	11.52	0.00	-1.51	0.99	0.99	0.99	0.00	0.00
13	38_100m	100	12.5	9.8	9.8	0.0	-2.7	13.01	11.51	11.51	0.00	-1.50	0.99	0.99	0.99	0.00	0.00
14	38_125m	125	12.1	9.5	9.5	0.0	-2.6	12.99	11.49	11.49	0.00	-1.50	0.99	0.99	0.99	0.00	0.00
15	38_150m	150	11.9	9.4	9.4	0.0	-2.5	12.98	11.48	11.48	0.00	-1.49	0.99	0.98	0.98	0.00	0.00
16	38_175m	175	11.7	9.2	9.2	0.0	-2.4	12.97	11.48	11.48	0.00	-1.49	0.99	0.98	0.98	0.00	0.00
17	38_200m	200	11.5	9.1	9.1	0.0	-2.4	12.96	11.47	11.47	0.00	-1.49	0.98	0.98	0.98	0.00	0.00

Receptor 37W – A275 at Wych Cross

Lookup ID	Road Link	Distance From Road (m)	Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
			BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
18	37W_0m	0	18.7	14.3	14.5	0.2	-4.2	14.21	12.52	12.53	0.01	-1.68	1.09	1.08	1.08	0.00	-0.01
19	37W_5m	5	15.6	12.2	12.3	0.1	-3.4	14.04	12.40	12.41	0.01	-1.64	1.07	1.07	1.07	0.00	-0.01
20	37W_10m	10	14.5	11.4	11.4	0.1	-3.1	13.98	12.36	12.36	0.00	-1.62	1.07	1.06	1.06	0.00	0.00
21	37W_15m	15	13.9	10.9	11.0	0.1	-2.9	13.95	12.34	12.34	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
22	37W_20m	20	13.5	10.7	10.7	0.0	-2.8	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
23	37W_30m	30	13.1	10.4	10.4	0.0	-2.7	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
24	37W_40m	40	12.8	10.2	10.2	0.0	-2.6	13.89	12.30	12.30	0.00	-1.59	1.06	1.05	1.05	0.00	0.00
25	37W_50m	50	12.7	10.1	10.1	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
26	37W_60m	60	12.6	10.0	10.0	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
27	37W_70m	70	12.5	9.9	10.0	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
28	37W_80m	80	12.4	9.9	9.9	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
29	37W_90m	90	12.4	9.9	9.9	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
30	37W_100m	100	12.3	9.8	9.8	0.0	-2.5	13.86	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
31	37W_125m	125	12.3	9.8	9.8	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
32	37W_150m	150	12.2	9.7	9.7	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
33	37W_175m	175	12.2	9.7	9.7	0.0	-2.4	13.85	12.27	12.27	0.00	-1.58	1.05	1.05	1.05	0.00	0.00
34	37W_200m	200	12.1	9.7	9.7	0.0	-2.4	13.85	12.27	12.27	0.00	-1.58	1.05	1.05	1.05	0.00	0.00

Receptor 37E – A275 at Wych Cross

Lookup ID	Road Link	Distance From Road (m)	Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
			BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
35	37E_0m	0	18.1	13.9	14.1	0.2	-4.0	14.18	12.50	12.51	0.01	-1.67	1.09	1.07	1.08	0.00	-0.01
36	37E_5m	5	15.4	12.0	12.1	0.1	-3.3	14.03	12.39	12.40	0.01	-1.63	1.07	1.06	1.06	0.00	-0.01
37	37E_10m	10	14.3	11.2	11.3	0.1	-3.0	13.97	12.35	12.36	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
38	37E_15m	15	13.8	10.9	10.9	0.1	-2.9	13.94	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
39	37E_20m	20	13.4	10.6	10.7	0.0	-2.8	13.92	12.32	12.32	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
40	37E_30m	30	13.0	10.3	10.4	0.0	-2.7	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
41	37E_40m	40	12.8	10.2	10.2	0.0	-2.6	13.89	12.29	12.30	0.00	-1.59	1.06	1.05	1.05	0.00	0.00
42	37E_50m	50	12.7	10.1	10.1	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
43	37E_60m	60	12.6	10.0	10.0	0.0	-2.5	13.88	12.28	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
44	37E_70m	70	12.5	9.9	9.9	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
45	37E_80m	80	12.4	9.9	9.9	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
46	37E_90m	90	12.4	9.9	9.9	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
47	37E_100m	100	12.3	9.8	9.8	0.0	-2.5	13.86	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
48	37E_125m	125	12.3	9.8	9.8	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
49	37E_150m	150	12.2	9.8	9.8	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
50	37E_175m	175	12.2	9.7	9.7	0.0	-2.5	13.85	12.27	12.27	0.00	-1.58	1.05	1.05	1.05	0.00	0.00
51	37E_200m	200	12.2	9.7	9.7	0.0	-2.4	13.85	12.27	12.27	0.00	-1.58	1.05	1.05	1.05	0.00	0.00

Receptor 34 – A22 at Nutley

Lookup ID	Road Link	Distance From Road (m)	Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
			BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
52	34_0m	0	29.0	20.7	20.7	0.0	-8.3	15.04	13.11	13.11	0.00	-1.92	1.17	1.13	1.13	0.00	-0.03
53	34_5m	5	22.0	16.1	16.1	0.0	-6.0	14.67	12.87	12.87	0.00	-1.80	1.13	1.11	1.11	0.00	-0.02
54	34_10m	10	18.9	14.0	14.0	0.0	-4.9	14.51	12.76	12.76	0.00	-1.75	1.11	1.10	1.10	0.00	-0.01
55	34_15m	15	17.2	12.9	12.9	0.0	-4.3	14.42	12.70	12.70	0.00	-1.72	1.10	1.09	1.09	0.00	-0.01
56	34_20m	20	16.2	12.2	12.2	0.0	-3.9	14.36	12.66	12.66	0.00	-1.70	1.10	1.09	1.09	0.00	-0.01
57	34_30m	30	14.9	11.4	11.4	0.0	-3.5	14.29	12.62	12.62	0.00	-1.67	1.09	1.08	1.08	0.00	-0.01
58	34_40m	40	14.2	10.9	10.9	0.0	-3.3	14.25	12.59	12.59	0.00	-1.66	1.09	1.08	1.08	0.00	-0.01
59	34_50m	50	13.7	10.6	10.6	0.0	-3.1	14.22	12.57	12.57	0.00	-1.65	1.08	1.08	1.08	0.00	0.00
60	34_60m	60	13.4	10.4	10.4	0.0	-3.0	14.21	12.56	12.56	0.00	-1.65	1.08	1.08	1.08	0.00	0.00
61	34_70m	70	13.1	10.2	10.2	0.0	-2.9	14.19	12.55	12.55	0.00	-1.64	1.08	1.08	1.08	0.00	0.00
62	34_80m	80	12.9	10.1	10.1	0.0	-2.8	14.18	12.54	12.54	0.00	-1.64	1.08	1.08	1.08	0.00	0.00
63	34_90m	90	12.8	10.0	10.0	0.0	-2.8	14.17	12.54	12.54	0.00	-1.63	1.08	1.07	1.07	0.00	0.00
64	34_100m	100	12.6	9.9	9.9	0.0	-2.7	14.17	12.53	12.53	0.00	-1.63	1.08	1.07	1.07	0.00	0.00
65	34_125m	125	12.4	9.7	9.7	0.0	-2.7	14.15	12.52	12.52	0.00	-1.63	1.08	1.07	1.07	0.00	0.00
66	34_150m	150	12.2	9.6	9.6	0.0	-2.6	14.14	12.52	12.52	0.00	-1.62	1.07	1.07	1.07	0.00	0.00
67	34_175m	175	12.1	9.6	9.6	0.0	-2.6	14.14	12.51	12.51	0.00	-1.62	1.07	1.07	1.07	0.00	0.00
68	34_200m	200	12.0	9.5	9.5	0.0	-2.5	14.13	12.51	12.51	0.00	-1.62	1.07	1.07	1.07	0.00	0.00

Receptor 33 – A22 at Wych Cross

Lookup ID	Road Link	Distance From Road	Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
			BL Base	DM (Base	DS (Scn1	Change (DS-	Change (DS-	BL Base	DM (Base	DS (Scn1	Change (DS-	Change (DS-	BL Base	DM (Base	DS (Scn1	Change (DS-	Change (DS-

		(m)		2033)	2033)	DM)	BL)		2033)	2033)	DM)	BL)		2033)	2033)	DM)	BL)
69	33_0m	0	23.9	17.7	17.7	0.0	-6.2	14.49	12.71	12.71	0.00	-1.78	1.12	1.10	1.10	0.00	-0.02
70	33_5m	5	18.9	14.3	14.3	0.0	-4.7	14.23	12.53	12.53	0.00	-1.70	1.09	1.08	1.08	0.00	-0.01
71	33_10m	10	16.9	12.9	12.9	0.0	-4.0	14.12	12.45	12.45	0.00	-1.67	1.08	1.07	1.07	0.00	-0.01
72	33_15m	15	15.8	12.1	12.1	0.0	-3.7	14.06	12.41	12.41	0.00	-1.65	1.07	1.07	1.07	0.00	-0.01
73	33_20m	20	15.1	11.6	11.6	0.0	-3.4	14.02	12.38	12.38	0.00	-1.64	1.07	1.06	1.06	0.00	-0.01
74	33_30m	30	14.2	11.0	11.0	0.0	-3.2	13.97	12.35	12.35	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
75	33_40m	40	13.7	10.7	10.7	0.0	-3.0	13.95	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
76	33_50m	50	13.4	10.5	10.5	0.0	-2.9	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
77	33_60m	60	13.2	10.3	10.3	0.0	-2.9	13.92	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
78	33_70m	70	13.0	10.2	10.2	0.0	-2.8	13.91	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
79	33_80m	80	12.9	10.1	10.1	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
80	33_90m	90	12.8	10.0	10.0	0.0	-2.7	13.89	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
81	33_100m	100	12.7	10.0	10.0	0.0	-2.7	13.89	12.29	12.29	0.00	-1.59	1.06	1.05	1.05	0.00	0.00
82	33_125m	125	12.5	9.9	9.9	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
83	33_150m	150	12.4	9.8	9.8	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
84	33_175m	175	12.3	9.7	9.7	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
85	33_200m	200	12.3	9.7	9.7	0.0	-2.6	13.86	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

Receptor 6b_37_33 – Junction of A22 and A275

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup		Distance	BL	DM (Base	DS (Scn1	Change (DS-	(DS-	BL	DM (Base	DS (Scn1	Change (DS-	(DS-	BL	DM (Base	DS (Scn1	Change (DS-	(DS-
ID	Road Link	From Road (m)	Base	2033)	2033)	DM)	BL)	Base	2033)	2033)	DM)	BL)	Base	2033)	2033)	DM)	BL)
86	6b_37_33_0m	0	25.2	18.7	18.8	0.1	-6.4	14.55	12.75	12.76	0.01	-1.79	1.12	1.10	1.10	0.00	-0.02
87	6b_37_33_5m	5	22.5	16.8	16.9	0.1	-5.6	14.41	12.66	12.66	0.01	-1.75	1.11	1.09	1.09	0.00	-0.02
88	6b_37_33_10m	10	21.0	15.8	15.9	0.1	-5.1	14.34	12.60	12.61	0.00	-1.73	1.10	1.09	1.09	0.00	-0.02
89	6b_37_33_15m	15	20.1	15.2	15.2	0.1	-4.9	14.28	12.57	12.57	0.00	-1.71	1.10	1.08	1.08	0.00	-0.01
90	6b_37_33_20m	20	19.4	14.7	14.7	0.1	-4.6	14.25	12.54	12.54	0.00	-1.70	1.09	1.08	1.08	0.00	-0.01
91	6b_37_33_30m	30	18.2	13.9	13.9	0.0	-4.3	14.18	12.50	12.50	0.00	-1.68	1.09	1.07	1.08	0.00	-0.01
92	6b_37_33_40m	40	17.3	13.3	13.3	0.0	-4.0	14.14	12.46	12.47	0.00	-1.67	1.08	1.07	1.07	0.00	-0.01
93	6b_37_33_50m	50	16.6	12.8	12.9	0.0	-3.8	14.10	12.44	12.44	0.00	-1.66	1.08	1.07	1.07	0.00	-0.01
94	6b_37_33_60m	60	16.1	12.5	12.5	0.0	-3.6	14.07	12.42	12.42	0.00	-1.65	1.07	1.07	1.07	0.00	-0.01
95	6b_37_33_70m	70	15.7	12.2	12.2	0.0	-3.5	14.05	12.40	12.40	0.00	-1.64	1.07	1.07	1.07	0.00	-0.01
96	6b_37_33_80m	80	15.3	11.9	11.9	0.0	-3.4	14.03	12.39	12.39	0.00	-1.64	1.07	1.06	1.06	0.00	-0.01
97	6b_37_33_90m	90	15.0	11.7	11.7	0.0	-3.3	14.01	12.38	12.38	0.00	-1.63	1.07	1.06	1.06	0.00	-0.01
98	6b_37_33_100m	100	14.8	11.5	11.6	0.0	-3.2	14.00	12.37	12.37	0.00	-1.63	1.07	1.06	1.06	0.00	-0.01
99	6b_37_33_125m	125	14.2	11.2	11.2	0.0	-3.1	13.97	12.35	12.35	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
100	6b_37_33_150m	150	13.8	10.9	10.9	0.0	-2.9	13.95	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
101	6b_37_33_175m	175	13.5	10.7	10.7	0.0	-2.9	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
102	6b_37_33_200m	200	13.3	10.5	10.5	0.0	-2.8	13.92	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00

Receptor 6b - A22 at Royal Ashdown Forest Golf Course

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup		Distance From Road	BL	DM (Base	DS (Scn1	Change (DS-	(DS-	BL	DM (Base	DS (Scn1	Change (DS-	(DS-	BL	DM (Base	DS (Scn1	Change (DS-	(DS-
ID	Road Link	(m)	Base	2033)	2033)	DM)	BL)	Base	2033)	2033)	DM)	BL)	Base	2033)	2033)	DM)	BL)
103	6b_3m	3	21.7	16.2	16.2	0.0	-5.5	14.35	12.61	12.61	0.00	-1.74	1.10	1.09	1.09	0.00	-0.02
104	6b_8m	8	18.6	14.0	14.1	0.0	-4.5	14.18	12.49	12.49	0.00	-1.69	1.09	1.07	1.07	0.00	-0.01

105	6b_13m	13	17.0	13.0	13.0	0.0	-4.0	14.10	12.43	12.43	0.00	-1.66	1.08	1.07	1.07	0.00	-0.01
106	6b_18m	18	16.1	12.3	12.4	0.0	-3.7	14.05	12.40	12.40	0.00	-1.65	1.07	1.06	1.06	0.00	-0.01
107	6b_23m	23	15.4	11.9	11.9	0.0	-3.5	14.01	12.38	12.38	0.00	-1.64	1.07	1.06	1.06	0.00	-0.01
108	6b_33m	33	14.6	11.4	11.4	0.0	-3.2	13.97	12.35	12.35	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
109	6b_43m	43	14.2	11.1	11.1	0.0	-3.1	13.94	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
110	6b_53m	53	13.8	10.8	10.9	0.0	-3.0	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
111	6b_63m	63	13.6	10.7	10.7	0.0	-2.9	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
112	6b_73m	73	13.4	10.6	10.6	0.0	-2.9	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
113	6b_83m	83	13.3	10.5	10.5	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
114	6b_93m	93	13.2	10.4	10.4	0.0	-2.8	13.89	12.29	12.29	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
115	6b_103m	103	13.1	10.4	10.4	0.0	-2.8	13.89	12.29	12.29	0.00	-1.59	1.06	1.05	1.05	0.00	0.00
116	6b_128m	128	12.9	10.2	10.2	0.0	-2.7	13.88	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
117	6b_153m	153	12.8	10.2	10.2	0.0	-2.7	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
118	6b_178m	178	12.8	10.1	10.1	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
119	6b_203m	203	12.7	10.1	10.1	0.0	-2.6	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

Receptor 6aSW – A22 at Royal Ashdown Forest Golf Course

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup		Distance	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
ID	Road Link	From Road (m)	Base					Base					Base				
120	6aSW_0m	0	29.0	21.3	21.3	0.0	-7.7	14.73	12.87	12.88	0.00	-1.85	1.14	1.11	1.11	0.00	-0.03
121	6aSW_5m	5	21.6	16.2	16.2	0.0	-5.3	14.34	12.60	12.61	0.00	-1.73	1.10	1.09	1.09	0.00	-0.02
122	6aSW_10m	10	18.7	14.3	14.3	0.0	-4.4	14.19	12.50	12.50	0.00	-1.69	1.09	1.07	1.08	0.00	-0.01
123	6aSW_15m	15	17.2	13.2	13.2	0.0	-4.0	14.11	12.44	12.44	0.00	-1.66	1.08	1.07	1.07	0.00	-0.01
124	6aSW_20m	20	16.3	12.6	12.6	0.0	-3.7	14.05	12.41	12.41	0.00	-1.65	1.07	1.07	1.07	0.00	-0.01
125	6aSW_30m	30	15.1	11.8	11.8	0.0	-3.3	13.99	12.36	12.37	0.00	-1.63	1.07	1.06	1.06	0.00	0.00
126	6aSW_40m	40	14.5	11.4	11.4	0.0	-3.1	13.96	12.34	12.34	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
127	6aSW_50m	50	14.1	11.1	11.1	0.0	-3.0	13.94	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
128	6aSW_60m	60	13.8	10.9	10.9	0.0	-2.9	13.92	12.31	12.31	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
129	6aSW_70m	70	13.6	10.7	10.7	0.0	-2.9	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
130	6aSW_80m	80	13.4	10.6	10.6	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
131	6aSW_90m	90	13.3	10.5	10.5	0.0	-2.8	13.89	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
132	6aSW_100m	100	13.2	10.5	10.5	0.0	-2.7	13.89	12.29	12.29	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
133	6aSW_125m	125	13.0	10.3	10.3	0.0	-2.7	13.88	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
134	6aSW_150m	150	12.9	10.2	10.2	0.0	-2.7	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
135	6aSW_175m	175	12.8	10.2	10.2	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
136	6aSW_200m	200	12.7	10.1	10.1	0.0	-2.6	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

Receptor 6aSE – A22 at Royal Ashdown Forest Golf Course

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup		Distance	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
ID	Road Link	From Road (m)	Base					Base					Base				
137	6aSE_0m	0	32.7	23.7	23.8	0.1	-8.8	14.91	13.00	13.00	0.01	-1.91	1.16	1.13	1.13	0.00	-0.03
138	6aSE_5m	5	23.8	17.7	17.8	0.1	-6.0	14.46	12.68	12.69	0.00	-1.77	1.11	1.09	1.09	0.00	-0.02
139	6aSE_10m	10	20.4	15.4	15.4	0.0	-5.0	14.28	12.56	12.56	0.00	-1.72	1.10	1.08	1.08	0.00	-0.01
140	6aSE_15m	15	18.6	14.2	14.2	0.0	-4.4	14.18	12.49	12.50	0.00	-1.69	1.09	1.07	1.07	0.00	-0.01
141	6aSE_20m	20	17.5	13.4	13.4	0.0	-4.1	14.12	12.45	12.45	0.00	-1.67	1.08	1.07	1.07	0.00	-0.01
142	6aSE_30m	30	16.2	12.5	12.5	0.0	-3.7	14.05	12.40	12.40	0.00	-1.65	1.07	1.07	1.07	0.00	-0.01
143	6aSE_40m	40	15.4	12.0	12.0	0.0	-3.4	14.01	12.38	12.38	0.00	-1.63	1.07	1.06	1.06	0.00	-0.01

144	6aSE_50m	50	15.0	11.7	11.7	0.0	-3.3	13.98	12.36	12.36	0.00	-1.62	1.07	1.06	1.06	0.00	0.00
145	6aSE_60m	60	14.6	11.4	11.4	0.0	-3.2	13.97	12.35	12.35	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
146	6aSE_70m	70	14.4	11.3	11.3	0.0	-3.1	13.95	12.34	12.34	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
147	6aSE_80m	80	14.2	11.1	11.1	0.0	-3.0	13.94	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
148	6aSE_90m	90	14.0	11.0	11.0	0.0	-3.0	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
149	6aSE_100m	100	13.9	10.9	10.9	0.0	-3.0	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
150	6aSE_125m	125	13.7	10.8	10.8	0.0	-2.9	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
151	6aSE_150m	150	13.5	10.7	10.7	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
152	6aSE_175m	175	13.4	10.6	10.6	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
153	6aSE_200m	200	13.3	10.5	10.5	0.0	-2.8	13.89	12.29	12.29	0.00	-1.60	1.06	1.05	1.05	0.00	0.00

Receptor 6aNE – A22 at Royal Ashdown Forest Golf Course

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup ID	Road Link	Distance From Road (m)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Base	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
154	6aNE_0m	0	28.2	20.7	20.8	0.1	-7.4	14.70	12.85	12.85	0.00	-1.84	1.14	1.11	1.11	0.00	-0.03
155	6aNE_5m	5	21.7	16.3	16.3	0.0	-5.3	14.36	12.62	12.62	0.00	-1.74	1.10	1.09	1.09	0.00	-0.02
156	6aNE_10m	10	18.9	14.4	14.4	0.0	-4.5	14.21	12.52	12.52	0.00	-1.69	1.09	1.08	1.08	0.00	-0.01
157	6aNE_15m	15	17.5	13.4	13.4	0.0	-4.0	14.13	12.46	12.46	0.00	-1.67	1.08	1.07	1.07	0.00	-0.01
158	6aNE_20m	20	16.5	12.7	12.8	0.0	-3.7	14.08	12.42	12.43	0.00	-1.65	1.08	1.07	1.07	0.00	-0.01
159	6aNE_30m	30	15.4	12.0	12.0	0.0	-3.4	14.02	12.38	12.38	0.00	-1.63	1.07	1.06	1.06	0.00	-0.01
160	6aNE_40m	40	14.7	11.5	11.5	0.0	-3.2	13.98	12.36	12.36	0.00	-1.62	1.07	1.06	1.06	0.00	0.00
161	6aNE_50m	50	14.3	11.2	11.2	0.0	-3.1	13.96	12.34	12.34	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
162	6aNE_60m	60	13.9	11.0	11.0	0.0	-3.0	13.94	12.33	12.33	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
163	6aNE_70m	70	13.7	10.8	10.8	0.0	-2.9	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
164	6aNE_80m	80	13.5	10.7	10.7	0.0	-2.8	13.92	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
165	6aNE_90m	90	13.4	10.6	10.6	0.0	-2.8	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
166	6aNE_100m	100	13.2	10.5	10.5	0.0	-2.7	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
167	6aNE_125m	125	13.0	10.3	10.3	0.0	-2.7	13.89	12.29	12.29	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
168	6aNE_150m	150	12.9	10.2	10.2	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
169	6aNE_175m	175	12.7	10.1	10.1	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
170	6aNE_200m	200	12.7	10.1	10.1	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

Receptor 33N – A22 at Wych Cross

			Annual Mean Nox Conc. (ug/m3)					Annual Mean N Dep (k N/ha/yr)					Annual Mean A Dep (keq/ha/yr)				
Lookup ID	Road Link	Distance From Road (m)	BL Baseline	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Baseline	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)	BL Baseline	DM (Base 2033)	DS (Scn1 2033)	Change (DS-DM)	Change (DS-BL)
171	33N_0m	0	22.9	17.1	17.0	0.0	-5.9	14.44	12.67	12.67	0.00	-1.77	1.11	1.09	1.09	0.00	-0.02
172	33N_5m	5	18.3	13.9	13.9	0.0	-4.4	14.19	12.50	12.50	0.00	-1.69	1.09	1.07	1.07	0.00	-0.01
173	33N_10m	10	16.4	12.6	12.6	0.0	-3.8	14.09	12.43	12.43	0.00	-1.66	1.08	1.07	1.07	0.00	-0.01
174	33N_15m	15	15.4	11.9	11.9	0.0	-3.5	14.03	12.39	12.39	0.00	-1.64	1.07	1.06	1.06	0.00	-0.01
175	33N_20m	20	14.7	11.4	11.4	0.0	-3.3	14.00	12.37	12.37	0.00	-1.63	1.07	1.06	1.06	0.00	-0.01
176	33N_30m	30	14.0	10.9	10.9	0.0	-3.0	13.95	12.34	12.34	0.00	-1.62	1.06	1.06	1.06	0.00	0.00
177	33N_40m	40	13.5	10.6	10.6	0.0	-2.9	13.93	12.32	12.32	0.00	-1.61	1.06	1.06	1.06	0.00	0.00
178	33N_50m	50	13.2	10.4	10.4	0.0	-2.8	13.91	12.31	12.31	0.00	-1.60	1.06	1.06	1.06	0.00	0.00
179	33N_60m	60	13.0	10.3	10.3	0.0	-2.8	13.90	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
180	33N_70m	70	12.9	10.2	10.2	0.0	-2.7	13.89	12.30	12.30	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
181	33N_80m	80	12.8	10.1	10.1	0.0	-2.7	13.89	12.29	12.29	0.00	-1.60	1.06	1.05	1.05	0.00	0.00
182	33N_90m	90	12.7	10.0	10.0	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

183	33N_100m	100	12.6	10.0	10.0	0.0	-2.6	13.88	12.29	12.29	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
184	33N_125m	125	12.5	9.9	9.9	0.0	-2.6	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
185	33N_150m	150	12.4	9.8	9.8	0.0	-2.5	13.87	12.28	12.28	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
186	33N_175m	175	12.3	9.8	9.8	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00
187	33N_200m	200	12.2	9.7	9.7	0.0	-2.5	13.86	12.27	12.27	0.00	-1.59	1.05	1.05	1.05	0.00	0.00

Appendix B. Extract from Caporn et al (2010)

Table 21 of Caporn et al (2010): Summary of relationships between long-term nitrogen deposition and species richness by habitat expressed as the amount of incremental N deposition (in kg N ha^{-1} yr^{-1}) associated with a reduction in species richness of one species along the survey gradient sites. Modelled relationship only applied over N deposition range in which survey sites occurred; where no sites were surveyed at a given N deposition level '-' is shown.

Survey/ Habitat/	Max. species richness	Habitat/ species critical load kg N ha^{-1} yr^{-1}	Increase in N deposition (in kg N ha^{-1} yr^{-1}) required to reduce measured species richness by 1 at different background long-term N deposition levels					
			5 kg N	10 kg N	15 kg N	20 kg N	25 kg N	30 kg N
Upland heath (TU 2009)								
Total species richness	42 spp.	10-20	0.4 kg	0.8 kg	1.3 kg	1.7 kg	2.0 kg	2.4 kg
Upland heath (MRS)*								
Total species richness	16 spp.	10-20	1.7 kg	2.0 kg	2.5 kg	3.3 kg	5.0 kg	20.0 kg
Lowland heath (TU 2009)								
Total species richness	37 spp.	10-20	0.4 kg	0.8 kg	1.3 kg	1.7 kg	2.0 kg	2.4 kg
Bog (TU 2009)								
Total species richness	32 spp.	5-10	3.3 kg					
Sand dunes (TU 2009, all sites)								
Total species richness	77 spp.	8-15	0.1 kg	0.5 kg	1.1 kg	2.0 kg	-	-
Sand dunes TU 2009 (pH ≥6.5)								
Total species richness	77 spp.	8-15	0.3 kg	0.6 kg	0.9 kg	1.3 kg	-	-
Sand dunes TU 2009 + 2002 (Fixed dune grasslands)								
Total species richness	77 spp.	8-15	0.3 kg	0.6 kg	0.9 kg	1.3 kg	-	-
Acid grasslands (BEGIN)								
Total species richness	42 spp.	10-15	1.7 kg	1.7 kg	2.0 kg	2.0 kg	2.5 kg	2.5 kg

*in the upland heath MRS survey quadrat size was 0.5 x 0.5 m. This produced different results than the other surveys which used 2 x 2 m quadrats.

Appendix C. Existing or Proposed Sustainable Transport Policies

Core Policy 13 – Sustainable Travel

The local planning authority will promote and support development that encourages travel by walking, cycling and public transport, and reduces the proportion of journeys made by car, in order to help achieve a rebalancing of transport in favour of sustainable modes by:

1. **Ensuring that new development is located in sustainable locations with good access to schools, shops, jobs and other key services by walking, cycling and public transport in order to reduce the need to travel by car (unless there is an overriding need for the development in a less accessible location).**

2. **Ensuring that the design and layout of new development prioritises the needs of pedestrians, cyclists and users of public transport over ease of access by the motorist.**

3. **Ensuring that new residential developments are designed to achieve speeds of 20 mph or less.**

4. **Ensuring that new development minimises the need to travel and incorporates appropriate measures to mitigate for any transport impacts which may arise from that development.**

5. **Requiring new development to provide for an appropriate level of cycle and car parking in accordance with parking guidance approved by the local planning authority.**

6. **Requiring development which generates a significant demand for travel, and/or is likely to have other transport implications to:**

   i. **Be supported by a Transport Assessment/Transport Statement and sustainable Travel Plan, where appropriate;**

ii. Contribute to improved sustainable transport infrastructure, including the provision of safe and reliable sustainable transport modes; and
iii. Provide facilities and measures to support sustainable travel modes.

The local planning authority will work with East Sussex County Council and other relevant agencies to encourage and support measures that promote improved accessibility, create safer roads, reduce the environmental impact of traffic movements, enhance the pedestrian environment, or facilitate highway improvements. In particular, the local planning authority will:

a. Support the expansion and improvement of public transport services, particularly those providing links between the rural and urban areas;
b. Encourage improvements to existing rail services, new or enhanced connections or interchanges between bus and rail services, and improvements to the quality and quantity of car and cycle parking at railway stations; and
c. Support the development of a network of high quality walking and cycling routes throughout the district.

South Downs Local Plan Policy SD19: Transport and Accessibility (not yet adopted)

1. Development proposals will be permitted provided that they are located and designed to minimise the need to travel or promote the use of sustainable modes of transport.

2. Development proposals that are likely to generate a significant number of journeys, especially of vehicles, must be located near existing town and village centres, public transport routes, the cycle network and main roads. Such developments will be required to provide a transport assessment or transport statement.

3. Development proposals must demonstrate the continued safe and efficient operation of the strategic and local road networks.

4. The following improvements to public transport infrastructure will be supported:

a) Public transport waiting facilities, particularly those with reliable and accessible information;

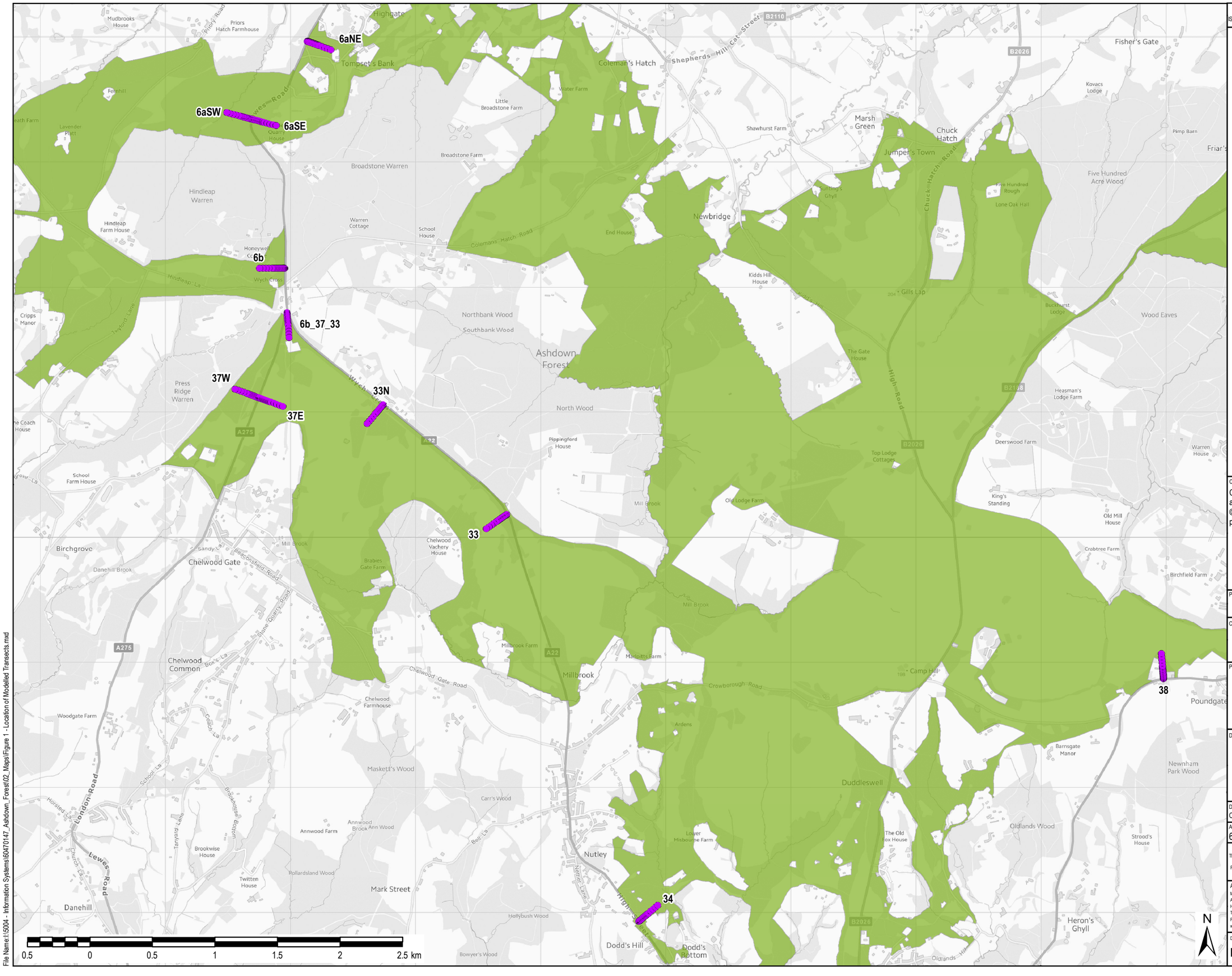
b) Infrastructure supporting the transfer of freight from road to rail and water;

c) Improvements to walking, cycling and bus connectivity at all transport interchanges;

d) Improvements to the quality and provision of cycle parking at railway stations and key bus stops.

5. In town and village centres, development will be permitted which appropriately provides for improved footways and cycle routes, cycle parking, and measures to restrict the impact of heavy goods vehicles and other traffic on historic streets.

6. Development proposals for powered aircraft landing or operation sites, or the expansion or intensification of such uses, will be refused. If exceptional circumstances exist which indicate that such development proposals are necessary, these will only be permitted where the impacts on both the special qualities, and on local amenity, can be fully mitigated.



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- Modelled Receptor
- Ashdown Forest Special Area of Conservation (SAC)

Purpose of Issue
FINAL

Client
SOUTH DOWNS NATIONAL PARK AUTHORITY AND LEWES DISTRICT COUNCIL

Project Title
AIR QUALITY ASSESSMENT FOR ASHDOWN FOREST SAC

Drawing Title
LOCATIONS OF MODELLED TRANSECTS

Drawn	Checked	Approved	Date
CN	JW	JR	13/09/2017

AECOM Internal Project No.	Scale @ A3
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Drawing Number
FIGURE 1

Rev
01

File Name:I:\5004 - Information Systems\60470147_Ashdown_Forest\02_Maps\Figure 1 - Location of Modelled Transects.mxd

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AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 100,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

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