# South Downs National Park Local Plan

## Habitats Regulation Assessment Regulation 19

South Downs National Park Authority

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## Quality information

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# 1. Introduction

1.1 South Downs National Park Authority (SDNPA) is preparing a new Local Plan. AECOM undertook an HRA of the adopted SDLP in 2018. The new South Downs Local Plan (LP) will set out the spatial vision, objectives, levels and types of growth, and strategic and development management policies. It will also identify infrastructure requirements and allocate sites for development in the period up to 2042.

1.2 AECOM was appointed to undertake the Habitats Regulations Assessment (HRA) report for the Regulation 18 consultation. That report has now been comprehensively updated as necessary for the Regulation 19 publication, taking account of amended or new allocations and relevant comments on the HRA received at Regulation 18. The Regulation 19 HRA also removes the issue of water neutrality regarding the Arun Valley SAC/Ramsar site, as this issue has since been resolved and water neutrality for new development in the Sussex North Water Resource Zone is no longer required.

1.3 The SDLP is a strategy document that will provide a positive vision for the future of the South Downs National Park. It will include a framework for addressing identified development needs and environmental and social priorities, to make sure future development provides the right kind of jobs, homes and infrastructure in the best and most sustainable locations.

1.4 SDNPA is a Competent Authority as defined in Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended). Regulation 105 states that '*A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which… is likely to have a significant effect on a European site* [a Special Area of Conservation, Special Protection Area or, as a matter of Government policy, a Ramsar site] *or a European offshore marine site (either alone or in combination with other plans or projects) …must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives'*.

1.5 There is no 'one size fits all' guidance regarding Zones of Influence (ZoIs) around Habitats Sites. The ZoIs of some impact pathways (e.g. loss of functionally linked habitat, water quality and water quantity, level and flow) can extend beyond 10km. For example, potential water quality impacts via the discharge of treated sewage effluent and/or surface runoff depend on the presence of hydrological linkages to environmental receptors and are typically assessed on a catchment scale. AECOM has therefore been led by identified impact pathways and their zone of influence rather than an arbitrary distance.

# 2. HRA Law and Methodology

## Legal Context

2.1 The UK left the European Union (EU) on 31 January 2020 under the terms set out in the EU (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). However, the Withdrawal Act retains the body of existing EU-derived law within our domestic law. Therefore, the requirement for HRA continues as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[1], unless this is changed by future legislation. It is to be noted that there are current government plans to change the Habitats Regulations although how they may change is currently unclear. Similarly, although EU case law is currently still considered of relevance in UK courts, that position may change during preparation and implementation of the SDLP.

2.2 The need for Appropriate Assessment (AA, Figure 1) is set out in the Conservation of Habitats and Species Regulations 2017 (as amended). The HRA process applies the 'Precautionary Principle'[2] to Habitats Sites (also known as European sites and covering Special Areas of Conservation, Special Protection Areas and Ramsar sites). Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the Habitats Site(s) in question. Plans and projects that are associated with potential adverse impacts on the integrity of Habitats Sites may still be permitted if there are no reasonable alternatives and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

**Figure 1: The legislative basis for Appropriate Assessment (AA).**

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

The Regulations state that:

"*A competent authority, before deciding to … give any consent, permission or other authorisation for a plan or project which… is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects) … must make an appropriate assessment of the implications for that site in view of that site's conservation objectives … The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site* ".

2.3 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Regulations from

[1] These do not act as a replacement for the 2017 Regulations but are another set of amendments.
[2] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm* [to the environment] *that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".*

screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'.

2.4 In spring 2018, the 'Sweetman' European Court of Justice ruling[3] clarified that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce a harmful effect on a Habitats Site that would otherwise arise) should **not** be taken into account when forming a view on Likely Significant Effects (LSEs). Mitigation should instead only be considered at the AA stage.

# HRA Methodology

2.5 This HRA has been carried out with reference to the general EC guidance on HRA[4]; the UK government also produced its own guidance in 2021[5].

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

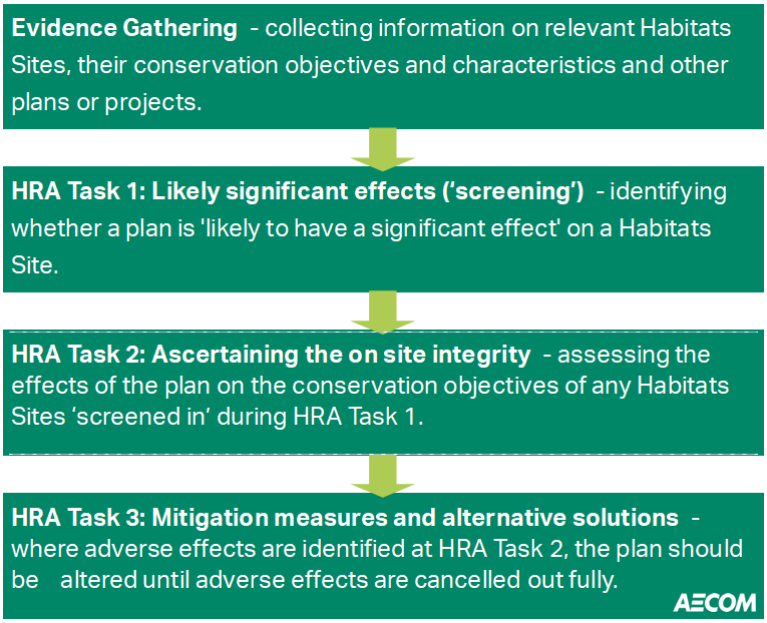


**Figure 2. Four-Stage Approach to Habitats Regulations Assessment.**

# Description of HRA Tasks

## HRA Task 1 – Likely Significant Effects (LSEs) Screening

2.7 Following evidence gathering and scoping (this stage), the first formal stage of any HRA is a Likely Significant Effects (LSEs) Screening. This is a brief, high-level assessment to decide whether the full subsequent stage known as AA is required. The essential question is: "*Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon Habitats sites?*"

[3] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)
[4] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[5] https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

2.8 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in significant adverse effects upon Habitats Sites. This is usually because there is no mechanism for an adverse interaction.

2.9 The LSEs Screening is based on the identification of the Source of impact, the Pathway of that impact to Receptors and then confirmation of the specific European Site receptors. These are normally designated features but also include habitats and species fundamental to those designated features, achieving favourable conservation status (notably functionally linked land outside the European site boundary).

2.10 In the Waddenzee case[6], the CJEU ruled on the interpretation of Article 6(3) of the Habitats Directive, including that:

- An effect should be considered 'likely', "*if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site*" (para 44);
- An effect should be considered 'significant', "*if it undermines the conservation objectives"* (para 48); and
- Where a plan or project has an effect on a site "*but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned*" (para 47).

2.11 The LSEs Screening consists of two parts: It determines whether there are any policies in the plan that could result in negative impact pathways and any Habitats sites that are sensitive to these impact pathways lie within the ZoI of the authority boundary.

2.12 Note that in line with the aforementioned 2018 case law, the conclusion of 'no LSEs' must not take account of any measures specifically introduced to avoid or reduce harm to Habitats Sites. Embedded measures (i.e. those that are integral to the plan itself or are otherwise required by law irrespective of the presence of Habitats sites) can be considered at this stage, but other types of mitigation must be deferred to the AA.

2.13 LSEs Screening must generally follow the Precautionary Principle as its main purpose is to determine whether the subsequent stage of AA (i.e. a more detailed assessment of impact pathways) is required.

## HRA Task 2 – Appropriate Assessment (AA)

2.14 Where it is determined that a conclusion of 'no Likely Significant Effect' cannot be drawn, the analysis must proceed to the next stage of HRA known as Appropriate Assessment (AA). Case law has clarified that 'Appropriate Assessment' is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to AA rather than the LSE screening. AA refers to whatever level of assessment is appropriate to form a conclusion regarding effects on the integrity (coherence of structure and function) of Habitats Sites in light of their conservation objectives.

[6] Case C-127/02

2.15 There is a clear implication that the analysis in an AA should be more detailed than that undertaken at the previous stage. One of the key considerations during AA is whether there is available mitigation that would entirely address the potential effect. In practice, the AA would take any policies or allocations that could not be dismissed following the high-level Likely Significant Effects Test analysis and assess the potential for an effect in more detail. The purpose would be to conclude whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the Habitats Site(s)).

2.16 In 2018 the Holohan ruling[7] was handed down by the European Court of Justice. This included paragraph 39 which stated that 'As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, … typical habitats or species must be included in the AA, if they are necessary to the conservation of the habitat types and species listed for the protected area' [emphasis added].

2.17 Where necessary, measures will be recommended for incorporation into the emerging Local Plan in order to avoid or mitigate adverse effects on Habitats sites. There is considerable precedent, both nationally and locally, concerning the level of detail that a Plan document needs to contain regarding mitigation for recreational impacts on Habitats Sites, for example. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Local Plan, but the Local Plan must provide an adequate policy framework within which these measures can be delivered.

2.18 In evaluating significance, AECOM have relied on professional judgement as well as the results of bespoke studies, supported by appropriate evidence/data, and previous stakeholder consultation regarding development impacts on the Habitats sites considered within this assessment.

**Mitigation**

2.19 Once the AA was completed, there was a requirement identified for mitigation. For a Local Plan, this generally consists of amendments to policy wording of the Local Plan, or the identification of strategic mitigation solutions for smaller sites unlikely to be able to deliver their own mitigation. The purpose is to ensure an adequate framework exists to protect Habitats Sites from any identified adverse effects.

2.20 For example, for Habitats Sites at which recreational pressure is a concern, mitigation is often achieved through creating a Strategic Access Management & Monitoring (SAMM) Strategy. This may be accompanied by the provision of Suitable Alternative Natural Greenspace (SANG), provided either by individual large developments to 'consume their own smoke' or strategically by the local authority to cater to those developments too small to deliver their own SANG.

2.21 The Department for Levelling Up, Housing & Communities (DLUHC) and Ministry of Housing, Communities and Local Government (MHCLG) guidance[8]

[7] Case C-461/17
[8] Department for Levelling up, housing and communities 2019. Guidance on Appropriate assessment https://www.gov.uk/government/organisations/department-for-levelling-up-housing-and-communities https://www.gov.uk/guidance/appropriate-assessment

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:

- "*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."*
- The Court of Appeal[9] ruled that providing the Council (competent authority) was duly satisfied that the proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Local Plan)[10]. In that case the High Court ruled that for '*a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Regulation 102 of the Habitats Regulations'.*

2.22 In other words, there is an acceptance that AA can be tiered and that all impacts are not necessarily appropriate for consideration to the same degree of detail at all tiers. The fullest level of detail is required at the reserved matters or full planning application stage.

2.23 Similarly, in any Local Plan, there are numerous policies for which there is a limit to the degree of assessment that is possible at the plan level. This is because either:

- The policy in question does not contain any specifics as to what will be delivered so it literally cannot be assessed in detail at the plan level. In these cases, the AA would focus on precautionary mitigation that can be included in the plan to ensure that whatever proposals come forward will not result in adverse effects on integrity; or
- The nature of the potential impacts (notably lighting, noise and visual disturbance during construction, or loss of functionally-linked land) is very closely related to exactly how the development will be designed and constructed or require detailed development site-specific bird survey data. They therefore cannot be assessed in detail at the plan level. In these instances, the AA focuses on the available mitigation measures, the extent to which such measures would be achievable and effective and whether an adequate protective framework exists to ensure that the policy would not

[9] No Adastral New Town Ltd (NANT) v Suffolk Coastal Metropolitan Borough Council Court of Appeal, 17th February 2015
[10] High Court case of R (Devon Wildlife Trust) v Teignbridge Metropolitan Borough Council, 28 July 2015

lead to an adverse effect on the integrity of any internationally designated sites.

2.24 On these occasions the advice of Advocate-General Kokott[11] is worth considering. She commented that: *'It would …hardly be proper to require a greater level of detail in preceding plans* [rather than planning applications] *or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure* ***to the extent possible on the basis of the precision of the plan****.* ***This assessment is to be updated with increasing specificity in subsequent stages of the procedure'*** [emphasis added]. This is the approach taken in the HRA and is in line with the Department for Levelling Up Housing and Communities guidance referenced in paragraph 4.27, and Court rulings that regarding the level of detail of the assessment which is appropriate at each stage of the planning process.

## Assessment 'in combination'

2.25 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question. In practice, 'in combination assessment' is of greatest importance when the policy would otherwise be screened out because the individual contribution is not significant. When undertaking an in-combination assessment for specific development sites, it is essential to avoid double-counting since many housing and employment projects that deliver growth will usually already be allocated in the Local Plan. In these instances, the development of a planning application essentially provides further detail on those aspects of Local Plan growth rather than presenting a new project.

2.26 Similarly, where growth is being delivered within surrounding authorities, this is captured in the 'in combination' assessment through consideration of the relevant Local Plan that sets out the total amount of growth that will be delivered across that authority during its plan period, based on currently adopted Local Plans.

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

# 3. Habitats Sites

3.1 In the case of the South Downs National Park, the Habitats sites being considered are based upon a combination of tracing impact pathways and using distances derived from various studies, as was decided in the HRA of the adopted Local Plan but updated where more recent evidence exists. The Habitats sites of relevance to HRA are shown in Table 3–1. These sites lie wholly or partly within the South Downs National Park or within the surrounding sphere of influence. Habitats Sites are listed alphabetically.

**Table 3–1: Relevant Habitats Sites and their location in relation to the South Downs National Park (SDNP) boundary.**

| Internationally Designated Site | Location |
|---|---|
| Arun Valley SAC/SPA/Ramsar | Within SDNP |
| Ashdown Forest SAC and SPA[12] | Approx. 13km north of SDNP |
| Butser Hill SAC | Within SDNP |
| Castle Hill SAC | Within SDNP |
| Chichester and Langstone Harbours SPA / Ramsar | Approx. 1.7km south of SDNP |
| Duncton to Bignor Escarpment SAC | Within SDNP |
| Dungeness, Romney Marsh and Rye Bay SPA | Approx. 11.5 km east of SDNP |
| East Hampshire Hangers SAC | Within SDNP |
| Ebernoe Common SAC | Within SDNP |
| Emer Bog SAC | Approx. 6.6km to the west of SDNP |
| Kingley Vale SAC | Within SDNP |
| Lewes Downs SAC | Within SDNP |
| The Mens SAC | Within SDNP |
| Pagham Harbour SPA and Ramsar | Approx. 8.5km south of SDNP |
| Pevensey Levels SAC and Ramsar | Approx. 3.2km north-east of SDNP |
| Portsmouth Harbour SPA / Ramsar | Approx. 5km south of SDNP |
| River Itchen SAC | Within the SDNP |
| Rook Clift SAC | Within SDNP |
| Shortheath Common SAC | Within SDNP |
| Singleton and Cocking Tunnels SAC | Within SDNP |
| Solent and Dorset Coast SPA | Approx. 4.3km south of SDNP |
| Solent & Southampton Water SPA / Ramsar | Approx. 13km to the south-west of SDNP |
| Solent Maritime SAC | Approx. 1.7km south of SDNP |
| Thames Basin Heaths SPA | Approx. 4.9km to the north of SDNP |
| Thursley, Hankley & Frensham Commons SPA | Approx. 2.2km to the north of SDNP |
| Thursley, Ash, Pirbright & Chobham SAC | Approx. 2.2km to the north of SDNP |
| Thursley & Ockley Bogs Ramsar | Approx. 7.9km to the north of SDNP |

[12] This Habitats site lies beyond the normally used impact pathway distances but has been included in the scope of the HRA as it was covered in the HRA of the adopted Local Plan

| | |
|---|---|
| Wealden Heaths Phase II SPA | Within SDNP |
| Woolmer Forest SAC | Within SDNP |

3.2 The locations of the Habitats Sites identified in Table 3–1 are illustrated in Appendix A, Figure A1 and further information on their qualifying features is provided in Appendix B.

3.3 Emer Bog SAC is located 6.7km from the South Downs National Park Authority boundary. Due to the nature of the bog habitats present, it is sensitive to changes in hydrology. However, the River Itchen separates the South Downs National Park Authority area from the catchment area of Emer Bog SAC, and as such, there is no hydrological connection between the SAC and the SDNP boundary. As such, Emer Bog SAC is not discussed further.

3.4 At its closest, the Solent and Isle of Wight Lagoons SAC is located 7.8km in a straight line from the South Downs National Park Authority boundary. The site is vulnerable to changes in salinity. However, the South Downs National Park Authority Local Plan is unlikely to contain any impact pathways that could result in changes. As such, the Solent and Isle of Wight Lagoons SAC is not discussed further.

3.5 At its closest, the Dungeness, Romney Marshes and Rye Bay SPA is located 17.7 km from the closest allocation. The qualifying species for which the site is designated are unlikely to forage at this distance in numbers that would adversely affect the conservation status of the species, based on unpublished guidance from Natural England. While lapwing (an assemblage species) may forage more than 10km inland from their SPAs, guidance states that developments affecting functionally-linked land more than 10km from the site are unlikely to impact significantly on designated populations. Therefore, there are no linking impact pathways to the Dungeness, Romney Marshes and Rye Bay SPA and as such is not discussed further.

# 4. Relevant Impact Pathways

## Recreational Pressure

4.1 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfil conservation objectives while also providing recreational opportunities. Various research reports have provided compelling links between changes in housing and access levels[13], and impacts on Habitats Sites[14] [15]. This applies to any habitat, but recreational pressure from housing growth is of particular significance for Habitats Sites. Different Habitats Sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects of recreation can be complex. HRAs of planning documents tend to focus on recreational sources of disturbance due to new residents[16]. Housing developments within the Local Plan will need to strongly consider their impact on Emerald Network sites.

## Trampling Damage, Nutrient Enrichment and Wildfires

4.2 Most terrestrial habitats (especially heathland, woodland and dune systems) can be affected by trampling and other mechanical damage. This dislodges individual plants, leading to soil compaction and erosion. The following studies have assessed the impact of trampling associated with different recreational activities in different habitats:

- Wilson & Seney)[17] examined the degree of track erosion caused by hikers, motorcyclists, horse riders and cyclists in 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[18] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each trampled 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 morphology (structure) was found to explain more variation in response than soil and topographic

[13] Weitowitz D.C., Panter C., Hoskin R. & Liley D. (2019). The effect of urban development on visitor numbers to nearby protected nature conservation sites. *Journal of Urban Ecology* **5**. https://doi.org/10.1093/jue/juz019
[14] Liley D, Clarke R.T., Mallord J.W., Bullock J.M. (2006a). The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.
[15] Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. (2006b). Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.
[16] The RTPI report 'Planning for an Ageing Population' (2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.
[17] 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
[18] 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

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. The cover of hemicryptophytes (plants with buds at or near the soil surface) and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year. These were therefore 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[19] conducted a follow-up study (across four vegetation types) in which shoe type (trainers or walking boots) and trampling weight were varied. Although immediate damage was greater with walking boots, no significant difference was observed after one year. Heavier tramplers caused a greater reduction in vegetation height than lighter tramplers, but there was no differential impact on vegetation cover.
- Cole & Spildie[20] experimentally compared the effects of off-track trampling by hikers and horse riders (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered the greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.

4.3 A major concern for nutrient-poor terrestrial habitats (e.g. heathlands, sand dunes, bogs and fens) is nutrient enrichment associated with dog fouling (addressed in various reviews[21]). It is estimated that dogs will defecate within 10 minutes of starting a walk, and therefore most nutrient enrichment arising from dog faeces will occur within 400m of a site entrance. In contrast, dogs will urinate at frequent intervals during a walk, resulting in a more spread-out distribution of urine. For example, in Burnham Beeches National Nature Reserve, it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually[22]. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of the main components[23]. Nutrient availability is the major determinant of plant community composition, and the effect of dog defecation in sensitive habitats is comparable to a high-level application of fertiliser, potentially resulting in a shift towards plant communities that are more typical of improved grasslands.

## Bird Disturbance

4.4 Human activity can affect birds either directly (e.g. by eliciting flight responses) or indirectly (e.g. by damaging habitat or reducing bird fitness in less obvious ways such as through inducing stress responses). The most obvious direct

[19] 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.
[20] 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
[21] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[22] 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.
[23] Taylor K., Anderson P., Liley D. & Underhill-Day J.C. (2006). Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.

effect is that of immediate mortality, such as death by shooting. Human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub-optimal areas, etc.) and physiological changes (e.g. an increase in heart rate). While such changes are less noticeable, they may result in significant population-level changes by altering the balance between immigration / birth, and emigration / death[24].

4.5 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily, and the time spent responding to disturbance is time that is not spent feeding[25]. Disturbance therefore increases energetic expenditure while reducing energetic intake, which can adversely affect the 'condition' and ultimately survival of birds. Additionally, displacement of birds from one feeding site to another can increase the pressure on the resources available within alternative foraging sites, which must sustain a greater number of birds[26]. Moreover, the higher proportion of time a breeding bird spends away from its nest, the more likely it is that eggs will cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar[27] [28].

4.6 Several factors (e.g. seasonality, type of recreational activity) may have pronounced impacts on the nature of bird disturbance. Disturbance in winter may be more impactful because food shortages make birds more vulnerable at this time of the year. In contrast, this may be counterbalanced by fewer recreational users in the winter months and lower overall sensitivity of birds outside the breeding season. Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance compared to hiking[29]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[30]. Furthermore, differences in on-site route lengths and usage patterns likely imply that key spatial and temporal parameters (such as the area of a site potentially impacted and the frequency of disturbance) will also differ between recreational activities. This suggests that activity type is a factor that ought to be taken into account in HRAs.

## Summary

4.7 Several Habitats sites relevant to the South Downs National Park are designated for habitats and species that are sensitive to recreational pressure. A growth in the local population will lead to an increased demand for access to outdoor areas and recreational greenspaces, especially Habitats Sites. Of

[24] Riley, J. (2003). Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[25] Riddington, R. *et al*. (1996). The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* **43**:269-279.
[26] Gill, J.A., Sutherland, W.J. & Norris, K. (1998). The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* **12**: 67-72.
[27] Clarke R.T., Liley D., Sharp J.M., Green R.E. (2013). Building development and roads: Implications for the distribution of stone curlews across the Brecks. *PLOS ONE*. https://doi:10.1371/journal.pone.0072984.
[28] Liley D. & Clarke R.T. (2003). The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. Biological Conservation **114**: 219-230.
[29] Banks P.B., Bryant J.Y. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.
[30] Miller S.G., Knight R.L., Miller C.K. (2001). Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* **29**: 124-132.

particular relevance to the HRA, a series of Habitats sites (those where recreational pressure has been identified as the greatest concern due to a combination of sensitivity and development pressure) have been subject to specific visitor surveys, which have led to the identification of a series of recreational catchments. These are:

- The Solent Habitats sites as a group – core recreational catchment 5.6km based on studies undertaken by Footprint Ecology;
- Pagham Harbour SPA/Ramsar - core recreational catchment 3.5km based on studies undertaken by Chichester District Council;
- Ashdown Forest SAC/SPA – core recreational catchment 7km based on studies undertaken by Footprint Ecology. This is the largest visitor catchment identified for sites within or around the SDNP and is a reflection of the role of Ashdown Forest as a regional draw, although it should be noted excluding tourists, 78% of visitors to the SAC/SPA live in Wealden or Mid-Sussex and the majority of frequent (at least weekly) visitors live in Crowborough, East Grinstead and Uckfield;
- Wealden Heaths Phase 2 SPA/Woolmer Forest SAC/Shortheath Common SAC – core recreational catchment 5km based on studies undertaken by Footprint Ecology and AECOM;
- Thursley, Hankley & Frensham Commons SPA/ Thursley, Ash, Pirbright & Chobham SAC – core recreational catchment 5km based on studies by UE Associates;
- Thames Basin Heaths SPA – core recreational catchment 5km based on numerous studies over many years by Footprint Ecology, EPR and others.

4.8 A number of sites may be sensitive to excessive recreational pressure but have no specific recreational catchment defined based upon a bespoke visitor survey of that site. This usually reflects lesser concern over recreational pressure due (for example) to expected low levels of net new housing around the sites. Based on the studies above, an indicative recreational catchment of 5km has been used for these sites.

4.9 Overall, the following Habitats sites are sensitive to increased recreational footfall and, therefore, could be negatively impacted by residential development, although the sites identified above will be the primary focus for the assessment, depending on the focus of new residential development in the National Park:

- Arun Valley SAC/SPA/Ramsar
- Ashdown Forest SAC and SPA
- Butser Hill SAC
- Castle Hill SAC
- Chichester and Langstone Harbours SPA and Ramsar
- Duncton to Bignor Escarpment SAC
- East Hampshire Hangers SAC
- Ebernoe Common SAC
- Kingley Vale SAC
- Lewes Downs SAC

- The Mens SAC
- Pagham Harbour SPA and Ramsar
- Rook Clift SAC
- Shortheath Common SAC
- Singleton and Cocking Tunnels SAC
- Thames Basin Heaths SPA
- Thursley, Hankley & Frensham Commons SPA
- Thursley, Ash, Pirbright & Chobham SAC
- Wealden Heaths Phase II SPA
- Woolmer Forest SAC

# Urbanisation

4.10 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 the close proximity of large-scale urban development. The list of urbanisation impacts can be extensive, but core impacts can be singled out:

- Increased fly-tipping: Rubbish tipping is unsightly, but the principal 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[31]. Alien species may also be introduced deliberately or inadvertently, such as through bird-sown seeds 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 Habitats sites over recent years. Monitoring has not always been carried out uniformly; however, site managers logged two incidents of fire on Shortheath Common in 2010, with none reported 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. A large proportion of domestic cats are found in urban situations, and increasing urbanisation is likely to lead to increased cat predation.

4.11 The impact of general urbanisation, of course, also involves recreational pressure. However, the recreational pressure impact pathway arises from a

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

potentially much wider catchment than 400m and thus has been discussed separately above.

4.12 The most detailed consideration of the link between the relative proximity of development to Habitat Sites and damage to interest features has been carried out with regard to the Thames Basin Heaths SPA and the Dorset Heathlands SAC/ SPA/ Ramsar site. For example, in relation to the Dorset Heathland sites, Natural England and its partners produced a Supplementary Planning Document (SPD)[32] which sets out a framework for accommodating development while also protecting the interest features of the heathland sites. This included the implementation of a series of zones within which varying constraints would be placed upon development.

4.13 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 Habitats Site), that concerning other aspects of urbanisation (predation of the chicks of ground-nesting birds by domestic cats, recreational pressure that cannot be readily diverted, fly tipping, increased incidence of fires and general urbanisation) was identified at 400m from the site boundaries. The SPD concluded that the adverse effects of residential development located within 400m of the SPA boundary could not be adequately mitigated, in part because this was the range within which cats could be expected to roam routinely, and there was no realistic way of restricting their movements. Setting a 400m housing exclusion zone surrounding heathland sites is, therefore, the principal means through which urbanisation effects are addressed.

4.14 In relation to the Thames Basin Heath SPA, after extensive research, in 2009, Natural England and its partners produced the 'Thames Basin Heaths Special Protection Delivery Framework'[33] which made recommendations for accommodating development while also protecting the interest features of the Habitats 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.

4.15 No exact correlation can be made between the incidence of fly-tipping and deliberate arson and the specific proximity of large-scale human settlements, 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 are 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.

[32] https://www.dorsetforyou.gov.uk/planning-buildings-land/planning-policy/joint-planning-policy-work/pdfs/heathlands/dorset-heathlands-planning-framework-supplementary-planning-document-2015-2020.pdf [accessed 20/11/2018]
[33] Available at Thames Basin Heaths SPA Delivery Framework (bracknell-forest.gov.uk) [Accessed 02/10/2024]

4.16 Overall, the available baseline information suggests the following Habitats Sites within the South Downs National Park are sensitive to urbanisation if residential development is located within 400m:

- Wealden Heaths Phase II SPA/Woolmer Forest SAC
- Shortheath Common SAC.

# Loss of Functionally Linked Habitat

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

4.18 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the integrity of qualifying populations lie outside the physical limits of Habitats Sites. Despite not being part of the formal designation, these habitats are integral to the maintenance of the structure and function of the designated site, for example, by encompassing important foraging grounds. Therefore, land use plans that may affect such functionally linked habitats require further assessment.

4.19 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land[34]. For example, bird surveys in relation to a previous HRA established that approximately 25% of the golden plover population in the Somerset Levels and Moors SPA were affected while on functionally linked land, and this required the inclusion of mitigation measures in the relevant plan policy wording. Another important case study originates from the Mersey Estuary SPA / Ramsar, where adjacently located functionally linked land had a peak survey count of 108% of the 5-year mean peak population of golden plover. This finding led to considerable amendments in the planning proposal to ensure that the site integrity was not adversely affected.

4.20 Generally, the identification of an area of habitat as functionally linked is not always a straightforward process. The importance of non-designated land parcels may not be immediately apparent and thus may require the analysis of existing data sources (e.g., Bird Atlases or data from record centres) to be firmly established. In some instances, data may not be available, requiring additional survey work.

## Arun Valley SPA and Ramsar

4.21 The Arun Valley SPA and Ramsar site is located within the SDNP boundary. Over winter the Arun Valley supports 115 Bewick's swans, representing approximately 1.6% of Britain's migratory population[35]. The Bewick's swan is a highly migratory bird species that spends summer in Russia. However, during the autumn months these swans migrate to northern Europe where

[34] Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. *Natural England Commissioned Reports* 207. 73p
[35] JNCC (2001) SPA Description: Arun Valley (www.jncc.defra.gov.uk)

they feed upon a diet of grasses, sedges and aquatic plants. The Arun Valley consists of mixed wet grasslands that provides optimal over wintering habitat for these species. In addition, much of the wider surrounding area of Arun consists of floodplain grazing marsh due to the periodic flooding of the River Arun; also supporting suitable over wintering grounds. The Bewick's swan has seen recent declines of 27% from 1995 to 2005[36] with national trends indicating continual declines. Preservation of significant habitat for Bewick's swan, whether it occurs within or outside the SPA and Ramsar site boundary is therefore essential.

4.22 The Arun Valley SPA and Ramsar site is designated for its wintering population of Bewick's swan. Bewick's swans will fly up to 10km from their roost sites to feed. However, it is widely accepted[37] that Bewick's swans frequently feed on suitable farmland up to 5km from the designated site and this matches unpublished Natural England guidance on Impact Risk Zones which identifies that the type of development allocation in Local Plans (notably residential) will generally only significantly affect the species within 5km of the sites for which it is designated. 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 Horsham Local Plan HRA goes a little further and notes that review of the underlying SSSI Impact Risk Zones online indicates that Impact Risk Zone 2 extends to about 6.5km from the SPA / Ramsar.

4.23 Bewick's swan feed during the day on pastures within the SPA or at a range of sites to the south of the SPA, between Arundel and Amberley. Natural England have identified that much of the functionally linked land is located within a designated Important Bird Area (which includes Ramsar sites and SPA sites). The species of waterfowl that contribute to the designated bird assemblage of the SPA are not identified by the SPA citation. The Supplementary Advice on the Conservation Objectives for the SPA states that in addition to Bewick swan key assemblage species comprise: wigeon, teal, shoveler, pintail, lapwing, ruff, black-tailed godwit and green sandpiper[38]. Most of these remaining avian features of the Arun Valley SPA and Ramsar site (pintail, ruff, shoveler, teal and widgeon), primarily frequent waterbodies such as lakes, and will be found foraging and roosting around these waterbodies rather than within arable parcels of land. Lapwing, black-tailed godwit and green sandpiper may use farmland. In broad terms if fields are suitable for foraging non-breeding Bewick's swan, they are also likely to be suitable for these other species.

## The Sussex Bat SAC Sites

4.24 Ebernoe Common SAC, The Mens SAC and Singleton and Cocking Tunnels SAC are designated for their populations of rare bats; Bechstein's and barbastelle. Bats are not expected to be confined to the boundaries of Habitats Sites and are anticipated to forage within the wider vicinity of their Core

[36] Rees, E.C. & Beekman, J. Submitted. Bewick's Swan: a population in decline. British Birds.
[37] 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, and from unpublished Natural England internal guidance it has been established that Bewick's Swan often use habitat up to 5km from the designated site for foraging in the winter months. As such 5km has been defined as a zone within which likely significant effects could result from loss of supporting habitat.
[38] European Site Conservation Objectives for Arun Valley SPA - UK9020281 (naturalengland.org.uk) [Accessed 04/10/2024]

Sustenance Zone (CSZ). For example, in a 2001 study, female adult Bechstein's bats regularly undertook commuting distances of up to 1km[39]. A second radio-tracking study in 2002 of Ebernoe Common SAC, showed that the maximum distance travelled by tagged individuals was 1,407m, with an average of 735.7m[40]. For Bechstein's it is reasonable to assume that the core foraging areas around the Ebernoe Common SAC and The Men's SAC, for which they are designated, are likely to be within c.1km of each site boundary.

4.25 Barbastelle bats are known to travel substantial distances from their roots to feeding sites. A study on barbastelle bats determined that home range distances show considerable inter-individual differences, with bats travelling between 1 and 20km to reach their foraging areas[41]. In 2016, the Bat Conservation Trust published guidelines on how to determine CSZs for bats and highlighted that barbastelles have a mean maximum CSZ of 6.47km[42].

4.26 As a precaution, Natural England and South Downs National Park Authority have since agreed a Sussex Bat Protocol[43], which identifies a maximum 12km zone around the Sussex Bat SAC sites (Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC) in which HRAs investigating habitat fragmentation are required. This is based on the furthest distance from the first two SACs at which foraging bats were radio-tracked. The protocol identifies two key impact zones surrounding the three bat SACs as follows:

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

4.27 The 6.5 km includes the key conservation area in which all impacts must be considered as habitats within this zone are considered critical for sustaining the populations of bats within the SACs. All three of the Sussex Bat SAC sites are located within the SDNP boundary.

4.28 Therefore, the following Habitats Sites are taken forward into the following chapters regarding impacts on functionally linked land:

- Arun Valley SPA/Ramsar
- The Sussex Bat SAC sites: Ebernoe Common SAC, The Mens SAC, and Singleton and Cocking Tunnels SAC

# Atmospheric Pollution

4.29 The main pollutants of concern for Habitats Sites are oxides of nitrogen (NOx), ammonia ($NH_3$) and sulphur dioxide ($SO_2$), and these are summarised in Table 4-1. Ammonia can have a direct toxic effect upon vegetation, particularly at close distances to the source, such as near road verges[44]. NOx can also be

[39] Kerth G., Wagner M. & Koenig B. 2001. Roosting together, foraging apart: Information transfer about food is unlikely to explain sociality in female Bechstein's bats (*Myotis bechsteinii*). Behavioural Ecology and Sociobiology 50: 283-291.
[40] 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.
[41] Zeale M.R.K., Davidson-Watts I. & Jones G. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): Implications for conservation. Journal of Mammalogy 93: 1110-1118.
[42] Bat Conservation Trust. (2016). Coe Sustenance Zones: Determining zone size. Available at Core_Sustenance_Zones_Explained_04.02.16.pdf (bats.org.uk) [Accessed on the 04/10/2024].
[43] South Downs National Park Authority/ Natural England (2017). Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Final Draft
[44] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

toxic at very high concentrations (far above the annual average Critical Level). NOx and $NH_3$ both contribute to the total nitrogen deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This often has adverse effects on community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats[45] [46].

**Table 4–1: Main sources and effects of air pollutants on habitats and species[47]**

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

[45] Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. (2006). Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. *Lichenologist* **38**: 161-176.
[46] Dijk, N. (2011). Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation. *Global Change Biology* **17**: 3589-3607.
[47] Information summarised from the Air Pollution Information System (http://www.apis.ac.uk/).

| Pollutant | Source | Effects on habitats and species |
|---|---|---|
| | | quartz rich rocks tend to be more susceptible. |
| Ammonia ($NH_3$) | Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock. It is also emitted from some vehicles.<br>Ammonia reacts with acid pollutants such as the products of $SO_2$ and $NO_X$ emissions to produce fine ammonium ($NH_4$+) - containing aerosol. Due to its significantly longer lifetime, $NH_4$+ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).<br>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type. | The negative effect of $NH_4$+ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation. Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen. As emissions mostly occur at ground level in the rural environment and $NH_3$ is rapidly deposited, some of the most acute problems of $NH_3$ deposition are for small relict nature reserves located in intensive agricultural landscapes. |
| Nitrogen oxides ($NO_x$) | Nitrogen oxides are mostly produced in combustion processes. Half of $NO_X$ emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.<br>In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles. | Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NOx for all vegetation types has been set to 30 ug/m3.<br>Deposition of nitrogen compounds (nitrates ($NO_3$), nitrogen dioxide ($NO_2$) and nitric acid ($HNO_3$)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.<br>In addition, $NO_x$ contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species. |
| Nitrogen deposition | The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. $NO_X$) or reduced (e.g. $NH_3$) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major | All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.<br>Species-rich plant communities with high proportions of slow- |

| Pollutant | Source | Effects on habitats and species |
|---|---|---|
| | conurbations or highways, reduced nitrogen mostly derives from farming practices.<br>The N pollutants together are a large contributor to acidification (see above). | growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.<br>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost. |
| Ozone ($O_3$) | A secondary pollutant generated by photochemical reactions involving NOx, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).<br>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at the international level to reduce levels of the precursors that form ozone. | Concentrations of $O_3$ above 40 ppb can be toxic to both humans and wildlife and can affect buildings.<br>High $O_3$ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomatoes, potatoes), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities. |

4.30 Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping[48]. As such, it can be excluded that material increases in $SO_2$ emissions will not be associated with the Local Plan. In contrast, NOx emissions are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion of its overall NOx footprint (92%) through associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[49]. Emissions of ammonia can also be linked to traffic, although vehicles are not the major source. Therefore, emissions of NOx and ammonia can reasonably be expected to increase primarily due to an increase in commuter traffic volume associated with housing growth.

4.31 The World Health Organisation has the following critical thresholds for plant communities: The critical NOx concentration (also known as the Critical Level) for the protection of vegetation is 30 $\mu gm^{-3}$, that for vascular plants for ammonia is 3 $\mu gm^{-3,}$ and the threshold for sulphur dioxide is 20 $\mu gm^{-3}$. Additionally, ecological studies have determined 'Critical Loads'[50] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH3).

[48] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[49] Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. http://www.airquality.co.uk/archive/index.php
[50] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.

Natural England has published guidance regarding the early stages of air quality impact assessment[51].

4.32 According to Design Manual for Roads and Bridges Volume LA105 (Air Quality)[52], beyond 200m, the contribution of vehicle emissions from the roads to local pollution levels is insignificant. Therefore, this distance has been used throughout this HRA to determine whether Likely Significant Effects (LSEs) on sensitive Habitats Sites may arise due to implementation of the Plan.

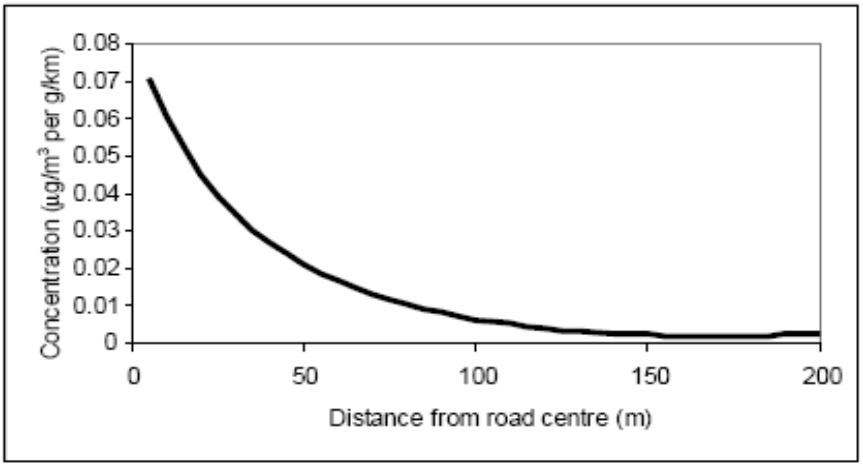


**Figure 3: Schematic representation of the reduction in traffic contribution to concentrations of pollutants at different distances from a road**

4.33 Overall, the following Habitats Sites are sensitive to an increase in atmospheric pollution. The average UK car journey is approximately 10.6km[53]. At a 10km distance between a development site and any road within 200m of a vulnerable Habitat site, the traffic generated from that development is likely to have dispersed across the network such that it is unlikely to contribute to a statistically significant difference in annual average daily traffic. A 10km buffer is therefore utilised within this report to identify sites which may have a potential likely significant impact.

4.34 Being within this 10km buffer does not necessarily mean there will be a likely significant effect, just that they will be assessed within the report to ascertain if they will contribute to a likely significant effect in combination:

- Butser Hill SAC
- Castle Hill SAC
- Chichester and Langstone Harbours SPA and Ramsar site
- East Hampshire Hangers SAC
- Ebernoe Common SAC
- Emer Bog SAC
- Kingley Vale SAC
- Lewes Downs SAC

[51] Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations - NEA001
[52] https://www.standardsforhighways.co.uk/prod/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true [Accessed 23/01/23)
[53] GOV.UK (2019). Average number of trips made and distance travelled. https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled

- The Mens SAC
- Portsmouth Harbour SPA and Ramsar site
- Shortheath Common SAC
- Solent Maritime SAC
- Thames Basin Heaths SPA
- Thursley, Hankley & Frensham Commons SPA
- Thursley, Ash, Pirbright & Chobham SAC
- Wealden Heaths Phase II SPA
- Woolmer Forest SAC
- River Itchen SAC

4.35 Singleton and Cocking Tunnels SAC lies within the SDNP but consists of two railway tunnels. It is therefore not considered to be sensitive to atmospheric pollution.

4.36 Traffic and air quality modelling will ultimately be required to inform the Habitats Regulations Assessment work for the Local Plan, which will include consideration of whether the Habitats sites identified above lie within 200m of roads likely to be material journey to work routes for residents of the SDNP.

# Water Quality

4.37 The quality of the water that feeds Habitats Sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen-depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient, and so eutrophication is associated with discharges containing available nitrogen.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

4.38 The main risk associated with the SDLP is the discharge of treated sewage effluent from Wastewater Treatment Works (WwTWs) serving the Authority area. This could increase the nutrient concentrations in the water feeding Habitats Sites that are hydrologically linked to waterbodies that receive treated wastewater, such as the Arun Valley SAC/SPA/Ramsar site, the River Itchen SAC or the Solent Habitats Sites. The Rother, the Stor and the Arun are all thought to contribute to the nutrient and sediment loading in the Arun Valley.

4.39 Whilst the main risk associated with the SDLP is the discharge of treated sewage effluent from WwTW serving the Authority area, a risk relating to direct run off from a proposed site into a watercourse that is linked to a Habitats Site also exists. However, it is an offence to pollute watercourses anyway under the Environmental Permitting (England and Wales) Regulations 2016, irrespective of whether they are linked to Habitats sites. For the purposes of the Local Plan HRA, it is therefore assumed that any development will not be granted planning permission without these standard provisions in place, and as such, it is not considered further within this HRA.

## Nutrient Neutrality

4.40 Nutrient neutrality has become a requirement in many areas of the country, such as the Solent, Somerset Levels, the Wye catchment in Herefordshire, the Camel catchment in Cornwall, and the Stour catchment in Kent. It ultimately results from the ruling of the European Court of Justice (ECJ) in combined cases C-293/17 and C-294/17 (the Dutch Nitrogen case). That judgment was about nitrogen from atmosphere but in the process of making their ruling the judgment refined the definition of plans and projects to include operations such as agriculture, confirming that agricultural inputs of nutrients (either from atmosphere or runoff) need to be covered in the 'in combination' requirements of the HRA process. This is significant because the traditional assessment process as applied for example in the Environment Agency Review of Consents programme distinctly separates treated wastewater from agricultural discharge, largely because the latter is effectively unconsented [diffuse] and outside the remit of the Environment Agency.

4.41 There are published methodologies and calculation tools for nutrient neutrality related to the Solent Habitats sites and River Itchen SAC[54]. It is these sites will be the focus of the water quality assessment regarding nutrients and treated wastewater. The Levelling Up and Regeneration Act 2023 makes significant amendments to the legal regime applicable to Habitats Sites subject to the nutrient neutrality requirement. LURA received Royal Assent in October 2023 and entered into force on Boxing Day 2023.

4.42 Under LURA's Part 7[55] the Water Industry Act 1991 ("WIA") was amended to require sewerage undertakers to secure specific nitrogen and phosphorus pollution standards by the "upgrade date" of 2030 (for designations made in the initial period). The insertion of new Section 96B into the WIA[56] requires both "nitrogen significant plant" and "phosphorus significant plant" to meet a specified nitrogen or phosphorus nutrient pollution standard (as the case may be) by the upgrade date. The duty to achieve this result is enforceable principally by the Secretary of State, but also by the Environment Agency[57] . However, some WwTWs are already achieving their best Technically Achievable Limit (TAL) and so this requirement will have no impact on the discharge from these WwTWs. Additionally, even with the best TAL, there will still be some residual TN or TP that needs to be addressed at the catchment level to be nutrient neutral.

[54] Nutrient Neutrality - South Downs National Park Authority
[55] Levelling Up and Regeneration Act 2023 Levelling-up and Regeneration Act 2023 (legislation.gov.uk) [Accessed 11/10/204]
[56] Water Industry Act 1991 Water Industry Act 1991 (legislation.gov.uk) [Accessed 11/10/2024]
[57] Habitats Regulations advice for LPAs | Local Government Association

4.43 The Government announced changes to Nutrient Neutrality on 17 December 2025 in POSTnote 755[58] "Changes to Nutrient Neutrality in England". This sets out that, as part of Part 3 of the Planning and Infrastructure Bill, Natural England can produce and implement Environment Delivery Plans (EDP), which require developments to pay into a Nature Restoration Fund (NRF) to provide catchment-based mitigation schemes upstream of protected sites. This would mean that where an EDP is in place and a developer pays the NRF levies, they would no longer be required to undertake nutrient impact assessments or deliver project-specific mitigations. Although this has been announced, no EDPs are yet in place; therefore, current mitigation schemes and processes must still be followed. For the sake of completeness this is discussed in this HRA.

# Water Flow, Velocity and Volume

4.44 The unique nature of wetlands combines shallow water, high levels of nutrients and high primary productivity. These conditions are ideal for the growth of organisms at the basal level of food webs, which feed many species of birds, mammals, fish and amphibians. Overwintering and migrating wetland bird species are particularly reliant on these food sources, as they need to build up enough nutritional reserves to sustain their long migration routes.

4.45 Maintaining a steady water supply is of critical importance for many hydrologically dependent SPAs, SACs and Ramsar sites. For example, in many wetlands winter flooding is essential for sustaining a variety of foraging habitats for SPA / Ramsar wader and waterbird species. However, different species vary in their requirements for specific water levels. Splash and / or shallow flooding is required to provide suitable feeding areas and roosting sites for ducks and waders. In contrast, deeper flooding is essential to provide foraging habitats for Bewick's swans and other ducks.

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

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

[58] https://researchbriefings.files.parliament.uk/documents/POST-PN-0755/POST-PN-0755.pdf

pluvial flooding results in downstream inundation of watercourses and the potential flooding of wetland habitats.

4.47 Specifically, the Site Improvement Plan[59] for Arun Valley SAC/SPA/Ramsar identify inappropriate water levels as threats to the respective sites. Increases to the quantity and rate of water delivery can result in summer flooding and prolonged / deeper winter flooding. This in turn results in the reduction of feeding and roosting sites for birds and be harmful to the little whirlpool ram's-horn snail, which has very specific water level requirements.

4.48 The emerging Local Plan could result in changes to the water quantity, level and flow in the catchment of the River Arun Habitats sites if it required additional abstraction from such sites or the continuance of existing damaging abstraction. This could alter the water level within the designated sites themselves with potential cascading effects on qualifying species.

4.49 Following consultation with Natural England at the Horsham Draft Local Plan Regulation 18 stage, Natural England expressed concerns regarding the Hardham groundwater abstraction and its effect on Arun Valley SAC/Ramsar following a review of evidence. In September 2021, Natural England issued a Position Statement to the relevant local planning authorities, including SDNPA, advising that new development within the Sussex North Water Supply Zone (SNWSZ) should demonstrate water neutrality, in order to protect the Arun Valley habitats from potential impacts linked to Southern Water's groundwater abstraction at Pulborough. Since then, the LPAs have worked together in developing the Sussex North Water Certification Scheme.

4.50 As this work was underway, on 31 October 2025, Natural England issued a Withdrawal Statement[60] confirming that its Water Neutrality Position Statement of September 2021 has been withdrawn.

4.51 This follows agreement between Natural England, Southern Water and the Environment Agency that a package of ecological resilience measures and a reduction in the licence cap on water abstraction will address risk of further decline.

4.52 Natural England advises in their withdrawal statement that the reduction in the licence cap on water abstraction will ensure, with sufficient certainty, that development will not adversely impact the protected Arun Valley habitats.

4.53 Natural England has advised that local authorities are not required to undertake an appropriate assessment on water scarcity issues affecting the sites.

4.54 Ultimately, it is the water companies who have to provide sufficient water to the growing population without impacting Habitats sites through their Water Management Plans, which are long-term plans stretching beyond the Local Plan period and additionally go through Habitats Regulations Assessment as well. The Local Plan can therefore rely on the most recently published version of the Water Management Plans for the water suppliers' catchments and therefore, water quantity is not discussed as a linking impact pathways for the remaining aquatic habitat sites within this HRA.

[59] Site Improvement Plan: Arun Valley - SIP004
[60] https://www.southdowns.gov.uk/wp-content/uploads/2025/11/Arun-Valley-Withdrawal-Statement-31.10.25.pdf

# Summary

4.55 Table 3 below summarises the potential linking impact pathways. Where existing evidence exists in relation to a specific impact pathway or an internationally designated site, further discussion is undertaken in the subsequent section.

**Table 3: Potential impact pathways that could link the Local Plan to a Habitats Site**

| Habitats Site | Potential Linking Impact Pathways |
|---|---|
| Arun Valley SAC/SPA/Ramsar | • Recreational Pressure<br>• Water Quality<br>• Loss of functionally-linked habitat for waterfowl and waders |
| Ashdown Forest SAC and SPA | • Recreational Pressure<br>• Atmospheric Pollution– This site is located circa 13km from the SDNP boundary and is therefore beyond the normal assessment distance for this impact pathway. However, since it was included in the HRA of the adopted South Downs National Park Local Plan it is also considered in this report. |
| Butser Hill SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Castle Hill SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) [61] |
| Chichester and Langstone Harbours SPA and Ramsar | • Recreational Pressure<br>• Water Quality (Nutrient Neutrality)<br>• Water Quantity<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Duncton to Bignor Escarpment SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| East Hampshire Hangers SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) [62] |
| Ebernoe Common SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Loss of functionally linked habitat for bats<br>• Water Quality |
| Emer Bog SAC | • Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Kingley Vale SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Lewes Downs SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| The Mens SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Loss of functionally linked habitat for bats |
| Pagham Harbour SPA and Ramsar | • Recreational Pressure<br>• Water Quality<br>• Water Quantity |

[61] There are no signfiicant roads within 200m of Castle Hill SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth
[62] There are no signfiicant roads within 200m of East Hampshire Hangers SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth

| Habitats Site | Potential Linking Impact Pathways |
|---|---|
| Pevensey Levels SAC and Ramsar Site | • Water Quality |
| Portsmouth Harbour SPA and Ramsar site | • Recreational Pressure<br>• Water Quality (Nutrient Neutrality)<br>• Water Quantity<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thames Basin Heaths SPA | • Recreational pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thursley, Hankley & Frensham Commons SPA | • Recreational pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thursley, Ash, Pirbright & Chobham SAC | • Recreational pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| River Itchen SAC | • Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Water Quality (Nutrient Neutrality)<br>• Water Quantity |
| Rook Clift SAC | • Recreational Pressure[63] |
| Shortheath Common SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) [64] |
| Singleton and Cocking Tunnels SAC | • Recreational Pressure<br>• Loss of functionally linked habitat for bats<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Solent and Dorset Coast SPA | • Water Quality (Nutrient Neutrality)<br>• Water Quantity |
| Solent Maritime SAC | • Water Quality (Nutrient Neutrality)<br>• Water Quantity<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Solent and Southampton Water SPA Ramsar site | • Atmospheric Pollution (Nitrogen and Ammonia Deposition) – However this site is located circa 13km from the SDNP boundary and as such it is not a realistic linking impact pathway and not discussed further |
| Wealden Heaths Phase II SPA | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Urbanisation |
| Woolmer Forest SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |

4.56 While the Habitats sites identified above are vulnerable to other impacts, those identified in the table are most likely to be associated with potential changes in the South Downs National Park.

[63] There are no significant roads within 200m of Rook Clift SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth
[64] There are no significant roads within 200m of Shortheath Common SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth

# 5. Test of Likely Significant Effects

## The Local Plan

5.1 The Likely Significant Effects test of Local Plan policies and potential site allocations is undertaken in full in Appendix A. Table 9–3 undertakes the Test of Likely Significant Effects for the Local Plan polices. The site allocations in this Local Plan review will consist of (a) allocations from the adopted Local Plan that have yet to be built out and are proposed to be carried forward, and (b) new site allocations. Table 9–4 undertakes the Test of Likely Significant Effects for those existing Local Plan allocations which are to be carried forward to the new Local Plan, whilst

5.2 Table 9–5 undertakes the Test of Likely Significant Effects for the entirely new potential Local Plan allocations.

**Local Plan Policies**

5.3 Table 9–3 identifies the following Local Plan policies that could potentially provide linking negative impact pathways to a Habitats Site:

- Core Policy SDC2: Development Strategy – when completed, this policy will indicate where in the Local Plan area development is appropriate.
- Strategic Policy SDH1: Housing Supply – outlines the quantum of net new dwellings to be provided over the plan period e.g. approximately 6,760 net new dwellings.
- Strategic Policy SDH4: Specialist and Older Persons' Accommodation – provides potential locations for specialist and older persons' residential development.
- Strategic Policy SDH7: Replacement and Subdivision of Dwellings – this could enable an increase in the occupancy of particular dwellings.
- Strategic Policy SDH8: Householder Development – this could enable an increase in the occupancy of particular dwellings
- Strategic Policy SDH9: New Rural Workers' Dwellings – this would result in a small increase in the number of dwellings
- Strategic Policy SDH10: Gypsies, Travellers and Travelling Showpeople – provides a quantum of Gypsy, Traveller and Travelling Showpeople pitches during the plan period, e.g. 40 permanent pitches.
- Strategic Policy SDE7: Regenerative Tourism – potentially allows for an increase in tourism provision.
- Strategic Policy SDE8: Equestrian Development – potentially allows for an increase in equestrian development, which could lead to increased nutrient input, habitat abrasion and disturbance to qualifying species within the Habitats Sites.
- Strategic Policy SDT2: Active Travel Routes – this policy safeguards the disused railway lines for active walking routes, as the Singleton and Cocking Tunnels SAC is part of this; the policy could potentially cause impacts on the bats for which this SAC is designated.

5.4 Potential linking impact pathways related to these policies are as follows:

- Recreational pressure
- Urbanisation
- Loss of Functionally Linked Land
- Air quality
- Water flow, velocity and volume
- Water quality

**Local Plan Allocations**

5.5 The potential new and carried over SDLP site allocations that provide for potential linking impact pathways to Habitats sites are located within Table 8-4 and 8-5 and will be discussed where necessary in the following sections.

## Habitats Sites, and Threats, and Vulnerabilities Discussed

5.6 Table 5–1 outlines which Habitats Sites are sensitive to which, potentially linking impact pathways that could link to the Local Plan, and as such are discussed within this chapter.

**Table 5–1 Habitat Site Potential Threats and Vulnerabilities that Could Link to the Local Plan.**

| Habitat Site | Potential Linking Impact Pathways |
|---|---|
| Arun Valley SAC/SPA/Ramsar | • Recreational Pressure<br>• Water Quality<br>• Loss of functionally-linked habitat for waterfowl and waders |
| Ashdown Forest SAC and SPA | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Butser Hill SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Castle Hill SAC | • Recreational Pressure[65] |
| Chichester and Langstone Harbours SPA and Ramsar | • Recreational Pressure<br>• Water Quality (Nutrient Neutrality)<br>• Water Quantity |
| Duncton to Bignor Escarpment SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| East Hampshire Hangers SAC | • Recreational Pressure[66] |
| Ebernoe Common SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Loss of functionally linked habitat for bats<br>• Water quality |
| Emer Bog SAC | • Water quality |
| Kingley Vale SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Lewes Downs SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| The Mens SAC | • Recreational Pressure |

[65] There are no significant roads within 200m of Castle Hill SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth
[66] There are no significant roads within 200m of East Hampshire Hangers SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth

| Habitat Site | Potential Linking Impact Pathways |
|---|---|
| | • Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Loss of functionally linked habitat for bats |
| Pagham Harbour SPA and Ramsar | • Water Quality<br>• Water Quantity |
| Pevensey Levels SPA/Ramsar | • Water Quality |
| Thames Basin Heaths SPA | • Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thursley, Hankley & Frensham Commons SPA | • Recreational pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thursley, Ash, Pirbright & Chobham SAC | • Recreational pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |
| Thursley and Ockley Bog Ramsar | • Water Quantity |
| River Itchen SAC | • Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Water Quality (Nutrient Neutrality)<br>Water Quantity |
| Rook Clift SAC | • Recreational Pressure[67] |
| Shortheath Common SAC | • Recreational Pressure[68] |
| Singleton and Cocking Tunnels SAC | • Recreational Pressure<br>• Loss of functionally linked habitat for bats |
| Solent and Dorset Coast SPA | • Water Quality (Nutrient Neutrality)<br>• Water Quantity |
| Solent & Southampton Water SPA/Ramsar | • Water quality (Nutrient Neutrality)<br>• Water Quantity |
| Solent Maritime SAC | • Water Quality (Nutrient Neutrality)<br>Water Quantity |
| Wealden Heaths Phase II SPA | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition)<br>• Urbanisation |
| Woolmer Forest SAC | • Recreational Pressure<br>• Atmospheric Pollution (Nitrogen and Ammonia Deposition) |

# Recreational Pressure

5.7 The following paragraphs discuss recreational pressure in relation to each Habitats Site identified in Table 5-1 with a vulnerability to recreational pressure. It discusses whether the Local Plan provides a valid linking impact pathway to recreational pressure at that Habitats Site. It also discusses whether there is realistically potential for a likely significant effect (and AA is required) or not (i.e. there would be no likely significant effect), and the impact of recreational pressure in relation to the specific Habitats Site can be screened out from further consideration.

### Arun Valley SAC/SPA/Ramsar site

5.8 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 fewer recreational users,

[67] There are no significant roads within 200m of Rook Clift SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth
[68] There are no significant roads within 200m of Shortheath Common SAC, so although the interest features are vulnerable to atmospheric pollution they are beyond the zone of influence for South Downs Local Plan growth

whereas 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 significant disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages, such that disturbance resulting in the abandonment of suitable feeding areas can have severe consequences.

5.9 The Local Plan allocates four sites within 5 km of the SPA/SAC/Ramsar site: East Street Farm at Amberley for 20 dwellings, Land East of Coombe Crescent at Bury for 15 dwellings, Land South of London Road, Coldwaltham for 30 dwellings and Land north of Kings Lane, Coldwaltham a gypsy and traveller plot for two permanent pitches. This is a total of 65 dwellings and two pitches within 5km. The nearest site is East Street Farm which is 100m from Amberley Wild Brooks. However, it is separated from the SPA/SAC/Ramsar site by existing residential and other development.

5.10 The component parts of the SPA/Ramsar site are Pulborough Brooks SSSI, Waltham Brooks SSSI and Amberley Wild Brooks SSSI. 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[69]. This is presumably because two of the most potentially sensitive parts of the SPA (Amberley Wild Brooks SSSI and Pulborough Brooks SSSI) are managed by the RSPB. Unlike many other RSPB reserves, recreational visitors are discouraged from visiting Amberley Wild Brooks SSSI due to the site's sensitivity, and it is not designed or promoted to attract visitors. Access to the site is severely restricted, specifically to prevent disturbance. Access is therefore restricted to the Wey South Path.

5.11 Pulborough Brooks SSSI is open to the public under normal circumstances, but access is well-managed with a network of hides and prohibitions on dogs in the most sensitive areas. Whilst a single Public Right of Way passes through the site from the village of Pulborough (in the north) to Wiggonholt and the RSPB visitor centre (in the south), the site is located approximately 0.6 km from the village itself. Additionally, parking provision and site access are not advertised by the village of Pulborough. It is likely that most visitors will access the site from the RSPB car park visitor centre, as access is publicly advertised and managed there.

5.12 With the exception of RSPB members, a per-visit charge is in place (albeit there is no charge for accessing along the public right of way), and the limited parking provision will also limit the number of casual walkers. Moreover, there are ample areas of alternative attractive natural green spaces already available to residents of Storrington and West Chiltington: Rackham Hill (located within the South Downs National Park) is the closest landmark, Parham Park SSSI lies between Storrington and Amberley Wild Brooks SSSI, while Hurston Warren SSSI lies between West Chiltington and the same SSSI.

5.13 Consultation comments from both the Coldwaltham Meadows Conservation Trust and the Sussex Wildlife Trust to the previous South Downs Local Plan HRA did identify concerns regarding recreational pressure on the Waltham Brooks SSSI component of the SAC, SPA and Ramsar site. The primary risk here would be an increase in visitor pressure (particularly from dog walkers),

[69] Site Improvement Plan: Arun Valley - SIP004

disturbing grazing livestock used to manage the Waltham Brooks SSSI, which is in the condition 'Recovering'. However, this part of the SPA is at least 2.2 km from the closest potential allocation in the Local Plan, and the nearest allocation in the Horsham Local Plan is over 2 km away. The HRA for the Horsham Local Plan scoped out recreational pressure as an impact pathway.

5.14 The principal other plans and projects of relevance to development around the Arun Valley SAC/SPA/Ramsar site are the Local Plans for the Horsham Local Plan and, to a lesser extent, the Arun and Adur districts. The HRA of the Horsham Local Plan considered recreational pressure from these local authorities collectively (including SDNP). Both Adur and Arun have begun preparing their new Local Plans, which provide for an increase in dwellings during their Plan periods (Adur Adopted Local Plan (2017) is currently providing for 3,718 new dwellings during its Plan period (up to 2032), whilst Arun Adopted Local Plan (2018) has a minimum requirement of 20,000 net new dwellings during its emerging Plan period (up to 2031)). However, the HRAs for the Arun, Horsham and Adur Local Plans all considered that there would be no likely significant effects on Arun Valley SAC, SPA and Ramsar site 'in combination' with each other and growth in Horsham. It is therefore considered that a conclusion of **no likely significant effect can be drawn regarding this impact pathway alone or in combination with other plans and projects.**

**Ashdown Forest SAC and SPA**

5.15 Ashdown Forest is well known to be sensitive to recreational pressure, and due to the close proximity of relatively substantial settlements, existing recreational pressure is considered a concern. As such, a mitigation strategy has been developed by the local planning authorities surrounding the South Downs National Park, including the South Downs National Park Authority. However, as already identified, the core recreational catchment for the SAC/SPA is 7 km, and the SDNP lies well beyond this. Therefore, **no likely significant effects will arise either alone or in combination with other plans and projects.**

**Butser Hill SAC**

5.16 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 the site of numerous organised recreational events 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, the grasslands of Butser Hill SAC are not considered particularly vulnerable to well-managed recreational pressure and activity, even during relatively large events. This was the conclusion of the HRA of the Chichester Local Plan HRA, with which Natural England concurred. **Likely significant effects can therefore be dismissed alone and in combination with other plans or projects.**

**Castle Hill SAC**

5.17 Castle Hill SAC is not noted to be vulnerable to an 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*'. This is reflected in the

Natural England Site Improvement Plan,[70] which does not identify recreational pressure as a concern or a target for further action. The main concerns noted on this site are not development-related but are management issues: under-grazing and the use of fertilisers. According to the Supplementary Advice on the Conservation Objectives[71] for this SAC, an issue at this site is excessive vegetation growth (coarse grasses), suggesting trampling is not a concern. **Likely significant effects can therefore be dismissed alone and in combination with other plans or projects.**

**Singleton and Cocking Tunnels SAC**

5.18 Singleton and Cocking Tunnels are not generally open to the public, being gated. However, Strategic Policy SDI2: Active Travel Routes includes safeguarding the Chichester–Midhurst disused railway line for active travel route proposals. Should this be developed into an active travel route, it could adversely impact the barbastelle and Bechstein's bat features of the Singleton & Cocking Tunnels SAC. Including the tunnels in the route could affect the bats that hibernate there, thereby causing an adverse effect. **Likely significant effects are therefore not dismissed, and this recreational pressure is taken forward to AA.**

**Chichester and Langstone Harbours SPA and Ramsar site/Solent & Southampton Water SPA/Solent Maritime SAC/Solent and Dorset Coast SPA**

5.19 Chichester and Langstone Harbours SPA/Ramsar, Solent and Southampton Water SPA, Solent and Dorset Coast SPA and Solent Maritime SAC are known to be sensitive to recreational pressure, particularly regarding disturbance of SPA birds. A core recreational catchment of 5.6 km has been identified. The SDLP makes no potential allocations within that zone, but several settlements within the National Park could receive windfall development within the recreational zone of these Habitats Sites. **Likely significant effects are therefore not dismissed, and therefore, recreational pressure is taken forward to AA.**

**Duncton to Bignor Escarpment SAC**

5.20 The Views About Management document for Duncton to Bignor Escarpment SSSI[72] identifies that '*Access to this site, and any recreational activities within, may also need to be managed.'* The Site Improvement Plan[73] for Duncton to Bignor Escarpment SAC does not identify any specific current requirement for access management improvements. The SAC is situated in a rural area, isolated from any large settlement. The Supplementary Advice on the Conservation Objectives[74] identifies that *'activities such as construction, forestry management and trampling by grazing livestock and human feet during recreational activity may all contribute to excessive soil compaction around ancient trees'.* However, this is clearly a general observation rather than any indication that the site is subject to unsustainable recreational pressure.

5.21 The Local Plan allocates five new sites within 5km of the SAC: East Street Farm at Amberley for 20 dwellings (3.9 km), Land East of Coombe Crescent at Bury for 15 dwellings (2.1 km), Land South of London Road, Coldwaltham

[70] Site Improvement Plan: Castle Hill - SIP039
[71] UK0012836_Castle Hill_SAC_Published 10 Jul 2024
[72] Views About Management
[73] Site Improvement Plan: Duncton to Bignor Escarpment - SIP067
[74] UK0030138_Duncton to Bignor Escarpment_SAC_Published 10 Jul 2024

for 30 dwellings (3.4km) and Land north of Kings Lane, Coldwaltham a gypsy and traveller plot for two permanent pitches (4.5km), Land at Rotherbridge Road at Petworth for seven dwellings (4.5 km) and, Land south of Herbert Shiner School at Petworth for 75 dwellings (4.6 km). This includes a total of 147 dwellings and two pitches within a 5 km radius. There are no potential allocations within 5 km of the SAC in any other Local Plans.

5.22 Given the low population density around the SAC and the large amounts of alternative locations available for recreational activity, it can be considered that the new housing identified within the SDLP **will not result in likely significant effects alone or in combination with other plans and projects and can be dismissed.** This is consistent with the conclusions of the Horsham and Chichester Local Plan HRAs.

**East Hampshire Hangers SAC**

5.23 The East Hampshire Hangers SAC is a composite site comprising woodlands that are distributed along a north-south axis throughout the district. All qualifying features of the SAC (semi-natural dry grasslands on calcareous substrates, beech forests, mixed woodland and yew woodland) are potentially sensitive to recreational impacts such as trampling damage, which is particularly concerning where orchid assemblages or ancient/veteran trees are present. While Natural England's SIP does not specify public access as a threat or pressure to the site, the Supplementary Advice on Conservation Objectives (SACO)[75] refer to a target of maintaining the soil structure around mature and ancient trees in an un-compacted condition. In compacted soils, which may result to varying extents from different recreational activities, there is little space for air and water, both of which are essential substances for root and tree growth.

5.24 A core catchment zone of the SAC of approximately 5 km (based on data from other terrestrial and woodland Habitats sites) is considered reasonable; however, given that there are few formal car parks that serve as official access points to the SAC, it is very likely that residents walking to the site from nearby housing represent the typical profile of a recreationist within the SAC. Therefore, any residential allocation within a typical walking distance of between 1-2 km is likely to increase the recreational footfall within the site. There are nine allocation sites proposed within 2 km of the SAC. These are;

[75] UK0012723_East Hampshire Hangers_SAC_Published 10 Jul 2024

- Land south of Lovell Gardens, Binsted for 12 dwellings – 1.2 km
- Land north of Winchester Road, Stroud for 20 dwellings – 1.7 km
- Windward, Reservoir Lane, Petersfield for five dwellings – 1.8 km
- Land at Farnham & Station Roads, West Liss for 60 dwellings and a 65-bed care home – 2 km.

  Land South of Church Road, Steep for nine dwellings – 0.74 km
- Land at Petersfield Road, Greatham for 37 dwellings – 1.4 km
- Land at Ketchers Field, Selborne for six dwellings – 0.30 km
- Land at Clements Close, Binsted for 10 dwellings – 1.3 km
- New Barn Stables, The Street, Binstead for one gypsy and traveller pitch – 1.4 km

5.25 Windward and Land at Farnham & Station Roads are separated from the SAC by the A3, such that it is very unlikely residents would walk to the SAC. However, there are seven allocations for 94 dwellings and a gypsy and traveller plot within walking distance not cut off by the A3.

5.26 It should be noted that off the existing tracks the nature of the site (e.g. steep with limited opportunities to go off track, coupled with very limited parking opportunities) makes it very robust and resilient regarding recreational pressure.

5.27 Natural England's SSSI condition assessment identifies that most SSSI components of the SAC are 'favourable' and, where this is not the case, recreational pressure is not identified as an underlying cause. Moreover, the SAC is traversed by an extensive network of Public Rights-of-Way (PRoWs). Generally, some recreational impacts are 'naturally' managed through existing access networks in nature conservation sites. For example, unless paths show significant erosion and expose underlying roots, the impacts of any recreational activity that is kept on track will be somewhat buffered. An additional buffer against off-track activities is provided by the steep slopes and challenging overall topography of the site, which is likely to encourage visitors to stay on the formal path network. As such, it is considered that there would be **no likely significant effect alone or in combination with other plans and projects and recreational pressure can be screened out of the AA for East Hampshire Hangers SAC.**

**Ebernoe Common SAC**

5.28 Ebernoe Common is designated for its woodland and for its population of barbastelle and Bechstein bats. The SAC is relatively remote from significant-sized settlements, with the nearest being Petworth, 3.5km to the south. As such, the Supplementary Advice on the Conservation Objectives[76] for the SAC does not identify recreational pressure as a concern. There are five new Local Plan allocations within 5 km of the SAC, the nearest being 2.1 km away: Land west of Valentines Lea, Northchapel for 25 dwellings, Land north of Northend Close at Petworth for 18 dwellings at 2.8 km from the SAC, Land West of The Street at Lodsworth for 10 dwellings (4.5 km), Land south of Herbert Shiner School and Land at Rotherbridge Lane at Petworth for 75 and seven dwellings

[76] UK0012715_Ebernoe Common_SAC_Published 10 Jul 2024

respectively at 4.4 km from the SAC. This is a total of 135 dwellings within 5 km, the nearest of which is over 2km away.

5.29 As recreational pressure is not identified as a concern in the SACO, it can be concluded that there would be **no likely significant effect alone or in combination with other plans and projects and can be dismissed.** This matches the conclusions of the HRA for the Chichester Local Plan and the Horsham Local Plan.

**Kingley Vale SAC**

5.30 The Kingley Vale SAC is designated for yew (*Taxus baccata*) woods and semi-natural dry grasslands/scrubland facies with potential sensitivity to recreational impacts, such as trampling damage and nutrient enrichment. It is situated in a rural area. The SAC is permeated by an extensive network of PRoWs, criss-crossing woodland and more open parcels within the site boundary. There is one formal car park providing access to the SAC at Lambdown Hill, but most visitors are likely to originate from the few smaller settlements and villages surrounding the site. The fact that the site lies in an undeveloped part of Chichester District and does not support the infrastructure to draw visitors from further afield may indicate that overall visitor numbers are relatively low. Recreational pressure is not specified as a concern in the SIP[77] or SACO[78] for the SAC.

5.31 There are no allocations within 5 km of the SAC. It is therefore **concluded that the potential emerging Local Plan residential site allocations will not result in LSEs on the Kingley Vale SAC regarding recreational pressure alone or in combination with other plans and projects and can therefore be dismissed.**

**Lewes Downs SAC**

5.32 As with Castle Hill SAC, the Lewes District Core Strategy HRA report 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 vulnerable to recreational pressures. This issue was not queried at the Examination. The Site Improvement Plan[79] and Supplementary Advice on Conservation Objectives[80] for the SAC do 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. **Likely significant effects can therefore be dismissed alone and in combination with other plans or projects and will not be discussed further.**

**The Mens SAC**

5.33 The Mens is designated for its woodland and for its population of barbastelle and Bechstein bats. The SAC is relatively remote from significant settlements, with the nearest being Petworth, approximately 3 km away, and Pulborough and Billingshurst, approximately 4 km away. As such, the Supplementary

[77] Available at: http://publications.naturalengland.org.uk/publication/6393220716036096 [Accessed on the 20/10/2022]
[78] Available at: http://publications.naturalengland.org.uk/publication/5727834794360832 [Accessed on the 20/10/2022]
[79] Site Improvement Plan: Lewes Downs - SIP120
[80] UK0012832_Lewes Downs_SAC_Published 10 Jul 2024

Advice on the Conservation Objectives[81] for the SAC does not identify recreational pressure as a concern. There are three new Local Plan allocations within 5 km of the SAC, the nearest being 3.2km away: Land north of Northend Close at Petworth for 18 dwellings, and Land south of Herbert Shiner School and Land at Rotherbridge Lane at Petworth for 75 and seven dwellings respectively and both 4km from the SAC. Additionally. This is a total of 100 dwellings within 5 km, the nearest of which is over 3 km away. As such, it is considered that there would be **no likely significant effect alone or in combination with other plans and projects and can be screened out of AA.** This matches the conclusions of the HRA for the Chichester Local Plan and the Horsham Local Plan.

**Pagham Harbour SPA and Ramsar site**

5.34 Pagham Harbour SPA/Ramsar is known to be sensitive to recreational pressure, particularly regarding disturbance of SPA birds. A core recreational catchment of 3.5 km has been identified in work by Chichester District Council. The SDLP does not allocate any dwellings within the 3.5 km zone, with the nearest being over 10 km distant. The entire National Park lies more than 3.5 km from this SPA/Ramsar site. Therefore, it is considered that there would be **no likely significant effect alone or in combination with other plans and projects and can be screened out of AA.**

**Rook Clift SAC**

5.35 Rook Clift SAC is isolated from any large settlements. There are three allocations within 5 km of the SAC. Land at Loppers Ash, South Harting (2.9km) and Land North of the Forge, South Harting (3.1km), each with seven dwellings. The Local Plan will therefore not result in a material change in recreational activity at the site. Additionally, the Natural England Site Improvement Plan and Supplementary Advice on Conservation Objectives[82] for Rook Clift SAC, do not identify recreational pressure as a site vulnerability. Therefore, it is considered that there would be **no likely significant effects from increased recreational pressure, either alone or in combination with other plans or projects and can be screened out of AA.**

**Shortheath Common SAC**

5.36 Visitor survey work undertaken for the East Hampshire Local Plan has identified that this SAC is susceptible to recreational pressure. The Site Improvement Plan identifies areas of acid grassland and dry heath where vegetation was being lost due to recreational disturbance. The same is true of the SSSI condition assessment (‘*Rabbit grazing and some recreational disturbance (including fires) has resulted in reduction of vegetation and hence a loss in the extent of acid grassland/dry heath)’*). That assessment appears to date from 2013, and the Supplementary Advice on the Conservation Objectives (2019) mentions inappropriate scrub control as an issue, suggesting that pressures on the site at the moment are complex and, in some locations, may relate to undermanagement rather than excessive erosion/trampling.

5.37 However, the recreational mitigation strategy for the Whitehill-Bordon development (the largest development currently underway in East Hampshire close to the SAC) includes the SAC. The 2018 visitor survey indicates that

[81] Terrestrial site advice
[82] UK0030058_Rook Clift_SAC_Published 10 Jul 2024

most visitors live very locally, although there are people from as far afield as Alton who visit the SAC and a 5km core catchment captures 74% of visitors. The survey shows that over 60% of people who currently visit the SAC go there to fish rather than undertake any other activity but delivery of more residential development close to the SAC may result in an increase in recreational disturbance and habitat impacts.

5.38 The SDLP allocates three sites within 5 km of the SAC:

- Land south of Lovell Gardens, Binsted, for 12 dwellings – 3.7 km
- Land at Clements Close, Binsted, for 10 dwellings – 3.6 km
- New Barn Stables, The Street, Binstead, for one gypsy and traveller pitch – 3.8 km

5.39 This is a total of 22 dwellings and a single gypsy and traveller pitch. This alone would not pose a likely significant effect, but it must be considered in combination with the currently unconfirmed number of dwellings to be allocated in the East Hampshire Local Plan. **Likely significant effects, therefore, cannot be dismissed, and recreational pressure on Shortheath Common SAC is screened in for AA.**

**Thames Basin Heaths SPA**

5.40 Visitor survey work undertaken over many years has identified that this SPA is susceptible to recreational pressure and has identified a core catchment of 5 km. The SDLP does not allocate any sites within this zone, and there are no settlements within this zone within the South Downs National Park. It is therefore considered that **no likely significant effects will arise, and recreational pressure on Thames Basin Heaths SAC can be screened out of AA, alone and in combination with other plans and projects.**

**Thursley, Hankley & Frensham Commons SPA/Thursley, Ash, Pirbright and Chobham SAC**

5.41 Visitor survey work undertaken for the East Hampshire Local Plan has identified that this SPA is susceptible to recreational pressure and has identified a core catchment of 5 km. The SDLP does not allocate any sites within this zone; the nearest site is 6.6 km from the SAC/SPA. These allocations are within Binsted, the nearest settlement to the SAC/SPA within the South Downs National Park. It is therefore considered that **no likely significant effects will arise, and recreational pressure on Thursley, Hankley & Frensham Commons SPA/Thursley, Ash, Pirbright and Chobham SAC can be screened out of AA, alone and in combination with other plans and projects.**

**Wealden Heaths Phase II SPA/Woolmer Forest SAC**

5.42 Visitor survey work undertaken for the East Hampshire Local Plan has identified that this SPA is susceptible to recreational pressure and has identified a core catchment of 5 km. The SDLP allocates 12 sites within 5 km of the SPA:

- Land west of Liphook/Land at Westlands Park for 300 dwellings, 65-bed care home and 14 traveller pitches (0.3 km)
- Land at Westlands House off Longmoor Road for 8 dwellings (0.5km)
- Land at Furnhurst Road, Milland for 13 dwellings (3.7 km)
- Land at Rake Road, Milland for 8 dwellings (3.7 km)
- Land at Copper Beeches, Silver Birch and Heathmount, Hill Brow for 25 dwellings (1.8 km)
- Clayton Court, Rogate Road, Hill Brow for 16 dwellings (3.0 km)
- Land at Farnham and Station Roads, Liss for 60 dwellings and a 65-bed care home (1.0 km)
- Land at Petersfield Road, Greatham for 37 dwellings (550 m)
- Land at Ketchers Field, Selborne for 6 dwellings (3.9 km)
- Land south of Lovell Gardens, Binsted, for 12 dwellings (3.0 km)
- Land at Clements Close, Binsted, for 10 dwellings (3.0 km)
- New Barn Stables, The Street, Binstead, for one gypsy and traveller pitch (3.0 km)

5.43 This is a total of 495 dwellings, 130 care-beds and 15 gypsy and traveller pitches. Moreover, this must be considered in combination with a currently unconfirmed number of dwellings to be allocated in the East Hampshire Local Plan. **Likely significant effect, therefore, cannot be dismissed and recreational pressure on Wealden Heaths Phase II SPA/Woolmer Forest SAC is screened in for AA.**

**Summary**

5.44 In summary, the following Habitats sites will be taken forward to AA:

- Chichester and Langstone Harbours SPA and Ramsar site/Solent & Southampton Water SPA/Solent Maritime SAC/Solent and Dorset Coast SPA
- Wealden Heaths Phase II SPA/Woolmer Forest SAC
- Shortheath Common SAC
- Singleton and Cocking Tunnels SAC

## Urbanisation

5.45 There is a single Habitat Site that could be potentially impacted by urbanisation as a result of the Local Plan which is Wealden Heaths Phase II SPA and this is discussed further below. In addition, Shortheath Common SAC, while not part of the SPA complex, can be considered functionally-linked to the Wealden Heaths Phase II SPA in that it is known to support populations of nesting nightjar, woodlark and/or Dartford warbler. It is highly likely that the SPA birds which breed at Shortheath Common are part of the wider SPA population.

**Wealden Heaths Phase II SPA/Shortheath Common SAC**

5.46 The SPA is located within the Local Plan area. There is now extensive evidence that heathland sites are sensitive to a wide range of urbanisation impacts, including cat predation, fly-tipping and arson. The SSSI parcels of

the Wealden Heaths Phase II SPA are distributed in the north-west of the South Downs National Park Authority Area amidst high housing densities in Bordon, Whitehill, Headley and Lindford. Therefore, it is evident that this Habitats Site is already subject to urbanisation impacts that cannot be fully mitigated.

5.47 If no constraints were placed on housing developments (i.e. no policy mechanism is in place) and assuming that future growth would follow historic development patterns, it is reasonable to anticipate that a significant portion of new housing would be delivered in close proximity to the heathland complex. This would exacerbate any existing urbanisation impacts, potentially significantly affecting designated heathland and ground-nesting birds.

5.48 The nearest potential site allocation to the SPA is Land west of Liphook/Land at Westlands Park, allocated for mixed use, including 300 dwellings, a 65-bed care home and 14 permanent Gypsy and Traveller pitches and SANG. At its closest, it is located 364 m from the SPA. It is noted that the majority of this potential allocation is located more than 400 m from the SPA. No other potential site allocations are located within 400 m of the SPA.

5.49 A 400 m urbanisation zone has been identified around this SPA, as identified in Natural England's comments on the Regulation 18 HRA. This zone will be applied in both the South Downs and East Hampshire District Local Plans and would also apply to Shortheath Common SAC. However, there are no allocations proposed within the 400m of Shortheath Common and therefore there would be no urbanisation impact on this SAC through its role as supporting functionally linked habitat for the SPA.

5.50 **However, likely significant effects on the Wealden Heaths Phase II SPA itself, regarding urbanisation, cannot be excluded, and this impact pathway is screened in for AA.**

## Loss of Functionally Linked Land

5.51 Habitat Sites that could be potentially impacted upon by Loss of Functionally Linked Land (FLL) as a result of the Local Plan are:

- Arun Valley SPA and Ramsar site for waterfowl and waders
- Ebernoe Common SAC, The Mens SAC, and Singleton and Cocking Tunnels SAC, collectively known as the "Sussex Bat sites".

5.52 The following paragraphs discuss loss of functionally-linked land in relation to each identified Habitats Site. It discusses whether the Local Plan provides a valid linking impact pathway to loss of FLL at that Habitats Site, and discusses whether there is realistic potential for a likely significant effect, and whether AA is required or not.

**Arun Valley SPA and Ramsar site**

5.53 The component parts of the SPA/Ramsar site are Pulborough Brooks SSSI, Waltham Brooks SSSI and Amberley Wild Brooks SSSI. All of these are within the South Downs National Park.

5.54 As detailed in paragraph 4.22, it is widely accepted that Bewick's swans frequently feed on suitable farmland up to 5 km from the designated site, and as such, suitable fields within 5 km of the SPA could constitute important

supporting habitat if they support a large enough percentage of the SPA population on a regular basis. In addition, Natural England has identified that much of the functionally linked land associated with the Arun Valley is located within a designated Important Bird Area (which includes Ramsar sites and SPA sites). For the Horsham Local Plan, a zone of 6.5 km was used rather than 5km.

5.55 LP Strategic Policy SDH1: Housing Supply, provides for dwellings to be delivered via windfall development, which by definition could result in an application for development being submitted anywhere within the SDNP boundary.

5.56 The Local Plan allocates four sites within 5 km of the SPA/SAC/Ramsar site: East Street Farm at Amberley for 20 dwellings, Land East of Coombe Crescent at Bury for 15 dwellings, Land South of London Road, Coldwaltham for 30 dwellings and Land north of Kings Lane, Coldwaltham, a gypsy and traveller plot for two permanent pitches. This is a total of 65 dwellings and two pitches within 5km. The nearest site is East Street Farm, which is 100m from Amberley Wild Brooks. If one increases the zone of influence to 6.5 km, it adds a single potential allocation; Land south of Herbert Shiner School in Petworth at 6.4 km from the SPA and potentially allocated for 75 dwellings. However, the Local Authority has highlighted that the 6.5 km zone only clips the southeast corner of the development, and the developable area will be outside of the 6.5 km zone.

5.57 From review of freely available aerial mapping, all four of the above-identified potential site allocations are located within greenfield sites. They are, however, located outside of the identified Important Bird Area[83] and located within or adjacent to the urban area associated with the settlements of Amberley and Bury and Petworth, and as such, these land parcels are less likely to support a significant population of designated Arun Valley bird features.

5.58 Nonetheless, in the absence of site-specific habitat data and, if required, wintering bird survey data from each site, it is not possible to definitively conclude no likely significant effect at the plan level, and as such, AA is required. Furthermore, as detailed in Strategic Policy SDH1: Housing Supply, some of the housing provision will be provided through windfall development. By its nature, no locations of windfall development are identified within the LP, and an application for development could potentially be submitted for any location within the SDNP boundary. **The potential for likely significant effects cannot be screened out and will therefore be discussed further within the AA.**

**Sussex Bat Sites (Ebernoe Common SAC, The Mens SAC and Singleton and Cocking Tunnels SAC)**

5.59 All three of the Sussex Bat SAC sites are located within the SDNP boundary.

5.60 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

[83] Available at IBAs UK | RSPB Open Data

north to Parham in the south. They also cross to the Adur floodplain. In some cases, the bats travelled up to 12.2 km to visit foraging areas[84]. The currently available radio-tracking evidence indicates that 75% of the bat population forages within 9km of the SAC, although it is conceivable that barbastelle bats of the SAC use a wider area for activities such as migrating between hibernation roosts and summer roosts.

5.61 Settlements that contain potential LP site allocations within 12km of the Sussex Bat SAC sites include Midhurst, Petworth, Amberley, Bury, Cocking, Singleton, Fernhurst, Cross Gate, Bury, Lodsworth, Northchapel, and Easebourne. Development within the built-up areas of any of the settlements or villages within this 12 km zone is unlikely to materially interfere with commuting or foraging opportunities for barbastelle bats associated with either SAC. However, greenfield development in this part of the SDNP boundary could have an adverse effect if it led to the net loss of linear features in pastoral landscapes, including deciduous woodland, wet meadows and waterbodies[85]. Even if it did not lead to their loss but failed to provide an adequate physical buffer zone against construction and operational lighting (for example), it could still result in an adverse effect.

5.62 LP Strategic Policy SDH1: Housing Supply, provides for dwellings to be delivered via windfall development, which by definition could result in an application for development being submitted anywhere within the SDNP boundary. As such, there is potential for a likely significant effect to result.

5.63 Potential Site Allocations located within 6.5km of The Mens SAC:

- Land north of Northend Close – Petworth – 18 dwellings (3.2 km)
- Land south of Herbert Shiner School - Petworth – 75 dwellings (3.5 km)
- Land at Rotherbridge Lane – Petworth – seven dwellings (4.0 km)
- Land South of London Road – Coldwaltham – 30 dwellings (5.5 km)
- Land north of Kings Lane – Coldwaltham – two pitches (4.7 km)

5.64 Potential Site Allocations located between 6.5km and 12km of The Mens SAC:

- Land at former Easbourne School – Easebourne – 9 dwellings (11.4 km)
- Land West of The Street – Lodsworth – 10 dwellings (8.4 km)
- Land west of Valentines Lea – Northchapel – 25 dwellings (8.5 km)
- Land East of Coombe Crescent – Bury – 15 dwellings (8.7 km)
- East Street Farm – Amberley – 20 dwellings (8.7 km)

5.65 Potential Site Allocations located within 6.5km of Ebernoe Common SAC:

[84] Greenaway, F. (2008) Barbastelle bats in the Sussex West Weald 1997 - 2008
[85] http://www.bats.org.uk/data/files/Species_Info_sheets/barbastelle_11.02.13.pdf [accessed 08/02/2018]

- Land north of Northend Close – Petworth – 18 dwellings (2.8 km)
- Land south of Herbert Shiner School - Petworth – 75 dwellings (4.4 km)
- Land West of The Street – Lodsworth – 9 dwellings (4.5 km)
- Land west of Valentines Lea – Northchapel – 25 dwellings (2.1 km)
- Land at Rotherbridge Lane – Petworth – seven dwellings (4.4 km)

5.66 Potential Site Allocations located between 6.5km and 12km of Ebernoe Common SAC:

- Land at Hawksfold – Fernhurst – seven dwellings (7.2 km)
- Land east of Pitsham Lane – Midhurst – 50 dwellings (9.9 km)
- Former Bus Depot, Pitsham Lane – Midhurst – six dwellings (9.9 km)
- Land at Forest and Hawthorn Close – Midhurst – five dwellings (9.8 km)
- Land adjacent to the Grange Car Park – Midhurst – 10 dwellings (9.0 km)
- Land at Former Easebourne School – Easebourne – 9 dwellings (7.1 km)
- Land west of Budgenor Lodge – Easebourne – 25 dwellings (7.9 km)
- Midhurst Community Hospital and 1-2 Rotherfield Mews – Easebourne – 66-bed care home (8.2 km)
- Land at the Fairway – Midhurst – nine dwellings (9.4 km)
- Holmbush Caravan Park – Midhurst – 50 dwellings (9.4 km)
- Land South of London Road – Coldwaltham – 30 dwellings (5.5 km)

  Land north of Kings Lane – Coldwaltham – two pitches (10.1 km)

5.67 Potential Site Allocations located within 6.5 km of Singleton and Cocking Tunnels SAC:

- Land east of Pitsham Lane – Midhurst – 50 dwellings – (3.0 km)
- Former Bus Depot, Pitsham Lane – Midhurst – six dwellings (3.0 km)
- Land at Forest and Hawthorn Close – Midhurst – five dwellings (3.5 km)
- Land adjacent to the Grange Car Park – Midhurst - 10 dwellings (4.3 km)
- Land at Former Easebourne School – Easebourne – nine dwellings (6.4 km)
- Land west of Budgenor Lodge – Easebourne – 25 dwellings (6.2 km)
- Midhurst Community Hospital and 1-2 Rotherfield Mews – Easebourne – 66-bed care home (5.3 km)
- Land at the Fairway – Midhurst – nine dwellings (3.6 km)
- Holmbush Caravan Park – Midhurst – 50 dwellings (3.6 km)

5.68 Potential Site Allocations located between 6.5km and 12km of Singleton and Cocking Tunnels SAC:

- 1-4 Parsonage Estate – Rogate – eight dwellings (9.5 km)
- Land at Hawksfold – Fernhurst – seven dwellings (11.5 km)
- Land north of Northend Close – Petworth – 18 dwellings (11.8 km)
- Land South of Herbert Shiner School – Petworth – 75 dwellings (11.0 km)
- Land West of The Street – Lodsworth – 10 dwellings (7.6 km)
- Land at Rotherbridge Lane – Petworth – seven dwellings (10.7 km)
- Land at Loppers Ash – South Harting – seven dwellings (8.8 km)
- Land North of the Forge – South Harting – seven dwellings (8.8 km)

5.69 **As likely significant effects could potentially result from LP development above, these sites cannot be screened out and will be discussed further within the AA.**

**Summary**

5.70 Loss of functionally linked land cannot be dismissed for either the Arun Valley SPA and Ramsar site or the Sussex Bat SAC sites and as such loss of functionally linked land will be discussed within the AA for these sites.

## Air Quality

5.71 Habitat Sites that could be potentially impacted by air quality as a result of the Local Plan are:

- Ashdown Forest SAC/SPA – located 13km from the SDNP boundary
- Butser Hill SAC - located within the SDNP boundary
- Castle Hill SAC - located within the SDNP boundary
- Chichester and Langstone Harbours SPA and Ramsar site - located circa 1.7km south of the SDNP boundary
- East Hampshire Hangers SAC - located within the SDNP boundary
- Ebernoe Common SAC - located within the SDNP boundary
- Emer Bog SAC - located circa 6.6 km west of the SDNP boundary
- Kingley Vale SAC - located within the SDNP boundary
- Lewes Downs SAC - located within the SDNP boundary
- The Mens SAC - located within the SDNP boundary
- Portsmouth Harbour SPA and Ramsar site - located circa 5km south of the SDNP boundary
- River Itchen SAC – located within the SDNP boundary
- Shortheath Common SAC - located within the SDNP boundary
- Solent Maritime SAC - located circa 1.7km south of the SDNP boundary
- Thames Basin Heaths SPA - located circa 4.9km south of the SDNP boundary
- Thursley, Hankley & Frensham Commons SPA - located circa 2.2km south of the SDNP boundary
- Thursley, Ash, Pirbright & Chobham SAC - located circa 2.2km south of the SDNP boundary

- Wealden Heaths Phase II SPA - located within the SDNP boundary
- Woolmer Forest SAC - located within the SDNP boundary

5.72 The following paragraphs discuss air quality in relation to each identified Habitats Site. It discusses whether the Local Plan provides a valid linking impact pathway to air quality impacts at that Habitats Site. It discusses whether there is realistic potential for likely significant effects (and AA is required) or not (i.e. there would be no likely significant effect), and the impact on air quality in relation to the specific Habitats Site can be screened out from further consideration. Air quality modelling is being undertaken for the consultation version of the SDLP HRA and this will have reference to the standing advice recently published on this issue by Natural England.

**Ashdown Forest SAC/SPA**

5.73 Three A roads lie within 200 m of the Ashdown Forest SAC/SPA, the A26, the A22 and the A275. The SAC is designated for its heathland habitats, which are known to be susceptible to atmospheric nitrogen deposition and ammonia. The minimum Critical Load for heathland is 5 kg N/ha/yr. The average background nitrogen deposition to heathland at this site is above this Critical Load (site minimum N deposition 13.86 kg N/ha/yr and site maximum N deposition 14.58 kg N/ha/yr) according to APIS[86].

5.74 Before undertaking air quality modelling, it is necessary to determine the Affected Road Network, i.e. the roads likely to be affected by traffic growth associated with SDLP. It is very likely that the Ashdown Forest SAC/SPA will lie well beyond the Affected Road Network of the South Downs National Park. However, it is considered at this point that **likely significant effects due to increased traffic attributable to the Local Plan cannot be dismissed. An AA is therefore required,** which as a minimum will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Butser Hill SAC**

5.75 Butser Hill SAC is adjacent to an A road (the A283). Habitats for which the SAC is designated are sensitive to nitrogen deposition. These are calcareous grassland and its epiphytic communities, and (coniferous) yew woodlands. The minimum Critical Load for calcareous grassland and associated epiphytic communities, and yew woodland is 10 kg N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition 25.117 kg N/ha/yr and site maximum N deposition 25.718 kg N/ha/yr) according to APIS[87].

5.76 Relatively high nitrogen deposition rates (site average N deposition 25.476 kg N/ha/yr) compared to relatively low NOx concentrations (site average NOx deposition 9.864 µg/m$^3$) suggest that much of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.

5.77 Before undertaking air quality modelling, it is necessary to determine the Affected Road Network, i.e. the roads likely to be affected by traffic growth associated with SDLP. The majority of the traffic passing Butser Hill SAC along the A3 will likely have come from outside of the SDNP boundary i.e.

[86] APIS app | Air Pollution Information System [Accessed 04/10/2024]
[87] APIS app | Air Pollution Information System [Accessed 04/10/2024]

Portsmouth or elsewhere on the south coast, or from locations in Surrey and beyond. The remaining traffic will have come from the A272 and Petworth within the SDNP and will be travelling to Godalming on the A3 and beyond, although it is acknowledged that a portion will have originated within the SDNP boundary.

5.78 It is considered at this point that **likely significant effects due to increased traffic attributable to the Local Plan cannot be dismissed. An AA is therefore required**, which, as a minimum, will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Castle Hill SAC**

5.79 Castle Hill SAC is a remote site that does not lie within 200m of any roads that would constitute journey to work routes for residents of the SDNP (it is located adjacent to a small rural dead-end road (Jugg's Road) that leads to fields. As such, air quality is not a realistic linking impact between the SAC and the SDLP. It can be concluded that **no likely significant effects would result either alone or in combination with other projects or plans.**

**Chichester and Langstone Harbours SPA and Ramsar site, Solent and Dorset Coast and Solent Maritime SAC**

5.80 Chichester & Langstone Harbours SPA and Ramsar site, and The Solent Maritime SAC and Solent and Dorset Coast SPA overlap much of each other in extent. They 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[88]; 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*'[89]. 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.). It is considered for all the reasons set out above that there will be **no likely significant effect on the Chichester & Langstone Harbours SPA Solent and Dorset Coast SPA or Solent Maritime SAC from atmospheric nitrogen deposition. Nonetheless, traffic and air quality modelling is being undertaken to inform the consultation version of the Regulation 19 Local Plan HRA.**

**East Hampshire Hangers SAC**

5.81 The East Hampshire Hangers SAC is a composite site that bisects East Hampshire District on a north-south axis (but is also located within the SDNP boundary). The SAC is designated for a range of habitats and species which are sensitive to atmospheric pollution. Its features that are most sensitive to

[88] 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*'. http://www.apis.ac.uk/node/968 [Accessed 04/10/2024]
[89] APIS website http://www.apis.ac.uk/node/968 [Accessed 04/10/2024]

atmospheric nitrogen deposition are the *Taxus baccata* (yew) wood of the British Isles and beech forests (nitrogen CL of 10-15 kg N/ha/yr). Exceedance impacts listed on APIS encompass changes in soil processes, nutrient imbalances, and altered composition of mycorrhizae and ground vegetation. The Minimum background nitrogen deposition rate is 24.281 kg N/ha/yr, and the Maximum nitrogen deposition is 28.29 kg N/ha/yr. These exceed the maximum nitrogen CL for all designated woodland habitats (e.g. *Taxus baccata* woods, *Asperulo-Fagetum* beech forest, *Tilio-Acerion* forests of slopes, screes and ravines). Furthermore, the qualifying 'semi-natural dry grasslands and scrubland facies' and '*Asperulo-Fagetum* beech forests' also harbour lichens and bryophytes, which are sensitive to direct toxicity effects from high ammonia ($NH_3$) concentrations with an identified Critical Level of 1 $\mu g/m^3$.

5.82 A review of the road infrastructure along the SAC indicates that there are no major commuter routes within 200m of the site. However, there are several smaller B roads (notably the B3006) alongside the SAC that connect the conurbations of Whitehill & Bordon and Alton. While B roads are less likely to experience significant increases in traffic flows, this cannot be excluded, particularly where large developments (such as dwellings and/or employment floorspace) are situated in close proximity.

5.83 **Overall**, **likely significant effects on the East Hampshire Hangers SAC regarding atmospheric pollution cannot be excluded and will be discussed further within the AA.**

**Ebernoe Common SAC**

5.84 This Habitats Site is adjacent to an A road (the A283). The woodland of Ebernoe Common SAC is sensitive to nitrogen deposition, which could affect the ground flora and epiphytic communities of the beech forest, although it is unlikely to affect tree survival. According to the UK Air Pollution Information System, nitrogen deposition is not believed to have a direct, major effect on tree growth in the UK.[90].

5.85 Before undertaking air quality modelling, it is necessary to determine the Affected Road Network, i.e. the roads likely to be affected by traffic growth associated with SDLP. The majority of the traffic passing Ebernoe Common along the A283 will have come from the A272 and Petworth within the SDNP and will be travelling to Godalming at the A3 and beyond.

5.86 The designated habitat for this SAC is beech woodland. This habitat has a minimum Critical Load of 10 kg N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition 22.349 kg N/ha/yr and site maximum N deposition 23.305 kg N/ha/yr) according to APIS[91]. Relatively high nitrogen deposition rates (site average N deposition 22.734 kg N/ha/yr) compared to relatively low $NO_x$ concentrations (site average $NO_x$ deposition 8.06 $\mu g/m^3$) suggest that much of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.

[90] Nitrogen deposition :: Broadleaved, Mixed and Yew Woodland | Air Pollution Information System (apis.ac.uk) [Accessed 04/10/2024]
[91] APIS app | Air Pollution Information System [Accessed 04/10/2024]

5.87 Nonetheless, it is considered at this point that a **likely significant effect due to increased traffic attributable to the Local Plan cannot be dismissed. This will be discussed within the AA,** which, as a minimum, will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP would result in a likely significant effect, either alone or in combination with other plans and projects.

**Emer Bog SAC**

5.88 Emer Bog SAC is a remote site that does not lie within 200m of any roads that would constitute journey to work routes for residents of the SDNP. As such, air quality is not a realistic linking impact between the SAC and the SDLP. It can be concluded that **no likely significant effects will result, either alone or in combination, and can be screened out of the AA.**

**Kingley Vale SAC**

5.89 The dry calcareous grasslands (including epiphytic communities and yew-dominated woodland of the SAC are sensitive to nitrogen deposition, which could affect these communities.

5.90 A review of the road infrastructure along the SAC indicates that there are no major commuter routes within 200 m of the site. However, it is located within 200 m of the B2141. This road connects Chichester (and East Lavant) with Petersfield (and other smaller settlements located along the B2141 located within the SDNP boundary. While B roads are less likely to experience significant increases in traffic flows, this cannot be excluded.

5.91 APIS identifies that the most sensitive SAC habitat to nitrogen deposition is the yew-dominated woodland habitat, which has a minimum Critical Load of 10 kg N/ha/yr and a maximum Critical Load of 15 kg N/ha/yr. The dry calcareous grasslands (including epiphytic communities) with a minimum Critical Load of 10 kg N/ha/yr and a maximum Critical Load of 20 kg N/ha/yr. The average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition 24.256 kg N/ha/yr and site maximum N deposition 25.315 kg N/ha/yr) according to APIS[92].

5.92 Relatively high nitrogen deposition rates (site average N deposition 24.901 kg N/ha/yr) compared to relatively low $NO_x$ concentrations (site average $NO_x$ deposition 9.15 µg/$m^3$) suggest that much of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.

5.93 Nonetheless, it is considered at this point that a **likely significant effect due to increased traffic attributable to the Local Plan cannot be dismissed. This will be discussed further within the AA,** which, as a minimum, will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Lewes Downs SAC**

5.94 The calcareous grassland for which Lewes Downs SAC is designated is sensitive to nitrogen deposition, which could affect this community. The calcareous grassland is also an epiphytic community. The minimum Critical Load for calcareous grassland and associated epiphytic communities is 10 kg N/ha/yr, and as such, the average background nitrogen deposition at this site

[92] APIS app | Air Pollution Information System [Accessed 04/10/2024]

is above this Critical Load (site minimum N deposition 22.647 kg N/ha/yr and site maximum N deposition 23.179 kg N/ha/yr) according to APIS[93].

5.95 Relatively high nitrogen deposition rates (site average N deposition 22.889 kg N/ha/yr) compared to relatively low $NO_x$ concentrations (site average $NO_x$ deposition 11.406 µg/m$^3$) suggest that much of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.

5.96 Lewes Downs SAC is located within 200 m of the A26 and the B2192, both considered to be key routes within Lewes and the surrounding area. The A26 carries traffic from Lewes to areas to the east of Lewes (within the SDNP boundary), and to neighbouring settlements outside of the SDNP, such as Uckfield and the A22 to the north-east and towards Eastbourne and the A27 to the south-east. The B2192 carries traffic from Lewes to areas to the east of Lewes (within the SDNP boundary), and to smaller neighbouring settlements outside of the SDNP such as Norlington, Broyle Side, Shortgate and Halland on the A22.

5.97 It is considered at this point that a **likely significant effect due to increased traffic attributable to the Local Plan cannot be dismissed and will be discussed further within an AA,** which, as a minimum, will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to be result in a likely significant effect, alone, or in combination with other plans and projects.

**The Mens SAC**

5.98 The woodland of The Mens SAC is sensitive to nitrogen deposition, which could affect the ground flora and epiphytic communities of the beech forest, although it is unlikely to affect tree survival. According to the UK Air Pollution Information System, nitrogen deposition is not believed to have a direct, major effect on tree growth in the UK.[94]

5.99 The Mens SAC is adjacent to an A road (the A272). Work undertaken for the South Downs Local Plan adopted in 2019 indicated that the road at this location has relatively low traffic flows such that modelled baseline $NO_x$ concentrations did not exceed the critical level for that pollutant even at the roadside and are forecast to fall further over the plan period due to the improvements in vehicle emissions technology (i.e. people replacing older vehicles with those compliant with the current emissions standard, Euro6, and working towards implementation of Euro7 standards from 2030), outstripping the forecast increase in vehicle flows.

5.100 The designated habitat for this SAC is beech woodland. This habitat has a minimum Critical Load of 10 kg N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition 22.716 kg N/ha/yr and site maximum N deposition 23.471 kg N/ha/yr) according to APIS[95]. Relatively high nitrogen deposition rates (site average N deposition 23.071 kg N/ha/yr) compared to relatively low $NO_x$ concentrations (site average $NO_x$ deposition 8.427 µg/m$^3$) suggest that much

[93] APIS app | Air Pollution Information System [Accessed 04/10/2024]
[94] Nitrogen deposition :: Broadleaved, Mixed and Yew Woodland | Air Pollution Information System (apis.ac.uk) [Accessed 04/10/2024]
[95] APIS app | Air Pollution Information System [Accessed 04/10/2024]

of the nitrogen deposition at the SAC derives from surrounding agriculture rather than road traffic.

5.101 Similar to Ebernoe Common SAC, nonetheless, it is considered at this point that a **likely significant effect due to increased traffic attributable to the Local Plan cannot be dismissed,** particularly since the A272 is one of the main routes within this part of the SDNP that connects interconnects locations within the SDNP such as Petersfield, Midhurst and Petworth and the A3 in the west to locations to the east of the SDNP such as Haywards Heath, Uckfield the Horsham, the A24 (a key north south route that connects the M25 to the south coast near Worthing, and the A23 (a key, north south route between the M25 and Brighton and Hove, also connecting to Gatwick airport). **This will be discussed further within an AA**, which, as a minimum, will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Portsmouth Harbour SPA and Ramsar site**

5.102 Portsmouth Harbour SPA and Ramsar site is relatively remote from the main population centres of the National Park, with the vast majority of the site being more than 200 m from significant roads. All four qualifying species (red-breasted merganser, black-tailed godwit, dark-bellied brent goose and dunlin) of the SPA/Ramsar rely on saltmarsh. APIS previously identified the nitrogen critical load for the upper saltmarsh of 20-30 kg N/ha/yr; however, in 2023, this was lowered to 10-20 kg N/ha/yr for upper saltmarsh. Upper saltmarsh is of less importance to the SPA/Ramsar birds than lower and pioneer saltmarsh, and SPA birds are less sensitive to subtle botanical changes than major structural changes. Therefore, it is considered that for the SPA/Ramsar, the higher critical load of 20 kg N/ha/yr is appropriate. For black-tailed godwits, which feed on aquatic invertebrates in mud, the effect of nitrogen addition to the system may balance out because an increase in nutrients may increase the number of prey items available to them. In contrast, dark-bellied brent geese feed on coastal saltmarsh, which could be replaced by other plant communities under elevated nutrient concentrations. Therefore, an increase in road traffic could lead to negative impacts on the geese due to the loss of suitable foraging habitat.

5.103 To establish the sensitivity of a Habitats site to atmospheric pollution arising from traffic, a detailed assessment of sensitive habitats within the site needs to be undertaken. Habitat mapping on MAGIC identifies that there are relatively few sections of coastal saltmarsh within the SPA/Ramsar in general. Only one of these habitat parcels lies within 200 m of a major road, the A32 Gosport Road to the south-east of Cams Alders Sports Centre. Even here, the closest area of saltmarsh is 171 m from the roadside and consists of a small patch, well beyond the zone where most of the nitrogen from the road will be deposited. This road is unlikely to constitute a major journey-to-work route for SDNP residents.

5.104 The critical load for saltmarsh is derived from studies that were not particularly realistic[96]; ultimately, APIS itself states that '*Overall, N deposition* [from the

[96] 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*'. http://www.apis.ac.uk/node/968 [Accessed 04/10/2024]

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*'[97]. In other words, the key to protecting saltmarshes, particularly in an area like the Portsmouth Harbours of 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.). It is considered for all the reasons set out above that **there will be no likely significant effect on the Portsmouth Harbours SPA from atmospheric nitrogen deposition.**

**River Itchen SAC**

5.105 The River Itchen SAC is located within the northwest extent of the SDNP. The River Itchen SAC crosses main roads, the A31 and M3, within the SDNP boundary. The A31 joins the settlements of Winchester and Alresford, which are both located immediately outside the SDNP boundary. The SAC is partially designated for its Southern damselfly. APIS identifies two habitats for southern damselfly on APIS: wet heath (the habitat in which they are normally found) and 'rivers and streams', which is the habitat in which they are found around the River Itchen, living in emergent aquatic and riverside vegetation. For the latter habitat, there is no critical load on APIS. Rather, it states: '*Decision to be taken at a site-specific level since habitat sensitivity depends on N or P limitation'*.

5.106 This is because most lowland flowing waterbodies are phosphate-limited; in other words, phosphorus is the growth-limiting nutrient rather than nitrogen and is therefore the key to controlling eutrophication and the growth of undesirable competitive riverine vegetation. The River Itchen is well known to be phosphate-limited; hence, the considerable effort put into reducing phosphate levels rather than nitrogen levels by the Environment Agency. As such, it could be argued that due to its phosphate-limited nature, there would be no effect on the SAC from increased nitrogen deposition from the atmosphere.

5.107 Reedbeds and emergent vegetation are not wholly aquatic, and it could therefore be argued that the emergent vegetation at the SAC is nitrogen-limited (or at least nitrogen and phosphorus co-limited). However, the critical load for reedbeds (there is no specific critical load for reedbeds but the critical load for 'rich fen' is often used as a proxy) is set by its botanical effects in terms of shifting species composition. Southern damselflies are relatively insensitive to all but the coarsest changes in habitat structure which are very unlikely to arise from the limited localised atmospheric nitrogen deposition from additional traffic growth. Moreover, the southern damselflies require shallow, slow-flowing water and are generally found in the water meadows of the SAC rather than in the main river channel. Moreover, the main channel around the A31 crossing at New Alresford is generally lacking in emergent vegetation.

5.108 Southern Water are delivering compensatory measures for the adverse effects on integrity of the River Itchen SAC that abstraction in their Drought Plan is predicted to have. Much of this compensatory habitat will be delivered in the River Test, which is 11km from the SDNP at its closest. However, some compensatory habitat for Atlantic salmon and the habitat 'water courses of plain to montane levels with *R. fluitantis'* (chalk stream habitat) within and around the River Meon, which sits within the South Downs National Park and

[97] APIS website http://www.apis.ac.uk/node/968 [Accessed 04/10/2024]

meanders through East Meon, West Meon, down through Warnford, Droxford and out of the SDNP at Wickham. However, in addition to the aforementioned background information on the lower sensitivity of these qualifying features to air quality impacts, there is only a single allocation (SDA45 – Droxford, 9 dwellings) within close proximity. The Droxford allocation is within 400m of the River. The next closest development is 3.5 km from the source at Land East of Langrish Primary School. This is relevant because for the majority of dwellings within the SDNP the traffic will have dispersed across the network.

5.109 It is therefore concluded that there will be no likely significant effect on the River Itchen SAC due to air quality impacts.

**Shortheath Common SAC**

5.110 The Shortheath Common SAC lies to the north-west of Bordon and is considered to be a functional part of the Wealden Heaths Phase II SPA complex, partly because it also supports ground-nesting birds. It is designated for a range of habitats that are potentially sensitive to atmospheric nitrogen deposition, including transition mires and quaking bogs, European dry heaths and bog woodland. However, a review of the existing road infrastructure surrounding the SAC indicates that there are no major commuter routes (A roads) within 200 m of the site boundary. As such, there is **no potential for likely significant effects either alone or in combination and traffic-related nitrogen deposition impacts of the SDLP on the Shortheath Common SAC are therefore screened out from further consideration.**

**Singleton and Cocking Tunnels SAC**

5.111 At its closest, Singleton and Cocking Tunnels SAC is located circa 80 m from the A286, a route that connects Chichester with Midhurst and the A272. The site is designated for its roosting Barbastelle and Bechstein's bat's which hibernate within the tunnels. The tunnel features that support the SAC are not considered sensitive to atmospheric nitrogen deposition, and as such, there is **no potential for likely significant effects either alone or in combination. Traffic-related nitrogen deposition impacts of the SDLP on the Singleton and Cocking Tunnels SAC are therefore screened out from further consideration.**

**Thames Basin Heaths SPA**

5.112 The SPA is designated for ground-nesting Dartford warbler, nightjar and woodlark. The dry heaths and pine forests upon which these bird species depend are noted to be sensitive to atmospheric nitrogen deposition. These habitats all have a minimum Critical Load of 5 kg N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition for short vegetation 11.074 kg N/ha/yr and site maximum N deposition for short vegetation 13.421 kg N/ha/yr) according to APIS[98]. There is a clear potential for traffic-related atmospheric nitrogen deposition to reduce the suitability of supporting habitats for these qualifying species.

5.113 At its closest, the Thames Basin Heaths SPA is located around 4.8 km north of the SDNP boundary at Heath Brow SSSI near Ewshot. The SPA comprises scattered land parcels within the districts of Hart, Rushmoor, Waverley, Surrey Heath, Woking, and Bracknell Forest. All components are located to the west

[98] APIS app | Air Pollution Information System [Accessed 04/10/2024]

of the A3/A31 (with the exception of the Ockham and Wisley Common SSSI component, which straddles the A3 to the south of the junction of the A3 with the M25 near Wisley Common and Bolder Mere, more than 30 km from the SDNP boundary). The SPA is located in proximity to larger settlements outside the SDNP boundary, such as Guildford, Aldershot, Farnham, and Camberley. Consequently, the SPA is situated within 200 m of major roads. The SPA component located closest to the SDNP boundary, within 200 m of a main road, is Heath Brow SSSI. Heath Bow SSSI is located adjacent to the A287, approximately 4.8 km from the SDNP boundary. However, when examining potential commuter routes from settlements within the SDNP, none of the main roads exiting the SDNP pass within 200 m of the SPA. To pass within 200 m of the SPA, convoluted routes would need to be travelled.

5.114 As such, it is considered that **no likely significant effects would result alone or in combination with other projects and plans. Traffic-related nitrogen deposition impacts of the SDLP on the Thames Basin Heaths SPA are therefore screened out from further consideration.**

**Thursley, Hankley & Frensham Commons SPA**

5.115 Similar to the Thames Basin Heaths SPA, the Thursley, Hankley and Frensham Commons SPA is designated for its ground-nesting Dartford warbler, nightjar and woodlark. The dry heaths and pine forests upon which these bird species depend are noted to be sensitive to atmospheric nitrogen deposition. These habitats all have a minimum Critical Load of 5 kg N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition for short vegetation 12.053 kg N/ha/yr and site maximum N deposition for short vegetation 13.563 kg N/ha/yr) according to APIS[99]. There is a clear potential for traffic-related atmospheric nitrogen deposition to reduce the suitability of supporting habitats for these qualifying species.

5.116 The SPA is located within 200 m of two main roads that could provide key commuter routes from the SDNP. These are the A287 at Frensham Common, where the road is located immediately adjacent to the SPA, and the A3 that bisects Thursley Common, Ockley Common and Witley Common.

5.117 However, these locations are over 10km from the nearest allocations in the SDLP. This is relevant because in general traffic related air quality modelling for Local Plans is only undertaken on roads up to 10km from allocation boundaries on the basis that by this point traffic has dispersed across the network. Therefore, likely significant effects are dismissed.

**Thursley, Ash, Pirbright & Chobham SAC**

5.118 Thursley, Ash, Pirbright and Chobham SAC spatially overlaps with the Thursley, Hankley and Frensham Commons SPA. It is designated for its wet heath, European dry heaths and depressions on peat substrates. All three habitats have a minimum Critical Load of 5 kg N/ha/yr (maximum Critical Load of 15 kg N/ha/yr), and as such, the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition for short vegetation 11.483 kg N/ha/yr and site maximum N deposition for short vegetation 13.563 kg N/ha/yr) according to APIS[100]. There is a clear potential

[99] APIS app | Air Pollution Information System [Accessed 04/10/2024]
[100] APIS app | Air Pollution Information System [Accessed 04/10/2024]

for traffic-related atmospheric nitrogen deposition to reduce the suitability of supporting habitats for these qualifying species.

5.119 The SAC is located within 200 m of two main roads that could provide key commuter routes from the SDNP. These are the A287 at Frensham Common, where the road is located immediately adjacent to the SPA, and the A3 that bisects Thursley Common, Ockley Common and Witley Common.

5.120 However, these locations are over 10km from the nearest allocations in the SDLP. This is relevant because in general traffic related air quality modelling for Local Plans is only undertaken on roads up to 10km from allocation boundaries on the basis that by this point traffic has dispersed across the network. Therefore, likely significant effects are dismissed.

**Wealden Heaths Phase II SPA**

5.121 Similar to Thames Basin Heaths SPA and Thursley, Hankley and Frensham Commons SPA, The Wealden Heaths Phase II SPA is designated for its ground-nesting Dartford warbler, nightjar and woodlark. The dry heaths, upon which these bird species depend, are noted to be sensitive to atmospheric nitrogen deposition. These habitats all have a minimum Critical Load of 5 kg/N/ha/yr, and as such, the average background nitrogen deposition at this site is above this Critical Load (Site Minimum N Deposition for short vegetation 13.438 kg/N/ha/yr and Site Maximum N Deposition for short vegetation 14.775 kg/N/ha/yr) according to APIS[101]. There is a clear potential for traffic-related atmospheric nitrogen deposition to reduce the suitability of supporting habitats for these qualifying species.

5.122 The SPA is located within 200 m of two main roads that could provide key commuter routes from the SDNP. These are the A325 and A3, which could both provide key commuting routes for residents of the SDNP.

5.123 As such, there is **potential for this impact pathway to link to the SPA. An AA is therefore required**, which as a minimum will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Woolmer Forest SAC**

5.124 Woolmer Forest is in its entirety located within Wealden Heaths Phase II SPA. Woolmer Forest SAC is designated for its natural dystrophic waterbodies, Northern Atlantic wet heaths, European dry heaths, transition mires and quaking bogs and depressions on peat substrates. The habitat most sensitive to atmospheric nitrogen deposition is dystrophic water bodies. This has a minimum Critical Load of 5 kg N/ha/yr (maximum Critical Load of 10kg N/ha/yr). All other designated habitats have a minimum Critical Load of 5 kg N/ha/yr and a maximum Critical Load of 15 kg N/ha/yr. This identifies that the average background nitrogen deposition at this site is above this Critical Load (site minimum N deposition for short vegetation 13.959 kg N/ha/yr and site maximum N deposition for short vegetation 14.775 kg N/ha/yr) according to APIS[102]. There is a clear potential for traffic-related atmospheric nitrogen

[101] APIS app | Air Pollution Information System [Accessed 04/10/2024]
[102] APIS app | Air Pollution Information System [Accessed 04/10/2024]

deposition to reduce the suitability of supporting habitats for these qualifying species.

5.125 The SAC is located within 200 m of two main roads that could provide key commuter routes from the SDNP. These are the A325 and A3, which could both provide key commuting routes for residents of the SDNP.

5.126 As such, **there is potential for this impact pathway to link to the SAC and this will be discussed further within an AA**, which as a minimum will involve scrutiny of traffic modelling data to determine whether the change in flows due to growth in the SDLP is likely to result in a likely significant effect, alone, or in combination with other plans and projects.

**Summary**

5.127 It was concluded that the following Habitats Sites could potentially be subjected to deleterious changes in air quality as a result of the SDLP alone or in combination with other projects and plans. As such, AA will be conducted for the following Habitats Sites:

- Butser Hill SAC
- East Hampshire Hangers SAC
- Ebernoe Common SAC
- Kingley Vale SAC
- Lewes Downs SAC
- The Mens SAC
- Wealden Heaths Phase II SPA
- Woolmer Forest SAC

5.128 All other Habitats Sites not listed above could be screened out from air quality changes stemming from the SDLP, resulting in a likely significant effect, alone or in combination and are not discussed further in relation to this impact pathway. **The AA will be undertaken in the subsequent chapter and will be available for the consultation version of this HRA report.**

## Water Quality

5.129 Habitats Sites that could be potentially impacted by water quality as a result of the Local Plan are:

- Arun Valley SAC, SPA and Ramsar site
- Ashdown Forest SAC and SPA
- Chichester and Langstone Harbours SPA and Ramsar site
- Ebernoe Common SAC
- Emer Bog SAC
- Pagham Harbour SPA and Ramsar site
- Pevensey Levels SAC and Ramsar site
- Portsmouth Harbour SPA and Ramsar site
- River Itchen SAC
- Solent and Dorset SPA
- Solent & Southampton Water SPA and Ramsar site
- Solent Maritime SAC

5.130 The following paragraphs discuss water quality in relation to each identified Habitats Site. It discusses whether the Local Plan provides a valid linking impact pathway to water quality at that Habitats Site. It discusses whether there is realistic potential for a likely significant effect (and AA is required) or not (i.e. there would be no likely significant effect), and the impact of water quality on the specific Habitats Site can be screened out from further consideration.

**Arun Valley SAC, SPA and Ramsar site**

5.131 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[103] for the Arun Valley SAC and SPA, the rivers Arun and Stor are failing on phosphate levels. The failure of 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. There may also be a risk of increased levels of nutrients and silt entering the site through flooding, especially if the riverbanks are not properly maintained. The ramshorn snail for which the SAC is 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 diseases. An increase in the growth of vegetation from sustained nutrient enrichment can make the habitat unsuitable for many bird species. Diffuse pollution and siltation from agricultural runoff are likely contributing to the phosphate levels (this latter issue is managed through Catchment Sensitive Farming).

5.132 In November 2021, Natural England identified that new targets for the interest features of the Arun Valley have been agreed as part of the condition assessment review based on national guidance changes. These include a reduced total phosphorus target and the introduction of a total nitrogen target. These will be included in updates to the favourable condition tables and supplementary advice as outcomes of the condition evidence review. Natural England's November 2021 Consultation states, '*Early indications from the site-specific water quality monitoring started in June 2021 and due for*

[103] Natural England Site Improvement Plan Arun Valley (2014) https://publications.naturalengland.org.uk/file/5185212862431232 [Accessed 10/10/2024]

*completion in June 2022 suggest the designated sites are likely to fail both total nitrogen and total phosphorus targets. Most of the wastewater treatment work in the Arun Rother and Stor do not have nitrogen stripping. Though agriculture will form a source of nitrogen sediment and phosphorus, the precise relationship cannot be known until the source apportionment is completed. Nitrogen is particularly impactful on aquatic and riparian plants, which include those that form part of the Ramsar features. The SAC snail is thought to require high water quality, and both phosphorus and nitrogen targets are important for the SAC. All the supporting habitats for the birds and invertebrate SPA and Ramsar features also require low nitrogen and phosphorus.*

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

*5.134* This outcome is confirmed in the Condition Assessments (which were updated between February and May 2024) for both Pulborough Brooks SSSI and Amberley Wild Brooks SSSI (which are located within the Arun Habitats Site). The Site Condition Assessment for Pulborough Brooks SSSI identifies that the SSSI is in 80% Unfavourable – Declining[104] condition. The Unfavourable – Declining condition includes, for the majority of wintering birds (except for Teal, which is in Favourable condition), the little ramshorn whirlpool snail and ditches (within which the snail lives). A similar story is told at Amberley Wild Brooks SSSI, which is also in part noted to be in Unfavourable – Declining [105] condition. The condition assessment for ditches within both SSSIs states that "*the recorded concentrations for mean annual total phosphorous and total nitrogen exceeded the current CSMG, or where applicable, newly instated/revised target, an unfavourable declining condition for the water chemistry attribute was concluded for the feature."*

*5.135* Within both SSSIs, the condition assessments identified that the snail was not present in many of the previous locations and as such is not meeting targets for population density, extent or its ability to successfully regenerate.

5.136 To support Nutrient Neutrality assessments, Natural England has published a Nutrient Neutrality Catchments (England) map[106]. This map was updated in July 2024, and the Arun Valley Habitats Sites are not identified on it, suggesting that, at present, nutrient neutrality considerations are not a concern to Natural England.

5.137 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 Habitats Sites is through increased discharge of treated sewage effluent stemming from new residential development that falls within the water catchment of a sensitive Habitats Site. As discussed above, there is a mixed message regarding whether the Arun Valley Habitats Sites are sensitive to changes in water quality resulting from the SDLP. However, based on the precautionary principle, it is considered that **there is potential for likely**

[104] Natural England Designated Sites View (naturalengland.org.uk) [Accessed 11/10/2024]
[105] Natural England Site feature condition (naturalengland.org.uk) [Accessed 11/10/2024]
[106] Natural England Nutrient Neutrality Catchments (England) | Natural England Open Data Geoportal (arcgis.com) [Accessed 11/10/2024]

**significant effects in combination and this will be discussed further within the AA.**

**Ashdown Forest SAC and SPA**

5.138 Ashdown Forest SPA and SAC is located within a river basin catchment that overlaps with the SDNP, the Adur and Ouse catchment[107]. However, the Habitats Site is located upstream of the SDNP, and as such, there is no hydrological connection stemming from the SDLP that could affect Ashdown Forest SAC and SPA. **There are no realistic linking impact pathways present, and this impact pathway upon this Habitats Site can be screened out.**

**Solent Habitat Sites: Chichester and Langstone Harbours SPA/Ramsar site, Portsmouth Harbour SPA/Ramsar site, Solent Maritime SAC, Solent and Southampton Water SPA and the Solent and Dorset SPA.**

5.139 The Chichester and Langstone Harbours SPA/Ramsar, Solent and Southampton Water SPA and Ramsar site, Solent Maritime SAC and Portsmouth Harbour SPA/Ramsar (which collectively form part of the Solent complex) are all sensitive to changes in water quality. Suboptimal water quality has the potential to affect qualifying birds in SPA and Ramsar sites indirectly via impacts on foraging resources. For example, excessive algal growth and concomitant changes in water quality parameters may lead to alterations in ecosystem composition, reducing the availability of foraging resources (e.g., eelgrass, invertebrates, and fish) to qualifying waterfowl and waders. Eutrophication can also lead to increased turbidity, which reduces the ability of visual hunters (e.g. terns) to locate their prey. Furthermore, when elevated nutrients reach SAC habitats, they have the potential to directly affect the structure and function of these habitats. Given that the Solent sites all encompass marine habitats, nitrogen is the main nutrient of concern as it is growth-limiting in these ecosystems.

5.140 Water pollution is identified as a threat to the Solent in Natural England's SIP[108], which states that '*water pollution affects a range of habitats and bird species at the site through 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).*' While treated sewage effluent is not specifically referred to in the SIP, data from the Environment Agency Catchment Data Explorer indicate that dissolved inorganic nitrogen from sewage discharge is contributing to Chichester Harbour not attaining good overall ecological status[109].

5.141 Natural England's 2022 advice on Habitats sites that are in unfavourable condition due to negative water quality impacts includes the wider Solent area. This means that LSEs of future development resulting in a net increase in nitrogen and phosphorus input to the Solent catchment cannot be excluded. It is advised that all development resulting in a net increase in population (i.e., overnight accommodation such as new homes, student and tourist accommodation) must demonstrate nutrient neutrality in order to be granted

[107] Environment Agency Adur and Ouse Management Catchment | Catchment Data Explorer [Accessed 10/10/2024]
[108] Available at: http://publications.naturalengland.org.uk/publication/4692013588938752 [Accessed on the 10/10/2024]]
[109] Information on the ecological status of Chichester Harbour can be obtained on the Environment Agency Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning/WaterBody/GB580705210000?cycle=3 [Accessed on the 10/10/2024]

planning consent. According to available mapping[110], the Solent has a large hydrological catchment that includes the southern and north-western parts of East Hampshire District.

5.142 A bespoke nutrient budget calculator[111] and accompanying guidance document[112] have been published for the Solent Catchment, which is to be used to quantify potential nutrient inputs arising from development plans.

5.143 Potential site allocations have been reviewed against the Nutrient Neutrality map for the Solent Catchment[113]. These are:

- Land South of the A272 at Hinton Marsh, Cheriton – 14 dwellings
- Land at Itchen Abbas House, Itchen Abbas – 9 dwellings
- Land north of Hewlett Close, Tywford – 15 dwellings
- Land at Old Green Farm, Owslebury – 7 dwellings
- Land at Park Lane, Droxford – 9 dwellings
- Land north of Dodds Lane, Swanmore – 15 dwellings

5.144 **As such, the potential for likely significant effects in combination cannot be dismissed and this will therefore be discussed within an AA.**

**Ebernoe Common SAC**

5.145 The SIP[114] identifies that Bechstein's bats of the SAC are potentially vulnerable to changes in hydrology. It identifies that water availability (ponds and streams) within a Bechstein's breeding site is likely to be important. Housing development around the site and hydrological changes in the local area could impact the availability of these habitats. However, the SAC is located in a rural area, and there are no potential site allocations within close proximity to the SAC (the closest being Land west of Valentines Lea, Northchapel, located 2.2 km northwest of the SAC). It is considered that **no likely significant effects will result, and this can be dismissed from further consideration.**

**Emer Bog SAC**

5.146 Emer Bog SAC is located approximately 6.6 km west of the SDNP boundary within the Test Valley Borough. It is located to the west of the River Itchen, and thus hydrologically distinct from the SDNP. Hydrological changes within the SAC are not a realistic linking impact pathway between the SDLP and the SAC**. As such, there is no likely significant effect and therefore can be screened out of further discussion.**

**Pagham Harbour SPA and Ramsar site**

5.147 Pagham Harbour is located approximately 8.5 km south of the SDNP within Chichester District. It is fed by two catchments, the Bremere Rife and the

[110] The nutrient neutrality map for the Solent is available at: Nutrient Neutrality Catchments (England) | Natural England Open Data Geoportal (arcgis.com) [Accessed on the 10/10/2024]
[111] Solent Nutrient Budget Calculator (2024) Available on the South Downs National Park Authority website at: https://www.southdowns.gov.uk/wp-content/uploads/2024/02/Nutrient_Calculator_Solent_V_02_3.xlsx [Accessed 10/10/2024]
[112] Ricardo Energy and Environment. (2022). Nutrient Budget Calculator Guidance Document for the River Itchen SAC. 14pp. Available at: Nutrient-Budget-Calculator-Guidance-Document_Solent_Issue1.pdf (southdowns.gov.uk) [Accessed 10/10/2024]
[113] DEFRA (2021). European protected sites requiring nutrient neutrality strategic solutions. Component SSSIs of Solent. Available at: https://www.easthants.gov.uk/media/6920/download?inline [Accessed on the 10/10/2024]
[114] Natural England https://publications.naturalengland.org.uk/file/5365367427825664 [Accessed 11/10/2024]

Pagham Rife[115]. There are no potential site allocations located within the catchment of either of these Rife's, and as such, there is no potential for likely significant effects as a result of the SDLP potential site allocations. However, the SDLP provides for its quantum of housing provision, in part via windfall development, which, by its nature, means the location of the windfall development is not known. The only settlement located within both the SDNP and the Pagham Harbour catchment (i.e. Bremere Rife and Pagham Rife) is Waterbeach. This is a small settlement which is less likely to support windfall development than a larger settlement within the SDNP, such as Petworth, for example.

5.148 To support the preparation of its Local Plan, Chichester District Council commissioned a Water Quality Assessment[116,] which identifies that due to the distance from the discharge points at Pagham and Sidlesham WwTW to the Habitats sites, and the processes of mixing and dilution, the contribution of nitrate loading in the Pagham Harbour is 'potentially low'. The Assessment concludes that no mitigation measures are required, and as such, development within those settlements served by both Pagham and Sidlesham WwTW would not adversely affect the water quality of the Pagham Harbour European site. Nonetheless, the Assessment identifies potential measures that could be implemented to limit nitrate emissions, such as demand management and reduced water usage. It is noted that Waterbeach is located further from Pagham Harbour than Pagham or Sidlesham, and as such, (whilst it is not known where wastewater from Waterbeach is discharged to), it is highly likely to have more opportunity to have been subject to mixing and dilution prior to it entering Pagham Harbour. **As such, it is considered that no likely significant effects will result and therefore it can be screened out of further discussion.**

**Pevensey Levels SAC and Ramsar site**

5.149 The Pevensey Levels SAC/Ramsar is designated for its notably large population of ramshorn snails, an invertebrate species that preferentially occurs in unpolluted water. Eutrophication, characterised by low oxygen concentrations and excessive algal growth, has been identified as a significant threat to this species. The Pevensey Levels Ramsar encompasses a range of important wetland flora and fauna communities, all of which are sensitive to water pollution. The site supports outstanding invertebrate populations, including *Mollusca*, aquatic *Coleoptera*, over 15 species of dragonfly and the fen raft spider (*Dolomedes plantarius*). Point-source domestic sewage pollution is identified as one of two factors currently adversely affecting the Ramsar's ecological status.

5.150 Pevensey Levels is located 3.2 km northeast of the SDNP within Wealden District. Only a small portion of the SDNP shares the same water catchment area as the Pevensey Levels. This is the area of the SDNP just to the west of Polgate at Folkington that is connected to the Pevensey Levels via the Langney Sewer at Eastbourne catchment[117]. Similar to Pagham Harbour, Folkington is a small settlement. The SDLP does not provide any potential site allocations within Folkington, however, there is potential for windfall

[115] Environment Agency Catchment Data Explorer Western Streams Operational Catchment | Catchment Data Explorer [Accessed 11/10/2024]
[116] AMEC Foster Wheeler (August 2018). Chichester District Council Water Quality Assessment. Final Report.
[117] Environment Agency Catchment Data Explorer Pevensey Operational Catchment | Catchment Data Explorer [Accessed 11/10/2024]

development to fall in this location within the same water catchment as the Pevensey Levels. Whilst when considered in isolation there is unlikely to be a likely significant effect, in combination considerations are required.

5.151 Within Wealden District, the SAC/Ramsar lies immediately south-east of the conurbation of Hailsham, which is served by two Wastewater Treatment Works (WwTWs) – Hailsham North and Hailsham South. Both WwTWs discharge into waterbodies that are connected to the SAC/Ramsar and sit directly adjacent to the boundary of the site. This implies that there is little scope for natural dilution and attenuation processes to reduce the influx of nutrients to the SAC/Ramsar. Natural England's Site Improvement Plan[118] specifies that the storm water tank of one of the WwTWs adjoins the SAC/Ramsar and discharges untreated sewerage into the site under peak flow conditions.

5.152 It is noted that treatment upgrades at Hailsham North and Hailsham South WwTWs have been made and that the WTWs operate in accordance with Environmental Permits set by the Environment Agency so that water quality objectives are protected. Water is now being treated to the best standard (the technically achievable limit – TAL)[119], substantially reducing the phosphorus concentration in the treated sewage that is released into the Pevensey Levels.

5.153 **Potential likely significant effects cannot be dismissed in the context of in-combination development and therefore this will be discussed further within the AA**.

**River Itchen SAC**

5.154 The River Itchen SAC is designated for its water course of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Furthermore, the site is also notified for a range of Annex II species, including Atlantic salmon, brook lamprey, bullhead, southern damselfly, white-clawed crayfish and otter. The qualifying vegetation and animal species all fully or partially depend on aquatic habitats with good water quality. Treated sewage effluent from existing and new development is a major cause of nutrient enrichment and associated decline in water quality. Typically, excessive levels of nutrients can cause the rapid growth of algae through eutrophication, resulting in knock-on impacts such as low dissolved oxygen concentrations, increased turbidity, and overall biodiversity loss. While the water quality in Habitats sites is typically safeguarded through the implementation of discharge limits at Wastewater Treatment Works (WwTWs), this is no longer deemed sufficient for sites in 'Unfavourable' condition.

5.155 Natural England's SIP for the River Itchen SAC[120] identifies species for which water pollution is the primary threat to qualifying features of the site. It states that '*the Diffuse Water Pollution Plan identifies numerous issues with water quality, in addition to point sources from Wastewater Treatment Works… Pollution causes excessive algal growth, smothering macrophytes, and increased BOD, decreasing oxygen availability for spawning gravels used by salmon and trout.*' Due to these existing impacts, Natural England has established a requirement for nutrient neutrality for developments with

[118] Site Improvement Plan: Pevensey Levels - SIP171
[119] TAL is the lowest level to which nutrients/pollutants can be removed to using current technology, and as technology changes and lower levels become achievable, the TAL will reduce further.
[120] Available at: http://publications.naturalengland.org.uk/publication/5404054607888384 [Accessed on the 10/10/2024]

hydrological connectivity to the SAC[121]. While the River Itchen SAC encompasses a freshwater environment (in which phosphorus is the primary growth-limiting nutrient), nutrient neutrality requirements have been extended to also include nitrogen (presumably because the SAC is part of the wider Solent marine catchment). A bespoke nutrient budget calculator[122] and accompanying guidance document[123] have been published for the River Itchen SAC, to be used for quantifying potential nutrient inputs arising from development plans.

5.156 Potential site allocations have been reviewed against the Nutrient Neutrality map for the River Itchen[124]. SDNP potential site allocations that are located within the River Itchen SAC catchment are:

- Land South of the A272 at Hinton Marsh, Cheriton – 14 dwellings
- Land at Itchen Abbas House, Itchen Abbas – 9 dwellings
- Land north of Hewlett Close, Twyford – 15 dwellings
- Land at Old Green Farm, Owslebury – 7 dwellings

5.157 **As such, there is potential for significant effects in combination and this will be discussed further within the AA.**

5.158 Southern Water are also delivering compensatory habitat on the River Meon in order to compensate for the adverse effects on the integrity of the River Itchen SAC that are forecast to arise from their Drought Plan; therefore the River Meon must also be considered as if it was an SAC in terms of phosphorous impacts. This will also be discussed within the AA.

**Summary**

5.159 Following the Test of Likely Significant Effects, the following Habitats Sites could not be screened out from resulting in a Likely Significant Effects, and as such will be subject to AA. These are:

- Arun Valley SAC and Ramsar
- Solent Habitats Sites (Chichester and Langstone Harbours SPA and Ramsar site, Solent Maritime SAC, Solent and Southampton Water SPA and the Solent and Dorset SPA)
- Pevensey Levels SAC and Ramsar site
- River Itchen SAC

5.160 Impacts on all other Habitats Sites could be screened as not resulting in likely significant effects and as such are not discussed further in relation to this impact pathway.

[121] Advice in a letter to relevant Local Planning Authorities. Natural England. (March 2022). Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites. 25pp.
[122] River Itchen Nutrient Budget Calculator (2024) Available on the South Downs National Park Authority website at: https://www.southdowns.gov.uk/wp-content/uploads/2024/02/Nutrient_Calculator_Itchen_SAC_V_02_3.xlsx [Accessed 10/10/2024]
[123] Ricardo Energy and Environment. (2022). Nutrient Budget Calculator Guidance Document for the River Itchen SAC. 14pp. Available at: Nutrient-Budget-Calculator-Guidance-Document_Solent_Issue1.pdf (southdowns.gov.uk) [Accessed 10/10/2024]
[124] Nutrient Neutrality Catchments (England) | Natural England Open Data Geoportal (arcgis.com) [Accessed 10/10/2024]

## Conclusions of the Test of Likely Significant Effects

5.161 Following the Test of Likely Significant Effects, some impact pathways linking to Habitats Sites could not be screened out from potentially resulting in a likely significant effect and as such will be discussed further within an AA.

5.162 The following impact pathways and relevant Habitats Sites will be screened in for AA.

**Recreational Pressure**

5.163 There are allocations within 5 km of Wealden Heaths Phase 2 SPA/Woolmer Forest SAC and/or Shortheath Common SAC and Singleton and Cocking Tunnels SAC.

5.164 Additionally, windfall development could be within 5.6 km of the Solent Sites (Chichester and Langstone Harbours SPA and Ramsar site/Solent & Southampton Water SPA/Solent Maritime SAC/Solent and Dorset Coast SPA).

**Urbanisation**

5.165 The nearest potential new site allocation within the SDLP is located 0.3 km from the Wealden Heaths Phase II SPA.

**Loss of Functionally Linked Land**

5.166 The SDLP contains policy and potential new site allocations that could result in a likely significant effect on the Arun Valley SPA and Ramsar site and the Sussex Bat SAC sites.

**Air Quality**

5.167 It was concluded that the following Habitats Sites could potentially be subjected to deleterious changes in air quality as a result of the SDLP alone or in combination with other projects and plans: Butser Hill SAC, East Hampshire Hangers SAC, Ebernoe Common SAC, Kingley Vale SAC, Lewes Downs SAC, The Mens SAC, Wealden Heaths Phase II SPA, and Woolmer Forest SAC. **These are being subject to traffic and air quality modelling, which will be reported on in the consultation version of the Regulation 19 Local Plan HRA.**

**Water Quality**

5.168 A total of six potential allocations lie within the surface water catchments of the River Itchen SAC and/or the Solent Habitats sites. These would therefore pose the potential for an in-combination effect on these Habitats sites along with other developments in these catchments. Other Habitats sites are also vulnerable to water quality impacts from treated sewage effluent, including the Arun Valley SPA, SAC and Ramsar site and the Pevensey Levels SAC and Ramsar Site; these will also be discussed within the appropriate assessment.

# 6. Appropriate Assessment (AA)

## Recreational Pressure

### Introduction

6.1 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 colonisation by invasive non-native species, for example, via seed transfer.

6.2 Different types of Habitats Sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects of recreation can be complex. Generally, policies that increase housing or tourism can lead to increased recreational pressure on a site.

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

- Singleton & Cocking Tunnels SAC;
- Chichester and Langstone Harbours SPA/Ramsar/Solent & Southampton Water SPA/Solent Maritime SAC/Solent and Dorset Coast SPA and
- Wealden Heaths Phase II SPA/Woolmer Forest SAC
- Shortheath Common SAC.

6.4 Policies promoting new residential development and tourism could lead to adverse effects on the integrity of designated sites if they were not delivered sensitively.

### Singleton and Cocking Tunnels SAC

6.5 Singleton and Cocking Tunnels are not generally open to the public, being gated. However, policy Strategic Policy SDT2: Active Travel Routes includes the safeguarding for development of the Chichester – Midhurst disused railway line. Should this development be brought forward it has the potential to adversely impact the barbastelle and Bechstein's bat features of Singleton & Cocking Tunnels SAC. The inclusion of the tunnels in the route could affect the use of the route by bats that hibernate there and, therefore, could lead to an adverse effect. The constraint imposed by the SAC will have to be a major factor in any feasibility study. If a proposal is developed that affects these tunnels, it will be captured by the project-level HRA requirement under Strategic Policy SDN2: Designated Sites Hierarchy and Strategic Policy

SDN3: The Sussex Bat Special Areas of Conservation (SAC). It is therefore possible to conclude that the Local Plan itself will not result in an adverse effect on the integrity of this SAC.

## Solent Habitats sites: Chichester and Langstone Harbours SPA/Ramsar and Solent Maritime SAC and Solent & Dorset Coast SPA

6.6 The settlements of Lavant, Funtington and West Ashling are all located within 5.6km of this SPA/Ramsar site. Windfall gains due to associated policies could therefore result in adverse effects on integrity, in combination with other growth in the core catchment outlined in other Local Plans. These policies are:

- SDE7: Regenerative Tourism
- SDC2: Development Strategy
- SDH1: Housing Supply
- SDH7: Replacement and Subdivision of Dwellings
- SDH8: Householder Development
- SDH9: Rural Workers' Dwellings
- SDH10: Gypsies, Travellers and Travelling Showpeople
- SDH4: Specialist and Older Persons' Accommodation
- SDE8: Equestrian Development
- SDT2: Active Travel Routes

6.7 Chichester & Langstone Harbours and other Solent Sites 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.

6.8 The Solent Recreation Mitigation Strategy (SRMS) established that disturbance levels within Chichester & Langstone Harbours SPA specifically 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 during storms, and they offer 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 located on top 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 the potential to cause disturbance to bird species for which the site is designated.

6.9 The Solent Forum project undertook a project to investigate recreational pressure issues and their mitigation[125] 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.

6.10 Phase 2 of the project assessed the impact of current visitor numbers and activities on the survival rates of shorebirds throughout the Solent[126.] 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 2.3-9.1 km. A core catchment area for the Solent Habitats sites has been identified at 5.6 km.

6.11 At a strategic level, it has been agreed that any development within 5.6 km of the Solent Habitats sites can address the effects of increased recreational pressure upon the European designated 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 adverse effects on integrity.[127]

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

6.13 The most recent mitigation strategy is under Item 11 in this location: https://www.push.gov.uk/wp-content/uploads/2024/09/Item-11-Bird-Aware-Partnership-Revised-Strategy.pdf. This strategy sets out a framework for funding the activities carried out by the Bird Aware Partnership via developer contributions for developments undertaken within a 5.6 km buffer for SPA birds. The main change from previous strategies is an amendment to the tariffs to reflect the fact that the strategy is now updated to also cover breeding birds for which the Solent SPAs are designated.

6.14 The Local Plan includes a new policy, Strategic Policy SDN6: The Solent Coast Special Protection Areas (SPAs) states that:

*6.15 'Development proposals resulting in a net increase in residential units, within the Solent Coast SPAs (Chichester & Langstone Harbours SPA, Portsmouth Harbour SPA and Solent & Southampton Water SPA) zone of influence shown*

[125] 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
[126] 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.
[127] 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.

*on the Policies Map, defined as 5.6km from the boundary of these sites, will be permitted where 'in combination' effects of recreation on the Solent Coastal SPAs are satisfactorily mitigated through the provision of an appropriate financial contribution to the delivery of strategic mitigation through the Bird Aware Solent Strategy. Some other types of development (such as care homes, student accommodation) may also need to address recreational disturbance both alone and in-combination and this development will be assessed on a case-by-case basis.*

6.16 *In the absence of a financial contribution toward mitigation, an appropriate assessment is required to demonstrate that any 'in combination' impacts which are likely to have a significant adverse effect can be avoided or can be satisfactorily mitigated through a developer-provided package of measures and agreed with the Local Planning Authority and Natural England, in place prior to occupation and provided in perpetuity.*' In addition, Strategic Policy SDN2: Designated Sites Hierarchy states:

- *'1…a) Internationally Protected Sites, as shown on the Policies Map (SPAs, SACs and Ramsar Sites, candidate and formally proposed versions of these designations, and including compensatory habitats for internationally protected sites). Development proposals with the potential to impact on one or more international sites(s), including compensatory habitat for internationally protected sites, will be refused unless;*
- *i. A Habitats Regulations Assessment (HRA) has concluded that the proposal will not have likely significant effects (either individually or in combination with other developments); or*
- *ii. An Appropriate Assessment has concluded there will be no adverse effect on the integrity of the site, including taking into account mitigation to address the impact such as that set out in policies SDN3-7; or*
- *iii. The impact of the development is being addressed through an approved Environmental Delivery Plan and the developer has committed to paying the Nature Restoration Levy; or*
- *iv. It has been 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.'*

6.17 SDN2 and SDN6 act as 'hook' policies within the Plan that provide protection both broadly and specifically for the Solent designated sites. As such a conclusion of no adverse effect on integrity can be reached regarding this impact pathway.

## Heathland bird sites: Wealden Heaths Phase II SPA, Shortheath Common SAC and Woolmer Forest SAC

6.18 The Wealden Heaths Phase II SPA is designated for three

6.19 ground-nesting (or low nesting in the case of Dartford warbler) bird species: Dartford warbler, nightjar and woodlark. 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 5 km (in that this is the zone within which the majority of visitors, particularly dog-walkers, to the SPA derive[128]).

These sites are discussed together as Woolmer Forest SAC is entirely overlapped by the SPA and Shortheath Common is close to the SPA and has similar issues (as discussed in the likely significant effects section), a similar catchment, and can be addressed by a similar mitigation approach. Although their interest features are not identical, the heathlands of the SAC support the SPA bird interest and some evidence from the Site Improvement Plan and SSSI condition assessments suggests risk of trampling and recreational damage to some of the SAC habitats. Measures to protect the SPA will therefore also protect the SACs.

6.20 Natural England's Supplementary Advice on Conservation Objectives (SACO)[129] highlights the disturbance caused by human activity as a potential threat to the long-term viability of SPA breeding bird populations and this will also apply to those SPA birds that nest at Shortheath Common SAC. This includes changes to foraging and roosting behaviour, increases in energy expenditure, abandonment of nest sites and desertion of supporting habitats. Cumulatively, this can lead to contraction of distribution ranges and impede reproductive success. The SACO also states that '*human disturbance plays a key role in increasing the vulnerability of eggs and chicks to predation.*' Public access/disturbance is also listed as a threat in the Site Improvement Plan (SIP)[130] for the heathland complex, which specifies that '*Visitor access provision is not currently coordinated between sites or managed so as to reduce impacts on ground-nesting birds.*'

**2018 Footprint Ecology Visitor Survey**

6.21 To update the baseline evidence on recreational patterns within the heathland complex obtained in a previous survey undertaken in 2012, AECOM (on behalf of EHDC) commissioned Footprint Ecology to carry out a repeat visitor survey across these sensitive Habitats sites. The survey points represented a subset of locations used in the 2012 survey to enable a direct comparison in visitor trends, including Shortheath Common, Kingsley Common, Broxhead Common, Woolmer Forest and Ludshott & Bramshott Commons. Each survey location was surveyed over 16 hours, with even 8-hour splits between a weekday and a weekend day. Tally counts of discrete user groups and the number of people and dogs seen were undertaken to provide an estimate of site busyness. Visitor interviews were conducted to characterise recreational use in the heathland complex, including the type of activity, frequency and length of visit, reasons for visiting, and home postcode. Obtaining interviewees' home postcodes is a key parameter for calculating the distance travelled from home and establishing a core recreational catchment for the heathland complex.

6.22 Overall, across all 23 survey locations, 2,012 people and 1,345 dogs were recorded over 16 hours, equating to 87.5 people and 58.5 dogs per survey point. In turn, this represents 5.5 people and 3.7 dogs per hour at each survey

[128] 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.
[129] Available at: https://publications.naturalengland.org.uk/publication/5729030657540096 [Accessed on the 21/11/2023]
[130] Available at: https://publications.naturalengland.org.uk/publication/5431913779036160 [Accessed on the 21/11/2023]

location, indicating an expected moderate level of busyness given the urban location of these heathland sites. However, there was a marked difference in visitor counts between different sub-parts of the heathlands. For example, Ludshott and Bramshott Commons were by far the busiest areas (with visitor numbers equating to 11 people and 8.3 dogs per hour per survey point), followed by Woolmer Forest (4.2 people per hour per survey point, with dog numbers at Woolmer Forest being the lowest). The Shortheath Common SAC was the quietest site with an average of only 2.3 people and 1.5 dogs per hour per location. The available data indicate that the recreational burden is not distributed evenly across the heathland complex, with Bramshott & Ludshott Common and Woolmer Forest clearly being focal points of interest. In part, this is likely to reflect the higher density of housing development adjoining these two sites compared to that at Broxhead Common, Kingsley Common, and Shortheath Common. It is also an important observation because the EHLP allocates a significant quantum of dwellings on Preferred Sites in parishes close to the heathland components that experience the highest existing levels of recreational pressure.

6.23 Interview data indicate that most interviewees (96%) are local residents undertaking short visits directly from home. This suggests that a large share of the recreational burden in the heathland complex likely originates in East Hampshire and adjoining authorities. As is commonly observed across most Habitats sites, dog walking was by far the most common activity (71%), followed by walking (12%), cycling (5%) and angling (specifically at Shortheath Common). However, there were statistically significant differences in activities between sites, particularly among dog walkers. For example, while Woolmer Forest experiences high footfall (see previous paragraph), the proportion of dog walkers there was much lower (52%) than at other sites (e.g. Kingsley Common; 81%). Accounting for differences in footfall and recreational activities is important, as each parameter has distinct implications for ecological receptors. For example, excessive trampling is associated with greater impact on SAC vegetation, whereas a high proportion of dog walkers implies greater disturbance to ground-nesting birds. Therefore, Ludshott & Bramshott Common appears to be the component of the heathland complex experiencing the highest existing pressure, with the highest visitor counts and the second-highest proportion of dog walkers (80%) recorded. Moreover, the highest proportion of dogs off lead (87%) was also recorded at Ludshott and Bramshott Common.

6.24 A common trend across all sites was that interviewees undertook short but frequent visits. The most common visit duration was between 30 minutes and 1 hour (55%), with only 2% visiting for more than 3 hours. The two most common visit frequencies were daily (26%) and ‘1 to 3 times a week’ (26%). Furthermore, a majority of interviewees had been highly loyal to this heathland complex, visiting for more than 10 years (49%) or between 5 and 10 years (10%). These data lend further support to the notion that the heathland complex is primarily a recreational resource for local residents. If the site were visited from further afield (i.e., more akin to a tourism destination), the average visit would be expected to be less frequent and longer in duration.

6.25 A total of 437 interviewees provided valid, georeferenced postcodes. Most interviewed visitors originated from East Hampshire District (85%), followed by Waverley District (10%). All other local authorities contribute a negligible

portion of the recreational burden in the heathlands complex. Within East Hampshire District, most interviewees lived in Headley (23%), Whitehill (16%), and Bramshott and Liphook (12%). When considering the 75th percentile of interviewees visiting from home (i.e., the three-quarters of postcodes that lie closest to the heathland sites), an approach typically used to identify the core recreational catchment of Habitats sites, this yields a core catchment of 3.6 km. There were also considerable differences in catchment size between different heathland parcels. Three-quarters of interviewees to Woolmer Forest came from within 3.2 km, while Kingsley Common had the largest core catchment of 6.9 km.

6.26 A fourth formal monitoring programme for EHDC and Whitehill Town Council (WTC) was undertaken in 2023, following five years of monitoring under contract with Natural England. This survey targeted the designated breeding species (nightjar, woodlark and Dartford warbler) that utilise habitats within the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC. Importantly, compared to the populations cited at the time of designation in 1998, all three species were considerably more abundant in 2023 (nightjar by +120%, woodlark by +173% and Dartford warbler by +619%). In general, this suggests that qualifying bird populations are thriving, despite an increase in housing development within the 5 km core recreational catchment of the heathland complex.

6.27 It should also be noted that the breeding populations of all three species experience strong inter-annual fluctuations. For example, the 2023 territory data for both woodlark and Dartford warbler were considerably lower than previously recorded peak figures and differences to population numbers at the time of citation. Weather patterns are a key driver of fluctuations in Dartford warbler abundance. Mild winters in the 1990s and early 2000s likely fuelled the initial population increase, while the increased frequency of colder winter weather since 2008 has been responsible for inter-annual dips in numbers. Conversely, habitat improvements are likely to be a key factor in the increase in nightjars and woodlarks. Crucially, the long-term population trends of all three species are most likely driven by factors other than human disturbance (e.g., availability of suitable habitat, weather). This indicates that meeting the Conservation Objectives of the Wealden Heaths Phase II SPA is unlikely to be impeded by recreation, although it does not imply that recreational pressure is not an important additional stressor on qualifying breeding birds.

6.28 Footprint Ecology have updated the 2018 visitor survey of Wealden Heaths Phase II SPA in 2025, but this has not resulted in a change in catchments. Generally, there are two main pillars for mitigating housing growth in core catchments and reducing recreational pressure in Habitats sites, including Suitable Alternative Natural Greenspace (SANG) provision and Strategic Access Management and Monitoring (SAMM).

### Strategic Access Management and Monitoring (SAMM)

6.29 For Wealden Heaths Phase II SPA a SAMM strategy has been identified by Natural England as the appropriate solution for net new housing within 5 km of Wealden Heaths Phase II SPA. The relevant LPAs (East Hampshire District Council, South Downs National Park Authority and Waverley Borough Council) are working together on a joint SAMM approach. A draft SAMM strategy has

been produced and is being reviewed. The SAMM strategy will involve an expanded rangering team, likely covering:

- Spending time on heathland sites, patrolling and talking to visitors, providing a visible presence on-site to influence visitor behaviour (e.g. relating to picking-up, dogs off lead, dogs in water bodies);
- Patrolling during high fire risk periods specifically to watch for smoke and be vigilant for any activity that could be associated with increased fire risk;
- On the ground familiarity with access and fire procedures so that – in the case of fire – emergency services can be directed to the right access locations and relevant site staff are contacted;
- Work with key parties around signage re: fire risk – with the potential for signage about no barbeques, fires etc., or high fire risk to be used across sites and on roads approaching sites;
- Complete parking audit and use to identify and prioritise locations where changes (such as formalising parking, reducing parking spaces, need for height restriction barriers or other infrastructure);
- Review signage and waymarking and support site managers and organisations where benefit in providing additional infrastructure;
- Maintaining an incident log and collecting basic data around engagement;
- Leading some guided walks on heathland sites;
- Supporting monitoring work and biological recording.

6.30 A range of small infrastructure projects will be likely to be needed to be funded through the SAMM, supplementing existing infrastructure already in place and maintained by partners. Locations and opportunities for these were identified through a workshop held with stakeholders. The list is not exhaustive and opportunities will change with time. Infrastructure works could include:

- Work on ponds (informed by pond project) such as dead hedging, fencing, steps;
- Signage and waymarking (with scope for low key markers and signage to facilitate people sticking to key routes and limiting dispersal across heaths);
- Interpretation and site information boards;
- Changes to car parking (landscaping, layout, roadside signage);
- Gates and access points;
- Barriers or other infrastructure to limit off-road vehicles/quadbikes/motorbikes accessing areas where no right of access;
- Dog bins.

6.31 **The SAMM strategy would need to be agreed before the South Downs Local Plan was submitted to the Secretary of State for Examination, and it is therefore recommended that the South Downs National Park Authority take an active role in developing the SAMM strategy.**

6.32 A key aspect of delivering the SAMM will be setting an appropriate tariff, which will be influenced by the number and cost of measures to be delivered, as well as the number of dwellings likely to be delivered within 5 km of the SPA/SACs. Given the different stages of development of the different Local Plans, the total

number of dwellings expected within 5 km is not currently known. Therefore, the SAMM strategy may need to be broken down into phases, with each phase capped at the number of dwellings it covers. Each phase would consist of a package of measures, which would be 'drawn down' as allocations come forward. Once a given phase has been exhausted, the second phase of measures would be made available for further new housing.

6.33 It will be necessary to prioritise and deliver certain measures likely to be most effective in reducing recreational impacts, particularly since a relatively small amount of housing will come forward within the SDNP part of the 5 km zone. For example, discussions with site managers indicate that the engagement officer role and associated awareness events are likely to be most influential in promoting a respectful treatment of the SPA and reducing the number of bird disturbance events. The final suite of mitigation measures to be delivered will be identified following a comprehensive costings exercise and gaining clarity over any additional authorities that would participate in SAMM provisioning.

6.34 The requirement for SAMM is already provided in the Local Plan Strategic Policy SDN5: Wealden Heaths Complex. This states that:

*6.35 'Development proposals resulting in a net increase in residential units within the 400m - 5km zone from the boundary of the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC, as shown on the Policies Map must demonstrate that development would not have an adverse effect on the integrity of the designations and recreational disturbance impacts are satisfactorily mitigated through:*

- *A financial contribution to the delivery of strategic mitigation through the Wealden Heaths Strategic Access Management and Monitoring (SAMM) Strategy; and*

*6.36 In the absence of a financial contribution toward SAMM mitigation, an appropriate assessment is required to demonstrate that any 'in combination' impacts which are likely to have a significant adverse effect can be avoided or can be satisfactorily mitigated through a developer-provided package of measures and agreed with the Local Planning Authority and Natural England, in place prior to occupation and provided in perpetuity'.*

6.37 Suitable Alternative Natural Greenspace (SANG)There is a much lower pressure experienced by the Wealden Heaths Phase II SPA compared to the Thames Basin Heaths SPA or the Dorset Heathlands SPA. Table 6-1 below shows that, when each SPA is considered as a whole, the scale of existing development is an order of magnitude lower than that around the Thames Basin Heaths SPA or Dorset Heathlands SPA.

**Table 6–1: Comparison of the demographic setting for Dorset Heathlands SPA/SAC/Ramsar site and Thames Basin Heaths SPA with Wealden Heaths**

| | | Number of existing dwellings within each key zone | Dwelling density per ha of the designated site |
|---|---|---|---|
| | **Site Area (ha)** | **0-5km** | **0-5km** |
| **Dorset Heathlands SPA** | 8,164.82 | 248,749 | 30.47 |
| **Thames Basin Heaths SPA** | 8,286.92 | 312,559 | 37.72 |
| **Wealden Heaths Phase II SPA** | 2,050.69 | 30,959 | 15.10 |
| **Thursley, Hankley & Frensham Commons (Wealden Heaths Phase I) SPA** | 1,874.90 | 30,736 | 16.39 |

6.38 While some parcels of the Wealden Heaths Phase 2 SPA have more existing housing within 5 km than others, when each SPA is looked at as a whole, there is a very clear difference in pressure between Wealden Heaths and Thames Basin Heaths. Moreover, for Wealden Heaths Phase I in particular, the main settlements are a long way from the SPA, whereas at the Thames Basin Heaths, very large settlements such as Woking, Guildford, Bracknell, Aldershot and Farnborough all lie within 2 km of the SPA and are often adjacent to it. Finally, for several Thames Basin Heaths SPA authorities (such as Surrey Heath and Rushmoor), there are few other areas of natural green space available for recreation, unlike around either part of the Wealden Heaths.

6.39 However, despite the lower pressure than around the Thames Basin Heaths SPA, Natural England has advised that SANG would still be required where 50 or more dwellings are being proposed. This has also been captured within Strategic Policy SDN5: Wealden Heaths Complex as follows:

6.40 '*b. Where development proposals are for a net increase in residential units of 50 or more, the provision of Suitable Alternative Natural Green Space (SANG), or a financial contribution to a strategic SANG, which is acceptable to provide mitigation for the development, is agreed with the Local Planning Authority and Natural England, in place prior to occupation, and provided in perpetuity.*'

6.41 **With the provision of the strategic policy texts above within the Local Plan, it can be concluded that no adverse effects on the integrity of the Habitats Sites from recreational pressure will result.**

# Urbanisation

## Wealden Heaths Phase II SPA

6.42 As detailed in the Test of Likely Significant Effects – Urbanisation section, due to the proximity of the potential site allocation Land west of Liphook and due to the potential for windfall development to fall in close proximity to the Wealden Heaths Phase II SPA, AA is required in relation to urbanisation effects on the SPA.

6.43 Local Plan Strategic Policy SDN5: Wealden Heaths Complex provides a strategic framework to protect the SPA from the effects of urbanisation (and recreational pressure) occurring within the SPA. With regards to urbanisation (i.e. development within 400m of the SPA). The policy states:

6.44 *'Development proposals resulting in a net increase in residential units within the 0 – 400 m 'exclusion zone' from the boundary of the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC boundaries as shown on the Policies Map, will not be permitted unless in exceptional circumstances where an Appropriate Assessment demonstrates that development would not have an adverse effect on the integrity of the designated sites and has been agreed by the Local Planning Authority in consultation with Natural England'*

6.45 As such, the potential site allocation, Land west of Liphook, and any residential development that falls within 400 m of the SPA will need to be subject to a project-level HRA (including consultation with the Local Planning Authority and Natural England) prior to permission being granted. Natural England did raise concerns about this site during Regulation 18 consultation. However, it must be noted that only a small portion of the potential site allocation boundary for Land west of Liphook is located within 400 m of the SPA, and as such, and given the nature of the protective policy, the residential portion of the allocation must lie more than 400m from the SPA and the developable area is shown on inset maps alongside the policy. . Provided this site (or any windfall) is designed in a way that there is no development within the 400m boundary (e.g. developable areas are all outside of 400m boundary), there will be no adverse effect on the integrity of the Habitats Site. This should be demonstrated at the project level HRA when the site is submitted for planning permission. However, at this stage, the policy text is sufficient to provide a reasonable framework of mitigation. **With the provision of this strategic policy text within the Local Plan, it can be concluded that no adverse effects on the integrity of the SPA will result from urbanisation.**

# Loss of Functionally Linked Land

6.46 The following paragraphs undertake the AA in relation to loss of FLL in relation to the Arun Valley SPA and Ramsar site, and also the Sussex Bat SAC sites (The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC). Specific potential new allocations are discussed, but other policies which could result in development in affected zones are:

- SDE7: Regenerative Tourism
- SDC2: Development Strategy
- SDH1: Housing Supply
- SDH7: Replacement and Subdivision of Dwellings
- SDH8: Householder Development
- SDH9: Rural Workers' Dwellings
- SDH10: Gypsies, Travellers and Travelling Showpeople
- SDH4: Specialist and Older Persons' Accommodation
- SDE8: Equestrian Development
- SDT2: Active Travel Routes

## Arun Valley SPA and Ramsar site

6.47 As detailed in the Test of Likely Significant Effects regarding Loss of Functionally Linked Land, Arun Valley SPA and Ramsar site, due to the proximity of four potential site allocations (East Street Farm at Amberley for 20 dwellings, Land East of Coombe Crescent at Bury for 15 dwellings, Land South of London Road, Coldwaltham for 30 dwellings and Land north of Kings Lane, Coldwaltham, a gypsy and traveller plot for two permanent pitches), to the Arun Valley SPA and Ramsar site (i.e. they are located within 5km of the SPA and Ramsar site). If one increases the zone of influence to 6.5 km, it adds a single potential allocation: Land south of Herbert Shiner School in Petworth, at 6.4 km from the SPA, potentially allocated for 75 dwellings.. However, the 6.5 km zone only clips the southeast corner of the development, and the developable area will be outside it. Finally the LP Strategic Policy SDH1: Housing Supply identifies that housing provision will in part be provided for by windfall development (for which an application for development could potentially be submitted for anywhere within the SDNP boundary), further discussion in relation to the loss of FLL that supports designated bird features of the Arun Valley SPA and Ramsar site is required.

6.48 Local Plan Strategic Policy SDN4: Arun Valley Special Protection Area (SPA): Functionally Linked Habitat provides a strategic framework to protect the Arun Valley site from the effects of loss of FLL. The policy states:

*6.49 'Development proposals on greenfield sites within 5 km of the Arun Valley SPA, as shown on the Policies Map, must undertake an appraisal as to whether the land is suitable for wintering Bewick's swan. If it is suitable then appropriate surveys must be undertaken to determine whether the fields are of importance to the swan population. If so, and likely significant adverse effects on the designated site cannot be avoided, development proposals must demonstrate that effects are adequately mitigated and, as a last resort, compensated for to demonstrate no adverse effect on the integrity of the Arun Valley SPA.*

*6.50 Compensation in the form of appropriate alternative habitat is to be agreed with the Local Planning Authority and Natural England and delivered before development proceeds.'*

6.51 As such, the potential site allocations East Street Farm at Amberley, Land East of Coombe Crescent at Bury, Land South of London Road, Coldwaltham and Land north of Kings Lane, Coldwaltham, as well as any windfall residential development that falls within 5 km of the SPA and Ramsar site will need to be subject to the avoidance measures outlined in LP Strategic Policy SDN4: Arun Valley Special Protection Area (SPA).

6.52 **Recommendation: To ensure full robustness of this policy it is recommended that Strategic Policy SND4: Arun Valley Special Protection Area (SPA) is amended to include the provision for a site specific HRA to ensure that no adverse effects on the integrity of the Arun Valley SPA and Ramsar site result. The Horsham Local Plan HRA goes a little further and notes that review of the underlying SSSI Impact Risk Zones undertaken by Arun Council for their Local Plan indicates that Impact Risk Zone 2 extends to a maximum of 6.5km from the SPA/Ramsar. This is based on the maximum extent of the zone shown on Figure 4.3 of the Arun Local Plan HRA[131]. The zone does not have an even boundary but Horsham Local Plan HRA used the maximum extent as a precautionary zone. It is therefore recommended that this 6.5 km zone is utilised as a precautionary zone for simplicity and to align with other Local Plans affecting the Habitats Sites.**

6.53 With the provision of this strategic policy text within the Local Plan and the inclusion of the above recommendation, it can be concluded that no adverse effects on the integrity of the Arun Valley SAP and Ramsar site will occur as a result of loss of FLL.

## Sussex Bat SAC Sites (Ebernoe Common SAC, The Mens SAC and Singleton and Cocking Tunnels SAC)

6.54 As detailed in the Test of Likely Significant Effects – Loss of Functionally Linked Land – The Sussex Bat SAC sites, due to the proximity of potential site allocations located within 12km of the SACs, and due to the fact that LP Strategic Policy SDH1: Housing Supply identifies that housing provision will in part be provided for by windfall development (for which an application for development could potentially be submitted for anywhere within the SDNP boundary), AA is required in relation to loss of FLL of the three Sussex Bat SAC sites.

6.55 Local Plan Strategic Policy SDN3: The Sussex Bat Special Areas of Conservation (SACs) provides a strategic framework to protect the three Sussex Bat SAC sites from the effects of loss of FLL. The policy states:

*6.56* '*Development proposals on greenfield sites and sites that support or are in close proximity to suitable commuting and foraging habitat (including grassland and mature vegetative linear features such as woodlands, hedgerows, riverine and wetland habitats) within the ranges of The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC set out in a) and b) and as shown on the Policies Map, should have due regard to the possibility that Barbastelle and Bechstein's Bats will be utilising the site. Such proposals will be required to undertake robust surveys and an ecological assessment of direct and indirect impacts to the key features (such as foraging*

[131] download.cfm

*habitat and commuting routes). This shall include details of the measures proposed to avoid and/or fully mitigate any identified harm to ensure these features are conserved and enhanced, provide a suitable buffer to safeguard against disturbance, and take opportunities to for characteristic habitat creation to link flightlines and features.*

*a) 6.5km: Key conservation area – all impacts to bats must be considered given that habitats within this zone are considered critical for sustaining the populations of bats within the SACs; and*

*b) 12km: Wider conservation area – significant impacts or severance to flightlines to be considered.*

*6.57 Proposed use or development of the tunnels comprising the Singleton & Cocking Tunnels SAC will be required to demonstrate that there is no adverse effect on the interest features, including hibernation habitat for Barbastelle and Bechstein's Bats, or on the integrity of the site.'*

6.58 As such, the potential site allocations identified in the Test of Likely Significant Effects, and any development that falls within 12km of the three Sussex Bat SAC sites, will need to be subject to the avoidance measures outlined in LP Strategic Policy SDN3: The Sussex Bat Special Areas of Conservation (SACs).

6.59 **With the provision of this strategic policy text within the Local Plan, it can be concluded that no adverse effects on the integrity of The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC will occur as a result of loss of FLL.**

# Air Quality

6.60 As detailed in paragraph 5.126, AA is required, to determine if the SDLP is likely to result in an adverse effect on the integrity alone or in combination with other plans and projects. To inform this, traffic and potentially air quality modelling is required. This has been undertaken and the results are ecological interpretation fo the results are shown below.

6.61 A total of 16 transects were modelled across 13 designated sites, these being the sites most likely to be affected by changes in traffic flows due to South Downs National Park Local Plan. Traffic modelling (based upon traffic counts undertaken in early 2026) provided Annual Average Daily Traffic (AADT) figures, percentage heavy duty vehicles, and average vehicle speeds for each road link within 200m of a European site. This enabled air quality modelling for three scenarios:

- Baseline Scenario: This is the current pollution levels (NOx, ammonia, nitrogen deposition and acid deposition) within 200m of the modelled roads based upon traffic counts
- Future Baseline Scenario: This is a hypothetical scenario that freezes traffic growth but accounts for improvements to vehicle emission factors to 2040 – this scenario would never arise in practice but is useful to acknowledge the improving pollutant background concentrations (particularly for NOx and nitrogen and acid deposition) and quantify any

retardation effects in air quality improvements that may be caused by development plans

- Do Minimum (DM) Scenario: Models air quality parameters based on residential / employment growth in authorities outside the South Downs National Park, but **excluding** growth allocated in the South Downs National Park Local Plan
- Do Something (DS) Scenario: Identical to Do Minimum but **including** development allocated in the South Downs National Park Local Plan – the difference to the 'Do Minimum' scenario allows for quantifying the air quality impacts of the South Downs National Park Local Plan alone, while also allowing for in-combination assessment by comparing DS with Future Baseline.

6.62 The process for interpreting the air quality results draws upon standing advice provided by Natural England on air quality modelling for Local Plans in 2025, and earlier advice (where this is not replaced by the 2025 standing advice)[132]. A critical first step is to determine whether the critical level (for pollutants in atmosphere) or critical load (for nitrogen and acid deposition) will be exceeded under the Do Something (i.e. all growth including the South Downs Local Plan) scenario. If not, then adverse effects on integrity can be dismissed immediately irrespective of the contribution to changes in pollution from the Local Plan. This is because harm is not expected to arise provided total concentrations or deposition rates remain below the critical level or load. Similarly, if the contribution of South Downs Local Plan is too small to show in the model (i.e. 0.00) then it effectively makes no contribution even in combination with other plans or projects and can be dismissed.

6.63 Table 6-2 shows that none of the transects exceeds the annual NOx critical level (30 $ugm^{-3}$) in 2040 in either the DM or DS scenarios. Therefore, NOx as a pollutant in atmosphere can be dismissed. The results were then analysed to understand if the relevant ammonia critical level was exceeded in 2040. There are two critical levels for ammonia. Heathland and most woodland habitats (except for yew woodland and alder woodland) have a critical level of 1 $ugm^{-3}$ because for these habitats a diverse lichen and bryophyte flora is a key part of the qualifying SAC features, and these 'lower plants' are much more sensitive to ammonia than other vegetation ('higher plants'). All other habitats generally have a critical level of 3 $ugm^{-3}$. For the purposes of the assessment in this report, that includes calcareous grassland. A critical level of 1 $\mu gm^{-3}$ is assigned to the Lewes Downs SAC (for example) on the UK Air Pollution Information System Site Relevant Critical Load app (APIS) because that threshold is automatically assigned to all sites supporting calcareous grassland, as this habitat can support ammonia-sensitive lichens and bryophytes. However, even when present, these assemblages are rarely integral to the conservation status of the grasslands themselves. A diverse terricolous lichen flora typically only develops within a calcareous grassland sward if this has been damaged, exposing bare ground for lichen colonisation. For Special Protection Areas, a critical level of 3 $ugm^{-3}$ is also generally

[132] Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations - NEA001

appropriate because the ability of the site to support its designated bird interest is generally unrelated to lichen and bryophyte composition.

6.64 Most Habitats sites could be screened out because the relevant critical level was not forecast to be exceeded in 2040. Where ammonia concentrations will exceed the relevant critical level in 2040, the next step was to determine whether changes in ammonia concentrations exceed 1% of the critical level due to either the SDNP alone or in combination with other plans or projects. This is because Natural England and Environment Agency guidance indicates that if the change does not exceed 1% of the critical level, then the impact will be imperceptible. Note that this does not mean that an adverse effect on integrity will necessarily arise if the change exceeds 1% of the critical level, but rather that further consideration of other factors is needed to draw a conclusion.

6.65 This was undertaken for the following Habitats Sites, where the relevant critical level is forecast to be exceeded in 2040 and the contribution of South Downs Local Plan is visible in the model:

- East Hampshire Hangers SAC (Transect 3 and 15)
- Ebernoe Common SAC (Transect 9)
- Woolmer Forest SAC (Transect 4)
- Wealden Heaths Phase II SPA (Transect 4)

6.66 Having examined ammonia, the results were then analysed to understand if the nitrogen deposition critical load for the relevant habitat was exceeded in 2040. The relevant critical load varies from habitat to habitat. For example, heathland has a low minimum critical load of 5 kgN/ha/yr, while saltmarsh has a higher minimum critical load of 10 kgN/ha/yr. For all relevant habitats the nitrogen deposition critical load was exceeded up to 200m back from the road verge. This is not unusual as nitrogen deposition typically exceeds the critical load for most Habitats sites due primarily to background sources such as agriculture (livestock and fertiliser) and the existing national road network. All Habitats Sites will be looked at in the next section as to whether nitrogen increases are increased above 1% of the critical load by either the SDNP alone or in combination with other plans or projects.

6.67 Finally, the results were analysed to understand if the acid deposition critical load was exceeded by either the SDNP plan alone or in combination with other plans and projects. This analysis indicated that for acid deposition, the majority of Habitats sites could be dismissed. In the next section it will be looked at whether acid deposition increases are increased above 1% of the critical level by either the SDNP alone or in combination with other plans or projects for the following Habitats Sites:

- The Mens SAC (Transect 10)
- Ashdown Forest SAC/SPA (Transects 12, 13, and 14)

6.68 As all Habitat Sites in the modelling were over the critical level or load in 2040 for either ammonia, nitrogen deposition or acid deposition, all sites were carried forward into the next assessment for one or more of these pollutants.

## Table 6–2 Initial Analysis of Exceedance of Pollutant Critical Level/Load

| Transect Number | Habitats Site | Designated Habitats | Exceeds NOx Critical Level in 2040 | Exceeds NH3 Critical Level in 2040 | Exceeds Nitrogen Critical Load in 2040 | Exceeds Acid Critical Load |
|---|---|---|---|---|---|---|
| Transect 1 | Butser Hill SAC | Calcareous grassland, yew woodland | No | Grassland (3ug) - <3ug<br>Yew Woodland (3 ug) – <3ug | **Exceeds 10 kg N/ha/yr for grassland and woodland in DM and DS** | No |
| Transect 2 | Solent Maritime SAC<br>Chichester and Langstone Harbours SPA | Estuaries, smooth cord-grass, Atlantic salt meadows, waterfowl and waders | No | All habitats and species (3ug) - <3ug | **Exceeds 10 kg N/ha/yr for coastal lagoon and Atlantic salt meadow in DM and DS** | No |
| Transect 3 | East Hampshire Hangers SAC | Calcareous grassland, yew woodland, Asperulo-Fagetum beech forests, Tilio-Acerion forests of slopes, screes and ravines | No | Grassland (3ug) – <3ug<br>**Woodland (1ug) – Yes >1ug up to 30m DM and DS** | **Exceeds 10 kg N/ha/yr for yew woodland and calcareous grassland in DM and DS** | No |
| Transect 4 | Woolmer Forest SAC<br>Wealden Heaths Phase II SPA | Dystrophic lakes, European dry heaths, wet heath, peat bog, mire, quaking bog | No | **Heathland (1ug) – Yes, >1ug between 60-90m DM and DS**<br>Woodland (1 ug) – Woodland not designated | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | No for heathland<br>Woodland not designated |
| Transect 5 | Woolmer Forest SAC<br>Wealden Heaths Phase II SPA | Dystrophic lakes, European dry heaths, wet heath, peat bog, mire, quaking bog | No | Heathland (1ug) – No heathland until 70m from road and then <1ug | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | No for heathland<br>Woodland not designated |

| Transect Number | Habitats Site | Designated Habitats | Exceeds NOx Critical Level in 2040 | Exceeds NH3 Critical Level in 2040 | Exceeds Nitrogen Critical Load in 2040 | Exceeds Acid Critical Load |
|---|---|---|---|---|---|---|
| | | | | Woodland (1 ug) – Woodland not designated. | | |
| Transect 6 | Wealden Heaths Phase II SPA | Nightjar, woodlark, dartford warbler | No | Woodland for bird use (3ug) - <3ug | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | No (less than 10m) |
| Transect 7 | Kingley Vale SAC | Calcareous grassland, yew woodland | No | Grassland (3ug) – No grassland Woodland (1ug) – <1ug from 147.5m from the roadside. | **Exceeds 10 kg N/ha/yr for yew woodland in DM and DS** | No for grassland or woodland |
| Transect 8 | Duncton to Bignor Escarpment SAC | Beech woodland | No | Woodland (1ug) – <1ug | **Exceeds 10 kg N/ha/yr for beech woodland in DM and DS** | No |
| Transect 9 | Ebernoe Common SAC | Beech woodland with yew and holly, Barbastelle and Bechstein's bat | No | **Woodland (1 ug) – Yes to 30m DM and DS** | **Exceeds 10 kg N/ha/yr for beech woodland in DM and DS** | No |
| Transect 10 | The Mens SAC | Beech woodland with yew and holly, Barbastelle. | No | Woodland (1 ug) – <10m | **Exceeds 10 kg N/ha/yr for beech woodland in DM and DS** | **Yes to 200m** |
| Transect 11 | Lewes Downs SAC | Calcareous grassland | No | Grassland (3ug) – grassland between 70 and 130 <3ug. | **Exceeds 10 kg N/ha/yr for calcareous grassland in DM and DS** | No |

| Transect Number | Habitats Site | Designated Habitats | Exceeds NOx Critical Level in 2040 | Exceeds NH3 Critical Level in 2040 | Exceeds Nitrogen Critical Load in 2040 | Exceeds Acid Critical Load |
|---|---|---|---|---|---|---|
| Transect 12 | Ashdown Forest SAC and SPA | Wet and dry heathland, nightjar and Dartford warbler | No | Heathland (1ug) - <1ug | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | **Yes to 200m** |
| Transect 13 | Ashdown Forest SAC and SPA | Wet and dry heathland, nightjar and Dartford warbler | No | Heathland (1ug) - <1ug | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | **Yes to 200m** |
| Transect 14 | Ashdown Forest SAC and SPA | Wet and dry heathland, nightjar and Dartford warbler | No | Heathland (1ug) - <1ug | **Exceeds 5 kg N/ha/yr for wet and dry heaths in DM and DS** | **Yes to 200m** |
| Transect 15 | East Hampshire Hangers SAC | Calcareous grassland, yew woodland | No | Grassland (3ug) – No grassland in transect. **Woodland (1ug) – Yes to 60m DM and DS** | **Exceeds 10 kg N/ha/yr for yew woodland and calcareous grassland in DM and DS** | No for grassland or woodland |
| Transect 16 | Lewes Downs | Calcareous grassland | No | Grassland (3ug) – grassland between 60 and 200 <3ug. | **Exceeds 10 kg N/ha/yr for calcareous grassland in DM and DS** | No |

6.69 Table 6-3 analyses the percentage contributions of the SDNP alone and in combination with other plans and projects. Where the pollutant was not raised above the critical level or load in the previous table, these have been excluded (N/A). Where alone or in combination increases are over 1% of the critical level/load for each pollutant, these are highlighted in orange. For most Habitat Sites and Transects where the critical level or load was exceeded, the plan, both alone and in combination with other plans and projects, contributed less than 1% of the critical level/load. As such, these could be dismissed from further consideration. The following Habitats Sites and Transects were over 1% of the critical level/load and will be discussed in the following sections:

- Butser Hill SAC – Transect 1 – Over 1% contribution in combination for nitrogen deposition on grassland to 50m and woodland to 80m from the road.
- Woolmer Forest SAC and Wealden Heaths Phase II SPA – Transect 4 – Over 1% contribution in combination for nitrogen on heathland to 120m from the road. Over 1% increase in ammonia ($NH_3$) for heathland up to 100m from the road.
- Woolmer Forest SAC and Wealden Heaths Phase II SPA – Transect 5 – Over 1% contribution in combination for nitrogen on heathland to 50m from the road.
- Wealden Heaths Phase II SPA – Transect 6 – Over 1% contribution in combination for nitrogen on heathland (for birds) to 60m from the road.
- Lewes Down SAC – Transect 16 – Over 1% contribution in combination for nitrogen on grassland to 42m from the road.

**Table 6–3 Subsequent Analysis of Exceedance of 1% of Pollutant Critical Level/Load Alone and In Combination**

| Transect | Habitats Site | Greater than 1% increase alone for NOX | Greater than 1% increase alone for NH3 | Greater than 1% increase alone for nitrogen deposition | Greater than 1% increase alone for acid deposition | Greater than 1% increase in combination for NOX | Greater than 1% increase in combination for NH3 | Greater than 1% increase in combination for nitrogen deposition | Greater than 1% increase in combination for acid deposition |
|---|---|---|---|---|---|---|---|---|---|
| Transect 1 | Butser Hill SAC | N/A | N/A | The Plan does not increase by 1% | N/A | N/A | N/A | **Increases over 1% to 50m for the grassland and 80m for the woodland, combined.** | N/A |
| Transect 2 | Solent Maritime SAC Chichester and Langstone Harbours SPA | N/A | N/A | The Plan does not increase by 1% | N/A | N/A | N/A | In combination does not increase by 1% | N/A |
| Transect 3 | East Hampshire Hangers SAC | N/A | N/A for grassland<br><br>The Plan does not increase (0.0) for woodland | The Plan does not increase by 1% | N/A | N/A | Increased by over 1% up to 10m for woodland only. But the LP contribution is zero. | In combination does not increase by 1% | N/A |
| Transect 4 | Woolmer Forest SAC | N/A | Alone does not | The Plan does not | N/A | N/A | **Increases over 1% to** | **Increases over 1% to 120 m** | N/A |

| Transect | Habitats Site | Greater than 1% increase alone for NOX | Greater than 1% increase alone for NH3 | Greater than 1% increase alone for nitrogen deposition | Greater than 1% increase alone for acid deposition | Greater than 1% increase in combination for NOX | Greater than 1% increase in combination for NH3 | Greater than 1% increase in combination for nitrogen deposition | Greater than 1% increase in combination for acid deposition |
|---|---|---|---|---|---|---|---|---|---|
| | Wealden Heaths Phase II SPA | | increase by 1% (<10m) | increase by 1% | | | **100m for the heathland only combined. Woodland not designated** | **for the heathland only (5 kg/N/yr), combined. Woodland not designated** | |
| Transect 5 | Woolmer Forest SAC Wealden Heaths Phase II SPA | N/A | N/A doesn't exceed the critical level | The Plan does not increase by 1% | N/A | N/A | N/A | **Increases over 1% to 50 m for the heathland only (5 kg/N/yr), combined. Woodland not designated.** | N/A |
| Transect 6 | Wealden Heaths Phase II SPA | N/A | N/A doesn't exceed the critical level | The Plan does not increase by 1% | N/A | N/A | N/A | **Increases over 1% to 60 m combined. (10kg/N/yr for birds.** | N/A |
| Transect 7 | Kingley Vale SAC | N/A | N/A | The Plan does not increase (0.0) | N/A | N/A | N/A | No increase in combination (0.0) | N/A |
| Transect 8 | Duncton to Bignor | N/A | N/A | The Plan does not | N/A | N/A | N/A | In combination does not | N/A |

| Transect | Habitats Site | Greater than 1% increase alone for NOX | Greater than 1% increase alone for NH3 | Greater than 1% increase alone for nitrogen deposition | Greater than 1% increase alone for acid deposition | Greater than 1% increase in combination for NOX | Greater than 1% increase in combination for NH3 | Greater than 1% increase in combination for nitrogen deposition | Greater than 1% increase in combination for acid deposition |
|---|---|---|---|---|---|---|---|---|---|
| | Escarpment SAC | | | increase by 1% | | | | increase by 1% (<10m) | |
| Transect 9 | Ebernoe Common SAC | N/A | The Plan does not increase by 1% | The Plan does not increase by 1% | N/A | N/A | In combination does not increase by 1% (<10m) | In combination does not increase by 1% (<10m) | N/A |
| Transect 10 | The Mens SAC | N/A | N/A | The Plan does not increase by 1% | The Plan does not increase (0.0) | N/A | N/A | In combination does not increase by 1% (<10m) | In combination does not increase by 1% |
| Transect 11 | Lewes Downs SAC | N/A | N/A | The Plan does not increase by 1% | N/A | N/A | N/A | In combination does not increase by 1% (<10m) | N/A |
| Transect 12 | Ashdown Forest SAC and SPA | N/A | N/A | The Plan does not increase (0.0) | The Plan does not increase (0.0) | N/A | N/A | In combination does not increase by 1% (<10m) | In combination does not increase by 1% |
| Transect 13 | Ashdown Forest SAC and SPA | N/A | N/A | The Plan does not increase by 1% | The Plan does not increase (0.0) | N/A | N/A | In combination does not increase by 1% (<10m) | In combination does not increase by 1% |

| Transect | Habitats Site | Greater than 1% increase alone for NOX | Greater than 1% increase alone for NH3 | Greater than 1% increase alone for nitrogen deposition | Greater than 1% increase alone for acid deposition | Greater than 1% increase in combination for NOX | Greater than 1% increase in combination for NH3 | Greater than 1% increase in combination for nitrogen deposition | Greater than 1% increase in combination for acid deposition |
|---|---|---|---|---|---|---|---|---|---|
| Transect 14 | Ashdown Forest SAC and SPA | N/A | N/A | The Plan does not increase (0.0) | The Plan does not increase (0.0) | N/A | N/A | In combination does not increase by 1% (<10m) | In combination does not increase by 1% |
| Transect 15 | East Hampshire Hangers SAC | N/A | The Plan does not increase (0.0) for woodland | The Plan does not increase by 1% | N/A | N/A | In combination does not increase by 1% | In combination does not increase by 1% | N/A |
| Transect 16 | Lewes Downs | N/A | N/A | The Plan does not increase by 1% | N/A | N/A | N/A | **Increases over 1% to 42m combined.** | N/A |

6.70 The preceding analysis established those transects where a) the critical level/load will be exceeded in 2040, and b) the change in pollution exceeds 1% of the critical level/load either due to South Downs National Park Local Plan alone or in combination with other projects and plans. The next step in Natural England guidance is to determine whether (where an improving pollution trend is forecast between 2024 and 2040 notwithstanding growth) the additional pollution from traffic growth will slow (retard) that trend by more than one year. This is because Natural England accepts that a slowing of the rate of improvement of one year or less is not a material interference with the improving trend and therefore will not materially interfere with the ability of the Habitats Site to achieve its conservation objective targets for air quality.

6.71 The following sections discuss whether the forecast pollutant doses due to traffic growth will retard the future baseline air quality improvements by more than one year. This is calculated by dividing the total improvement by the number of years in the Plan period. The difference between the 2024 Baseline and the 2040 Future Baseline is the total improvement in air quality, then divided by the number of plan years. The total retardation of improvement is then calculated by working out the difference between the 2040 Future Baseline and the 2040 DS. The total retardation of improvement is then compared to the yearly improvement. If the total retardation is one year's improvement or less this is not considered a significant retardation.

## Butser Hill SAC

**7.1.1** **Butser Hill SAC at Transect 1**: the total nitrogen contribution from traffic growth exceeds 1% of the critical load for nitrogen deposition up to 50m from the road in combination, reaching up to 18.1 m into the SAC itself. It is a general rule with interpreting air quality data that the outer 10 m of any Habitats site will be subject to edge effects that will have an overriding effect on the vegetation, irrespective of further traffic growth. Therefore, if the impact is confined to within the outer 1m belt of an SAC or SPA, it is reasonable to conclude no adverse effect on integrity.

**7.1.2** To understand if the impact at Butser Hill is a significant increase requiring mitigation, it is therefore necessary to look at whether the plan alone or in combination sets back nitrogen deposition improvements by more than one year, and whether it does so beyond the outermost 10m strip of SAC. If it does so, then further ecological considerations come into play, such as the nature and condition of the habitat within the affected area (e.g., whether qualifying habitats are present) and the total amount of that habitat within the SAC forecast to be affected.

**7.1.3** Over the course of the Plan the future baseline without any growth improves by -2.3905 kg N at the edge of the SAC (31.9m from the road) to -1.9869 kg N at 50 m from the road (18.1 m into the SAC). To get the yearly reduction rates, these are divided by 16, the number of years of the plan, which comes to a reduction of 0.1494 Kg/N/yr (31.9 m from the road) to 0.1242 Kg/N/yr (50 m from the road). The total retardation of improvement for the plan and others in combination is between 0.1702 Kg N at 31.9 m from the road and 0.1168 Kg N up to 50 m from the road. From the raw data, this means there is a greater than one-year retardation of improvement up to 40 m from the road,

but this is also less than 10 m into the SAC due to the distance of the SAC from the roadside. As the first 10 metres of the SAC are subject to edge effects and the habitats in this area are generally of a much poorer quality than further into the SAC, **these impacts can be dismissed. As the impacts can be dismissed in combination, the SDNP contribution alone can also be dismissed as not having an adverse effect on the integrity of the SAC.**

## Lewes Downs SAC

**7.1.4** **Lewes Downs SAC at Transect 16**: the total nitrogen contribution exceeds 1% of the critical level for nitrogen deposition up to 42m from the road in combination, reaching only the very edge of the SAC for this transect. As discussed, anything within 10 m of the edge of the SAC is subject to edge effects. Additionally, the habitat for which the site is designated, calcareous grassland, is not present along the A26 (the location of the modelled transect as this is the road experiencing the greatest traffic growth to 2040), until between 50-70 m into the SAC (depending on location), with a dense tree belt lying between the A26 and SAC grassland. Given that the designated habitats are not present where the nitrogen deposition contribution in combination exceeds 1% of the critical load, **the impacts can be dismissed. As the impacts can be dismissed in combination, the SDNP contribution alone can also be dismissed as not having an adverse effect on the integrity of the SAC.**

## Woolmer Forest SAC and Wealden Heaths Phase II SPA

7.1.5 **Woolmer Forest SAC and Wealden Heaths Phase II SPA at Transect 4**: the total nitrogen contribution exceeds 1% of the critical load (5 kg/N/yr) for nitrogen deposition for heathland up to 120 m from the road, reaching 109.85 m into the SAC and SPA. Anything within 10 m of the edge of the SAC is subject to edge effects. To determine whether this is a significant increase requiring mitigation, we must assess whether the plan, alone or in combination, sets back nitrogen deposition improvements by more than one year. Over the course of the Plan, the future baseline without any growth improves by 3.8067 Kg N at the edge of the SAC/SPA (10.15 m from the road) to 1.4364 Kg N at 120 m from the road (109.85 m into the SAC/SPA). To get the yearly reduction rates, these are divided by 16, the number of years of the plan, which comes to a reduction of 0.2379 Kg/N/yr at 10.15 m from the road to 0.0898 Kg/N/yr at 120 m from the road.

7.1.6 The total retardation of improvement for the South Downs National Park Local Plan and other sources of traffic growth in combination is between 0.4019 Kg/N/yr at 10.15 m from the road and 0.0472 kg/N/yr at 120 m from the road. From the raw data, this means there is a greater than one-year retardation of improvement up to 50 m from the road, or 39.85 m into the SAC. However, examination of the habitats up to 50 m back from the road along the A3 Transect 4 (and elsewhere on the same link in this area), shows that they are plantation woodland (including clearings), or a permanent tree belt along the roadside. This is not a designated feature of the SAC/SPA. Heathland habitats are not present along the A3 Transect 4 until over 60m back from the road. There are some areas of priority heathland shown on MAGIC, however, these data can require verification. Looking at aerial photographs, the areas mapped as heathland within 39.85 m of the SAC/SPA boundary is primarily a gravel

path and associated narrow verge between areas of managed plantation and therefore does not represent a qualifying interest feature of the SAC. As there are no qualifying habitats within the areas of over 1% increase of the critical and over one year retardation, **the impacts can be dismissed in combination; this also means the SNDP contribution alone can also be dismissed as not having an adverse effect on the integrity of the SAC/SPA both alone and in combination with other plans and project.**

7.1.7 **Woolmer Forest SAC and Wealden Heaths Phase II SPA at Transect 5**: the total nitrogen contribution exceeds 1% of the critical level for nitrogen deposition up to 50m from the road, in combination, this reaches some edge habitats, but the majority of the SAC/SPA begins around 70 m from the road. Anything within 10 m of the edge of the SAC is subject to edge effects. Additionally, the habitat for which the site is designated, heathland, is not present along Petersfield Road until approximately 70 m back from the road. Given that the designated habitats are not present where the nitrogen deposition contribution in combination exceeds 1% of the critical level, **the impacts can be dismissed. As the impacts can be dismissed in combination, the SDNP contribution alone can also be dismissed as not having an adverse impact on the integrity of the SAC/SPA both alone and in combination with other plans and projects.**

7.1.8 **Wealden Heaths Phase II SPA at Transect 6:** the total nitrogen contribution exceeds 1% of the critical load (10 kg/N/yr) for nitrogen deposition on heathland for heathland birds up to 110 m from the road, reaching 107.25 m into the SPA. Anything within 10 m of the edge of the SPA is subject to edge effects. To determine whether this is a significant increase requiring mitigation, we must assess whether the plan, alone or in combination, sets back nitrogen deposition improvements by more than one year. Over the course of the Plan the future baseline without any growth improves by 5.3714 Kg N at the edge of the SPA (2.75 m from the road) to 1.4683 Kg N at 110 from the road (107.25 m into the SPA). To get the yearly reduction rates these are divided by 16, the number of years of the plan, which comes to a reduction of 0.3357 Kg/N/yr at 2.75 m from the road to 0.0076 Kg/N/yr at 110 m from the road.

7.1.9 The total retardation of improvement for the plan and others in combination is between 0.6270 Kg/N/yr at 2.75 m from the road and 0.0575 kg/N/yr at 110 m from the road. From the raw data, this means there is a greater than one-year retardation of improvement up to 50 m from the road, or 47.25 m into the SAC. Looking at the habitats up to 50 m back from the road along the Portsmouth Road Transect 6, they are predominantly plantation or permanent woodland with small pockets of heathland between 40-50m back from the woodland. At the most affected part of the SPA, which would be at 10 m back from the road, the total contribution from the SDNP Plan in combination with other plans and projects retards the air quality improvements by approximately 19 and a half months (1.64 times the yearly improvement), which is a significant retardation. However, the SNDP contribution to the retardation of air quality improvements is significantly smaller at approximately 11 and a half weeks (2.84 months), far below the one-year threshold. Although the one-year threshold is exceeded in combination, there is very little heathland habitat within the 50 m zone from the road, existing mainly as small pockets. The core heathland areas are much further back from the roadside.

7.1.10 Additionally, the qualifying features of the SPA are birds (nightjar, woodlark, Dartford warbler) rather than the heathland habitats themselves. These species are known to be very sensitive to noise disturbance, making the first 50 m of habitat, which is affected by the nitrogen deposition, sub-optimal for use by the qualifying species, as the species are less likely to use heathland habitats within close proximity to the road. The most recent breeding bird survey of Wealden Heaths Phase II SPA (2023), available for this report, highlights that there were no nesting territories within the first 50m back from the A3. **These impacts can therefore be dismissed as not having an adverse effect on the integrity of the SPA, both alone and in combination with other plans and projects.**

7.1.11 The assessment of impacts on Wealden Heaths Phase II SPA focusses on heathland because while plantation woodland is very important as a habitat for SPA birds, the suitability of such habitat is influenced primarily by plantation management. Research in Breckland Forest[133] has identified that, with regard to rotationally-managed plantation, the amount of plantation in each growth stage and (for woodlark) the planting and restock period management regime (such as whether the area was de-stumped or ploughed, and factors such as brash cover and weed control) explain the vast majority of the recorded spatial and temporal variation in nightjar and woodlark abundance. Provided these management aspects are appropriate, other factors, such as nitrogen deposition, are therefore less likely to influence the achievement of biodiversity objectives for these species in rotational forestry than in more natural habitats. Therefore, impacts on heathland/acid grassland are most relevant to the consideration of whether the ability of the SPA to achieve its Conservation Objectives will be compromised by nitrogen deposition.

## Summary

6.72 Air quality impacts could be dismissed as not causing an adverse effect on the integrity of all Habitats Sites modelled both alone and in combination with other plans and projects.

# Water Quality

6.73 Specific potential new allocations are discussed, but other policies which could result in development in affected zones are:

[133] Probably the largest commercial plantation in England. Reference: Dolman, P. and Morrison, C. (2012). *Temporal change in territory density and habitat quality for Breckland Forest SSSI woodlark and nightjar populations*. Report to Forestry Commission and Natural England, number ENV103/11/19.

- SDE7: Regenerative Tourism
- SDC2: Development Strategy
- SDH1: Housing Supply
- SDH7: Replacement and Subdivision of Dwellings
- SDH8: Householder Development
- SDH9: Rural Workers' Dwellings
- SDH10: Gypsies, Travellers and Travelling Showpeople
- SDH4: Specialist and Older Persons' Accommodation
- SDE8: Equestrian Development
- SDT2: Active Travel Routes

**Arun Valley SAC and SPA**

6.74 As discussed in the Test of Likely Significant Effects section, there is potential for the SDLP to result in likely significant effects on the designated bird features and little whirlpool rams-horn snail of the SAC and SPA, and their supporting habitats. The discussion provided in the Test of Likely Significant Effects section provides a mixed message (i.e. that phosphorous and nitrogen levels exceeded the current CSMG and the SSSI Condition Assessments identify that SPA bird populations and the SAC rams-horn snail are in Unfavourable – Declining condition, in part at least due to the nutrient condition of the ditches within the site). These condition assessments were updated between February and May 2024.

6.75 However, the Natural England Nutrient Neutrality Catchment mapping was updated subsequent to the condition assessments of the Pulborough SSSI and Amberly Wild Brooks SSSIs (July 2024) and does not identify nutrient neutrality as being an issue at the Arun Valley. The HRA of the recently submitted Regulation 19 Horsham Local Plan[134] stated that "*the wastewater treatment standards of the relevant Sewage Treatment Works are already being tightened to protect the Arun Valley international sites from excessive phosphate loading the Horsham District Local Plan is screened out at this time (October 2023)* " and thus no adverse effects on the integrity to the site as a result of new residential development within the Arun Valley catchment would result.

**Solent Habitats Sites**

6.76 As discussed in the Test of Likely Significant Effects section, there is potential for the SDLP to result in likely significant effects on the designated bird features Solent Habitats Sites, and their supporting habitats through windfall but particularly through six potential allocations:

[134] Horsham District Council https://www.horsham.gov.uk/__data/assets/pdf_file/0004/132295/Habitats-Regulation-Assessment.pdf [Accessed 11/10/2024]

- Land South of the A272 at Hinton Marsh, Cheriton – 14 dwellings
- Land at Itchen Abbas House, Itchen Abbas – 9 dwellings
- Land north of Hewlett Close, Tywford – 15 dwellings
- Land at Old Green Farm, Owslebury – 7 dwellings
- Land at Park Lane, Droxford – 9 dwellings
- Land north of Dodds Lane, Swanmore – 15 dwellings

6.77 **Given their small size, they are likely to need to contribute to strategic mitigation rather than delivering anything on site. This is discussed below.**

6.78 Strategic Policy SDN7: Nutrient Neutrality provides for strategic protection to the Solent Habitats Sites in relation to Nutrient Neutrality. This policy states:

*6.79* '*Development involving an overnight stay (including dwellings, Gypsy, Traveller and Travelling Showpeople plots and pitches, and all forms of holiday accommodation), and tourism attractions that could bring visitors from outside the catchment, will be required to demonstrate that there will be no adverse effect on the integrity of the SPAs, SACs and Ramsar sites of the Solent and River Itchen. They shall do this by being nutrient neutral for the lifetime of the development, in accordance with guidance provided by Natural England and supported by a nutrient budget using the most up-to-date Natural England calculator, through:*

*a. A financial contribution towards a strategic mitigation scheme, and/or*

*b. A developer-provided on-site solution agreed with Natural England.*

*6.80 Other development proposals may impact the water quality of the SPAs, SACs and Ramsar sites of the Solent and River Itchen and these must demonstrate that adverse effects on the integrity of these designated sites are avoided, suitably mitigated, or as a last resorted compensated for. Such development proposals will be assessed on a case-by-case basis.*

6.81 *Development proposals for mitigation must be agreed with the Local Planning Authority and Natural England and will be supported where they are located in the relevant catchment in relation to the development they are to serve, conserve and enhance landscape character, and take opportunities to deliver wider environmental benefits such as for biodiversity, making a positive contribution to the ecological network.*'

6.82 With the provision of this protective policy in place, it can be concluded that no adverse effects on the integrity of the Solent Habitats Sites in relation to Nutrient Neutrality will result.

**Pevensey Levels SAC and Ramsar site**

6.83 As detailed in the Test of Likely Significant Effects, it is only in combination impact that require AA. The site is designated for various species that rely on sufficient water levels because they live in aquatic habitats. For example, the little whirlpool ram's-horn snail floats on the surface of freshwater ditches and land drainage has been identified as a key threat to this species. Young snails require annual winter floods to colonise new ditches and maintain healthy, genetically diverse populations. Furthermore, the Pevensey Levels Ramsar is

designated for its assemblage of wetland plants and invertebrates (especially Coleoptera and Odonata), which all require appropriate water levels.

6.84 The Pevensey Levels SAC/Ramsar is designated for its notably large population of ramshorn snails, an invertebrate species that preferentially occurs in unpolluted water. Eutrophication and resulting low oxygen concentrations and excessive algal growth have been identified as a major threat to this species. The Pevensey Levels Ramsar encompasses a range of important wetland flora and fauna communities, all of which are sensitive to water pollution. The site supports outstanding invertebrate populations, including Mollusca, aquatic Coleoptera, over 15 species of dragonfly and the fen raft spider *Dolomides plantarius*. Point-source domestic sewage pollution is identified as one of two factors currently adversely affecting the Ramsar's ecological status.

6.85 Notably, the SAC/Ramsar lies immediately south-east to the conurbation of Hailsham, which is served by two Wastewater Treatment Works (WwTWs) – Hailsham North and Hailsham South. Both WwTWs discharge into waterbodies that are connected to the SAC/Ramsar and sit directly adjacent to the boundary of the site. This implies that there is little scope for natural dilution and attenuation processes to reduce the influx of nutrients to the SAC/Ramsar. Natural England's Site Improvement Plan[135] specifies that the storm water tank of one of the WwTWs adjoins the SAC/Ramsar and discharges untreated sewerage into the site under peak flow conditions.

6.86 None of the settlements in the South Downs National Park are served by WwTWs that discharge to catchments which are not hydrologically connected to the Pevensey Levels SAC/Ramsar.

6.87 **There will therefore be no adverse effect on integrity in combination with other plans or projects.**

**River Itchen SAC**

6.88 As discussed in the Test of Likely Significant Effects section, there is potential for the SDLP to result in likely significant effects on the River Itchen SAC through windfall but particularly through four potential allocations:

- Land South of the A272 at Hinton Marsh, Cheriton – 14 dwellings
- Land at Itchen Abbas House, Itchen Abbas – 9 dwellings
- Land north of Hewlett Close, Twyford – 15 dwellings
- Land at Old Green Farm, Owslebury – 7 dwellings

6.89 **For each of these , four potential allocations, indicative nutrient neutrality calculations are being undertaken to inform the consultation version of the Regulation 19 Local Plan. However, it is clear that, given their small size, they are likely to need to input to strategic mitigation rather than delivering anything on site.**

6.90 SDLP Strategic Policy SDN7: Nutrient Neutrality provides for strategic protection to the River Itchen SAC in relation to Nutrient Neutrality. Strategic Policy SDN7: Nutrient Neutrality states:

[135] Site Improvement Plan: Pevensey Levels - SIP171

6.91 *"Development involving an overnight stay (including dwellings, Gypsy, Traveller and Travelling Showpeople plots and pitches, and all forms of holiday accommodation), and tourism attractions that could bring visitors from outside the catchment, will be required to demonstrate that there will be no adverse effect on the integrity of the SPAs, SACs and Ramsar sites of the Solent and River Itchen. They shall do this by being nutrient neutral for the lifetime of the development, in accordance with guidance provided by Natural England and supported by a nutrient budget using the most up-to-date Natural England calculator, through:*

*a. A financial contribution towards a strategic mitigation scheme, and/or*

*b. A developer-provided on-site solution agreed with Natural England.*

6.92 *Other development proposals may impact the water quality of the SPAs, SACs and Ramsar sites of the Solent and River Itchen and these must demonstrate that adverse effects on the integrity of these designated sites are avoided, suitably mitigated, or as a last resorted compensated for. Such development proposals will be assessed on a case-by-case basis.*

6.93 *Development proposals for mitigation must be agreed with the Local Planning Authority and Natural England and will be supported where they are located in the relevant catchment in relation to the development they are to serve, conserve and enhance landscape character, and take opportunities to deliver wider environmental benefits such as for biodiversity, making a positive contribution to the ecological network.***With the provision of this protective policy in place it can be concluded that no adverse effects on the integrity of the River Itchen SAC in relation to Nutrient Neutrality will result.**

## Nutrient Neutrality Budget and Mitigation

6.94 A nutrient neutrality report has been prepared for the SDNP HRA, and the following paragraphs are taken from this report to set out the nutrient neutrality budget and mitigation options.

6.95 There are three individual nutrient catchments within the Solent Nutrient Neutrality catchment that impact the SDNPA. These are, Western Streams, East Hampshire Rivers, and the River Itchen. The Western Streams and East Hampshire Rivers catchments require TN mitigation only, whereas the River Itchen requires both TN and TP mitigation. For the TN element of the River Itchen, mitigation can also be carried out in the River Test, given the spatial principles that apply. This means that the following catchment analysis was undertaken to create the nutrient budget and mitigation options:

- Western Streams (TN)
- East Hampshire Rivers (TN)
- Test and Itchen (TN)
- Itchen (TP)

### Allocations

6.96 Within the East Hampshire Rivers Catchment, there are two allocations, one being brought forward within five years and one being brought forward partially within the first five years of the plan.

- SDA79 – within five years – generates an estimated 18.9 Kg/TN/yr. As this site drains into the River Hamble, the mitigation is limited to the River Hamble catchment, as per NE guidance. In terms of mitigation, it has been confirmed that there is at least one suitable scheme which has over 600 credits available. **The SDNPA would need to enter into a legal agreement with the scheme to access the credits.**
- SDA45 – over five years – generates an estimated 70 Kg/TN/yr. **The SDNPA has legal agreements in place with two existing mitigation schemes from which this development can obtain suitable mitigation credits in the appropriate catchment.**

6.97 Within the Test and Itchen Rivers Catchment, the phasing of units zero to five years and over five years is shown below:

- Allocations within the first five years of the Plan generate a nutrient need of approximately 75.1 Kg/TN/yr. **The SDNPA has agreements in place with one existing mitigation scheme that allows developments in the catchment to obtain credits. This scheme is almost at capacity, but plans to bring forward 500 more credits within the next five years. There are also other available schemes that the SDNPA can enter if further mitigation is required.**
- Allocations over five years will bring an additional 212.5 Kg/TN/yr. **SDNPA will need to mitigate this through either the standing agreement, if it provides additional capacity or further schemes being entered as above.**

6.98 With regard to the phosphorus component of the River Itchen, there are four allocations within the catchment. The up to five years and over five years requirements are shown below:

- The phasing within the Upper Itchen catchment over the first five years would generate a nutrient need of approximately 9.8 Kg/TP/yr. **The SDNPA has legal agreements in place with one existing mitigation scheme that development can obtain suitable mitigation from in the catchment. The scheme is almost at capacity; therefore, further mitigation will be required to meet demand. There is at least one other scheme available in the catchment that could satisfy demand, but the SDNPA would need to enter into a legal agreement with the scheme to access the credits.**
- There is one allocation located in the Lower Itchen Catchment; this means that it can access mitigation within either the Upper or Lower Catchment. Information within the Nutrient Report shows that the Lower Itchen Catchment has mitigation capacity for the next 10 years. **However, to access the mitigation credits within the Lower Itchen Catchment, the SDNPA would need to enter into a legal agreement with the scheme.**
- The estimated total nutrient requirement beyond five years is 30.1 Kg/TP/yr, in addition to the above. This is all within the Upper Itchen Catchment, and the **SDNPA will be required to enter into a legal agreement with the additional scheme to provide the credits for this, as above.**

6.99 With regard to the long-term nitrogen and phosphorus mitigation needs in combination with neighbourhood development plans in the SDNP catchment over 5 years, it is estimated to be 236 kg/TN/yr and 30 kg/TP/yr across the

Test, Itchen and East Hampshire catchments. Based on the Solent Nutrient S&D report from December 2025 there is not currently enough supply to meet this need. However, while nutrient mitigation has not yet been identified to satisfy these years, the current rate of mitigation schemes coming online is expected to continue and be able to meet future demand. This is informed by the investment strategy of organisations such as the Solent Mitigation Partnership who received funding from MHCLG to create large-scale nutrient mitigation sites to enable housing delivery. Also, the South Downs National Park Authority has a green financing brokerage service for developers looking to purchase offsetting credits for nitrogen and/or phosphorous. Beyond the next 5 to 10 years, it is likely that mitigation will be supplemented by enhancements to regional WwTW which have a 5+ year investment cycle. For example, WwTW serving over 2000 population will be upgraded to TAL by 2030. This was mandated through the Levelling Up and Regeneration Act (LURA) 2023 and will result in a reduction in the overall demand for nutrient mitigation in the catchments. Alongside this, it is expected that other strategic solutions will also come forward such as Environmental Delivery Plans (EDPS). These are being developed by Natural England and are expected to come forward in the medium term as another form of nutrient mitigation that developers can utilise. However, when exactly the EDPs will come forward and whether they will provide suitable mitigation for the allocations is currently unknown.

6.100 As outlined in the Test of Likely Significant Effects, the River Meon should be treated as a Special Area of Conservation (SAC) in relation to phosphorus impacts, as it is being used to deliver as a compensatory habitat for Southern Water Drought Plan impacts on the River Itchen. Within the Meon catchment, a single residential allocation at Droxford is expected to deliver nine dwellings, which will generate a small phosphorus load to the River Meon. There is no nutrient neutrality requirement for the Meon such that the Southern Water Drainage and Wastewater Management Plan process will protect the site. Moreover, the only allocation within the SSSI Impact Risk Zones that have been applied to the River Meon are the 9 dwelling allocation at Droxford. The SSSI Impact Risk Zones require HRA for all residential development within 50m of the Meon, residential development over 50 dwellings within 200m of the Meon, and residential development over 100 dwellings within 1km of the Meon.

6.101 Although the Meon catchment is already included within the Solent nitrogen nutrient neutrality framework, there is presently no equivalent requirement for phosphorus neutrality. The Droxford allocation, being 400m from the Meon, currently falls below the identified thresholds in the SSSI Impact Risk Zones applied to the Meon. However, to ensure no adverse effects on the River Meon, it is recommended that a project-level Habitats Regulations Assessment (HRA) is undertaken for the Droxford allocation, as well as for any allocations brought forward through Neighbourhood Plans within the River Meon catchment. This will establish whether phosphorus mitigation is required on a case-by-case basis.

### Windfall

6.102 The below table sets out the nutrient demand for windfall in each of the River catchments.

**Table 6–4 Summary of nutrient demand for windfall development**

| Catchment | First five-year demand | Beyond five-year demand |
|---|---|---|
| Western Streams | 36 kg/TN/yr | 251 kg/TN/yr |
| East Hampshire Rivers | 90 kg/TN/yr | 627 kg/TN/yr |
| Test and Itchen | 72 kg/TN/yr | 501 kg/TN/yr |
| Itchen | 10 kg/TP/yr | 69 kg/TP/yr |

6.103 The windfall figures presented above are extremely precautionary as it is expected that a windfall development would likely have negative land use change and a lower wastewater permit due to a bespoke PtP or by connecting to a mains sewer. These factors would likely result in a lower nutrient load being required.

### Summary

6.104 In conclusion, it can be concluded that sufficient nutrient mitigation credits will be available to satisfy the development needs of the SDNPA across all of the Local Plan allocations. However, for five of the allocations, the SDNPA will need to enter into legal agreements with new schemes to obtain suitable mitigation from the available supply in the catchments. Alternatively, another strategic solution may come to the market. Assuming one of these occurs, the Plan meets the requirements of the Habitat Regulations and it can be concluded that there will be no adverse effects on the integrity of any Habitats Sites either alone or in combination with other plans or projects.

# 8. Other Plans and Projects

6.105 It is a requirement that HRAs assess the implications of development plans not only in isolation, but also in-combination with other plans and projects. This is particularly important where potential effects of a plan alone are insignificant (and the plan would otherwise be screened out from AA), but there is a potential for negative interactions with other development resulting in significant impacts cumulatively. The most important in-combination plans are Local Plans in adjoining authorities that are likely to affect the same Habitats Sites. Therefore, the following Local Plans have been considered while undertaking this HRA of the SDLP:

6.106 Local Plan documents for authorities surrounding the National Park:

- Lewes (Local Plan Part 1 adopted 2016, new Local Plan in early stages)
- Horsham (Local Plan withdrawn from Examination and being reconsidered)
- Wealden (new Local Plan Regulation 18 consultation planned)
- Eastbourne (new Local Plan being prepared)
- Brighton & Hove (new Local Plan in early stages)
- Mid Sussex (Local Plan currently undergoing Examination)
- Worthing (Local Plan adopted 2023)
- Adur (Local Plan adopted 2017, new Local Plan in early stages)
- Arun (Local Plan adopted 2018, new Local Plan undertook Issues and Options consultation 2024)
- Chichester (Local Plan adopted 2025)
- East Hampshire (Joint Core Strategy adopted 2014, new Local Plan in early stages)
- Waverley (Local Plan Part 1 adopted 2018, Local Plan Part 2 adopted 2023, new Local Plan in preparation)
- Winchester (Local Plan going through Examination)
- Eastleigh (Local Plan adopted 2022)
- Havant (Core Strategy adopted 2011, new Local Plan in preparation)
- Portsmouth (new Local Plan awaiting submission for Examination)
- Fareham (Local Plan adopted 2023)
- Gosport (Local Plan adopted 2015, new Local Plan in preparation)
- Southampton (Core Strategy adopted 2010 and amended 2015, new Local Plan in preparation)
- Alfriston Neighbourhood Plan (not yet produced)
- Amberley Neighbourhood Plan (adopted 2017)
- Bury Neighbourhood Plan (adopted 2018)
- Clapham Neighbourhood Plan (adopted 2016)

- Ditchling, Westmeston & Streat Neighbourhood Plan (adopted 2018)
- Easebourne Neighbourhood Plan (not yet produced)
- East Dean and Friston Neighbourhood Plan (adopted 2025)
- East Meon Neighbourhood Plan (adopted 2017)
- Fernhurst Neighbourhood Plan (adopted 2016)
- Findon Neighbourhood Plan (adopted 2020)
- Fittleworth Neighbourhood Plan (adopted 2019)
- Lavant Neighbourhood Plan (not yet produced)
- Lewes Neighbourhood Plan (adopted 2019)
- Liss Neighbourhood Plan (adopted 2017)
- Milland Neighbourhood Plan (adopted 2016)
- Patching Neighbourhood Plan (adopted 2018)
- Petersfield Neighbourhood Plan (adopted 2024)
- Petworth Neighbourhood Plan (adopted 2018)
- Rogate and Rake Neighbourhood Plan (adopted 2021)
- Sheet Neighbourhood Plan (not yet produced)
- Singleton Neighbourhood Plan (not yet produced)
- Stedham with Iping Neighbourhood Plan (adopted 2021)
- Twyford Neighbourhood Plan (adopted 2022)

6.107 The assessment in the preceding sections of the report (particularly Chapters 5 and 6) have been undertaken with consideration of in combination effects in mind.

6.108 The zones for functionally-linked land around SPAs and SACs have been set specifically to capture the effect of an accumulation of growth none of which may be of particular significance in itself but when taken collectively may negatively affect the designated sites.

- Arun Valley SPA/Ramsar: Two other local authority areas lie within 5km to 6.5km of this SPA/Ramsar. These are the Horsham and Arun Districts. Both local authorities considered impacts on functionally linked land as part of their Local Plan HRAs and both concluded that there would be no adverse effect on the integrity of the SPA/Ramsar either alone or in combination. This was because either relevant site allocations were not on habitat suitable for Brent geese, or because there was a policy in the Local Plan requiring further assessment and, if necessary, mitigation for planning applications. This was the approach, for example, applied to the two relevant allocations in the Horsham Local Plan.
- Sussex Bat sites: The following local authority areas lie within 12.6 km of the Sussex Bat sites – Chichester District, Arun District, Horsham District and Waverley District. As with the Arun Valley SPA/Ramsar, all these local authorities considered impacts on functionally linked land as part of their Local Plan HRAs and concluded that there would be no adverse effect on

the integrity of the SACs either alone or in combination. This was because either relevant site allocations were not on habitat suitable for commuting or foraging Bechstein's or barbastelle bats, or because there was a policy in the Local Plan ensuring that further assessment, and if necessary, mitigation or preservation of key features (including avoidance of lighting), was required for planning applications. This was the approach, for example, applied to the eighteen relevant allocations in the Horsham Local Plan.

6.109 In addition to Local Plans, there are a series of Neighbourhood Areas within the relevant zones around each Habitats Site. Each Neighbourhood Area is producing its own Neighbourhood Plan. However, each Neighbourhood Plan will be, or has been, accompanied by its own HRA and where it makes allocations this includes an assessment of whether the relevant allocation site is likely to contain features of value to SAC bats, or Arun Valley Brent geese. A review of these Neighbourhood Plan HRAs identifies that where such features are present the HRA recommends a policy for inclusion in the Neighbourhood Plan which mimics those of the relevant Local Plans, requiring detailed survey, preservation of key features, and if necessary, mitigation delivery, for each relevant allocation.

6.110 The recreational pressure zones around sensitive Habitats Sites (Wealden Heaths Phase II SPA/Woolmer Forest SAC/Shortheath Common SAC, Solent Habitats sites, Ashdown Forest SAC/SPA, Thursley, Hankley & Frensham Commons SPA/Thursley, Ash, Pirbright & Chobham SAC, and Thames Basin Heaths SPA) are all also set to capture the core recreational catchments and the collective impact on recreational pressure from a range of allocations across numerous plans.

6.111 The SDNP LP doesn't allocate any sites within the core recreational catchments of the Solent Habitats sites, Ashdown Forest, Thursley, Hankley & Frensham Commons/Thursley, Ash, Pirbright & Chobham, or Thames Basin Heaths SPA and therefore will not result in an 'in combination' effect with other Local Plans, although the potential for windfall housing to come forward within those National Park settlements within 5.6km of the Solent Habitats sites has been identified.

6.112 That leaves Wealden Heaths Phase II SPA/Woolmer Forest SAC/Shortheath Common SAC. Two other local authorities are delivering housing within 5 km of these designated sites: East Hampshire District Council and Waverley Borough Council. Both local authorities are currently working on their next Local Plans, so the amount of housing they envisage delivering within 5km of the Wealden Heaths Phase II SPA over the South Downs Local Plan period is uncertain. However, the fact that growth across the three authorities could act 'in combination' on the SPA and associated SACs has been taken into account in discussions between the three local authorities and has informed Natural England's advice regarding mitigation.

6.113 Nutrient neutrality regarding the River Itchen SAC and Solent Habitats Sites have been assessed 'in combination' in Chapter 6 of this report, but is reviewed here for completeness:

- Nutrient neutrality: Many local authorities lie within the catchment of the River Itchen or the Solent Habitats Sites. These are Basingstoke & Dean, Winchester, East Hampshire, Eastleigh, New Forest, Test Valley,

Southampton, Portsmouth, Gosport, Chichester and Fareham. The Natural England nutrient neutrality approach to both Habitats Sites takes account of the potential for growth across relevant parts of all these authorities to act in combination with each other. Each local authority has incorporated, or is incorporating, a policy into its Local Plan similar to that included in the South Downs Local Plan.

6.114 With the measures already identified in Local Plan policy, or recommended for addition to policy, the Local Plan will have addressed its contribution to these in combination effects and no adverse effect on integrity will arise.

# 9. Conclusion

6.115 There are 21 Habitats sites that could be impacted by development within the South Downs National Park. These are:

- Arun Valley SAC/SPA/Ramsar
- Ashdown Forest SAC and SPA
- Butser Hill SAC
- Castle Hill SAC
- Chichester and Langstone Harbours SPA and Ramsar
- Duncton to Bignor Escarpment SAC
- East Hampshire Hangers SAC
- Ebernoe Common SAC
- Kingley Vale SAC
- Lewes Downs SAC
- The Mens SAC
- Pagham Harbour SPA and Ramsar
- River Itchen SAC
- Rook Clift SAC
- Shortheath Common SAC
- Singleton and Cocking Tunnels SAC
- Solent and Dorset SPA
- Solent and Southampton Water SPA
- Solent Maritime SAC
- Wealden Heaths Phase II SPA
- Woolmer Forest SAC

6.116 There are 6 potential impact pathways which could link to development within the South Downs National Park. These are recreational pressure, atmospheric pollution, water quality, nutrient neutrality, water quantity, loss of functionally linked habitat and urbanisation.

# Recreational Pressure

6.117 With the inclusion of Policy SDN2: Designated Sites Hierarchy, Strategic Policy SDN5: Wealden Heaths Complex and Strategic Policy SDN6: The Solent Coast Special Protection Areas (SPAs), it is considered that the SDLP does contain a strategic policy framework to ensure no adverse effects on the integrity of Wealden Heaths Phase II SPA/Woolmer Forest SAC/Shortheath Common SAC. Strategic Policy SDT2: Active Travel Routes includes the safeguarding for development of the Chichester – Midhurst disused railway line, which has theoretical potential to impact adversely upon the barbastelle and Bechstein bat features of Singleton & Cocking Tunnels SAC. However, this will be captured by the project-level HRA requirement of Strategic Policy SDN2 Designated Sites Hierarchy).

6.118 However, East Hampshire District Council, South Downs National Park Authority, and Waverley Borough Council are in the process of developing a wider SAMM programme which is intended to expand the existing SAMM programme to cover all net new housing within 5km of the SPA and Woolmer Forest SAC and Shortheath Common SAC . It is advised that South Downs National Park Authority also participate in this strategy. The strategy would need to be developed before the South Downs Local Plan was submitted to the Secretary of State for Examination and it is therefore recommended South Downs National Park Authority take an active role in developing the SAMM strategy.

6.119 AECOM also advises that additional policy wording should be included in Strategic Policy SDN5 Wealden Heaths Complex to clarify the mitigation requirements for net new residential development within 400 m to 5 km core catchment area surrounding the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC.

# Urbanisation

6.120 With the inclusion of Strategic Policy SDN5: Wealden Heaths Complex, it was concluded that the Regulation 19 SDLP contains sufficient strategic policy framework to ensure that no adverse effects on the integrity of the Wealden Heaths Phase II SPA occur as a result of urbanisation effects due to the Local Plan, either alone or in combination.

# Loss of Functionally Linked Land

6.121 With the inclusion of Strategic Policy SDN4: Arun Valley Special Protection Area (SPA) and the recommended modification to the policy (see recommendation section below), and with the inclusion of Strategic Policy SDN3: The Sussex Bat Special Areas of Conservation (SAC), it was concluded that the Regulation 19 SDLP contains sufficient strategic policy framework to ensure that no adverse effects on the integrity of the Arun Valley SPA and Ramsar site or the Sussex Bat SAC sites (The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC) occur as a result of urbanisation effects due to the Local Plan, either alone or in combination.

6.122 However, regarding the reference to a 5 km zone around Arun Valley SPA/Ramsar in Policy SDN4: Arun Valley Special Protection Area (SPA), the

Horsham Local Plan HRA goes a little further and notes that review of the underlying SSSI Impact Risk Zones online indicates that Impact Risk Zone 2 extends to about 6.5 km from the SPA/Ramsar. It is therefore recommended that it is checked with Natural England as to whether the zone referenced in policy should remain 5km or should increase to 6.5 km. If one increases the zone of influence to 6.5 km, it adds a single potential allocation: Land south of Herbert Shiner School in Petworth, at 6.4 km from the SPA, potentially allocated for 75 dwellings. This more than doubles the number of housing units in the FLL zone.

# Air Quality

6.123 As detailed above, an AA was undertaken, to determine if the SDLP is likely to result in an adverse **effect** on the integrity alone or in combination with other plans and projects on the following Habitats Sites.

- Ashdown Forest SAC/SPA
- Butser Hill SAC
- East Hampshire Hangers SAC
- Ebernoe Common SAC
- Kingley Vale SAC
- Lewes Downs SAC
- The Mens SAC
- Wealden Heaths Phase II SPA
- Woolmer Forest SAC

6.124 To inform Appropriate Assessment, traffic and air quality modelling was undertaken and analysed with regards to ecological impacts in the above sections. It was concluded that air quality could be dismissed as not having adverse effects on the integrity of the Habitats sites modelled either alone or in combination with other plans and projects.

# Water Quality

6.125 With Strategic Policy SDN7: Nutrient Neutrality in place it is considered that the SDLP sets an appropriate policy framework to protect these Habitats sites from water quality issues due to new development.

# Recommendations

6.126 **Recommendation**: East Hampshire District Council, South Downs National Park Authority and Waverley Borough Council are in the process of developing a wider SAMM programme which will expand the existing SAMM programme to cover all net new housing within 5km of the SPA and Woolmer Forest SAC and Shortheath Common SAC. It is advised that South Downs National Park Authority also participate in this strategy. The strategy would need to be developed before the South Downs Local Plan was submitted to the Secretary of State for Examination and it is therefore recommended South Downs National Park Authority take an active role in developing the SAMM strategy.

6.127 **Recommendation**: AECOM also advises that additional policy wording should be included in Policy SDN5 Wealden Heaths Complex to clarify the mitigation requirements for net new residential development within 400 m to 5 km core catchment area surrounding the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC.

6.128 **Recommendation**: Regarding the reference to a 5km zone around Arun Valley SPA/Ramsar in Policy SDN4: Arun Valley Special Protection Area (SPA), the Horsham Local Plan HRA goes a little further and notes that review of the underlying SSSI Impact Risk Zones online indicates that Impact Risk Zone 2 extends to about 6.5km from the SPA/Ramsar. It is therefore recommended that the boundary should increase to 6.5km. If one increases the zone of influence to 6.5 km, it adds a single potential allocation: Land south of Herbert Shiner School in Petworth, at 6.4 km from the SPA, potentially allocated for 75 dwellings. However, the zone only clips the southeast corner of the development, and the developable area is entirely outside this zone. As already discussed, it would not capture any further potential Local Plan allocations if it were, but there may still be windfall development located within the 6.5 km zone.

6.129 **Recommended:** that a project-level Habitats Regulations Assessment (HRA) is undertaken for the Droxford allocation, as well as for any allocations brought forward through Neighbourhood Plans, and any windfall development within the River Meon catchment. This will establish whether phosphorus mitigation is required on a case-by-case basis.

# Appendix A Figure A1 – Location of the South Downs National Park Authority and Habitats Sites

# Appendix B Habitat Sites Detail

## Arun Valley SAC / SPA / Ramsar

### Reasons for Designation

SAC features[136]

6.130 Annex II Species that are a primary reason for selection of this site:

- Little whirlpool rams-horn snail *Anisus vorticulus*

SPA features[137]

6.131 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:

6.132 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, at the time of notification).

6.133 Assemblage qualification of non-breeding waterbirds.

- 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[138]

6.134 The is site is designated as a Ramsar site for the criteria summarised in Table 9–1: Ramsar criteria and qualification.Table 9–1.

**Table 9–1: Ramsar criteria 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 endangered species or threatened ecological communities. | The site supports seven wetland invertebrate species listed in the British Red Book and the endangered *Pseudamnicola confuse* (swollen spire snail). As well as four nationally rare and four nationally scarce plant species. |

[136] Available at: https://sac.jncc.gov.uk/site/UK0030366 [Accessed on 02/04/2024]
[137] Available at: https://designatedsites.naturalengland.org.uk/Terrestrial/TerrestrialSiteDetail.aspx?SiteCode=UK9020281 [Accessed on 02/04/2024]
[138] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11004.pdf [Accessed on 02/04/2024]

| | | |
|---|---|---|
| 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:<br>• 13774 waterfowl (5 year peak mean 1998/99-2002/2003)<br>Species identified subsequent to designation for possible future consideration:<br>• Northern pintail , *Anas acuta*, NW Europe 641 individuals, representing an average of 1% of the population (5 year peak mean 1998/9- 2002/3)<br>Species currently occurring at levels of national importance:<br>• 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)<br>• 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)<br>• 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). |

**SPA / SAC Conservation Objectives**

SPA[139]

*6.135 "With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

SAC[140]

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

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

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

## Threats / Pressures to Site Integrity[141]

- Inappropriate water levels
- Water pollution

[139] Available at: https://publications.naturalengland.org.uk/publication/4567444756627456 [Accessed on 02/04/2024]
[140] Available at: https://publications.naturalengland.org.uk/publication/4924283725807616 [Accessed on 02/04/2024]
[141] Available at: https://publications.naturalengland.org.uk/publication/5353882309885952[Accessed on 02/04/2024]

- Inappropriate ditch management

# Ashdown Forest SAC / SPA

## Reasons for Designation

SAC features[142]

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

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

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

- Great-crested newt *Triturus cristatus*

SPA features[143]

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

Breeding

- Nightjar *Caprimulgus europaeus*;
- Dartford warbler *Sylvia undata*.

## Conservation Objectives

SPA[144]

*6.142* "*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

[142] Available at: https://sac.jncc.gov.uk/site/UK0030080 [Accessed on 02/04/2024]
[143] Available at: https://designatedsites.naturalengland.org.uk/TerrestrialAdvicePDFs/UK9012181.pdf [Accessed on 02/04/2024]
[144] Available at: https://designatedsites.naturalengland.org.uk/Terrestrial/TerrestrialSiteDetail.aspx?SiteCode=UK9012181 [Accessed on 02/04/2024]

SAC[145]

*6.144 "With regard to the SAC and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

## Threats / Pressures to Site Integrity[146]

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

# Butser Hill SAC

## Reasons for Designation[147]

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

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco Brometalia*) (* important orchid sites).
- *Taxus baccata* woods of the British Isles (* priority feature)

## Conservation Objectives[148]

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

[145] Available at: https://designatedsites.naturalengland.org.uk/Terrestrial/TerrestrialSiteDetail.aspx?SiteCode=UK0030080 [Accessed on 02/04/2024]
[146] Available at: https://publications.naturalengland.org.uk/publication/5793096570765312 [Accessed on 02/04/2024]
[147] Available at: https://sac.jncc.gov.uk/site/UK0030103 [Accessed on 02/04/2024]
[148] Available at: https://publications.naturalengland.org.uk/publication/5067404384141312 [Accessed on 02/04/2024]

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

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

## Threats / Pressures to Site Integrity[149]

- Inappropriate scrub control
- Undergrazing
- Air Pollution: Risk of atmospheric nitrogen deposition

# Castle Hill SAC

## Reasons for Designation[150]

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

- Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco-Brometalia* (* important orchid sites)

6.150 Annex I species present as a qualifying feature, but not a primary reason for site selection:

- Early gentian *Gentianella anglica*

## Conservation Objectives[151]

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

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

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

[149] Available at: https://publications.naturalengland.org.uk/publication/4842655599034368 [Accessed on 02/04/2024]
[150] Available at: https://sac.jncc.gov.uk/site/UK0012836 [Accessed on 02/04/2024]
[151] Available at: https://publications.naturalengland.org.uk/publication/6088288314064896[Accessed on 02/04/2024]

- *The distribution of qualifying species within the site.*

## Threats / Pressures to Site Integrity[152]

- Undergrazing
- Fertiliser use
- Air Pollution: Impact of atmospheric nitrogen deposition

# Chichester and Langstone Harbours SPA / Ramsar

## Reasons for Designation

SPA features[153]

6.153 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

- Bar-tailed godwit *Limosa lapponica*
- Curlew *Numenius Arquata*
- Dark-bellied brent goose *Branta bernicla bernicla*
- Dunlin Calidris *alpina alpina*
- Grey plover *Pluvialis squatarola*
- Pintail *Anas acuta*
- Red-breasted merganser *Mergus serrator*
- Redshank *Tringa totanus*
- Ringed plover *Charadrius hiaticula*
- Sanderling *Calidris alba*
- Shelduck *Tadorna tadorna*
- Shoveler *Anas clypeata*
- Teal *Anas crecca*
- Turnstone *Arenaria interpres*
- Wigeon *Anas Penelope*

Breeding

- Common tern *Sterna hirundo*
- Little tern *Sterna albifrons*
- Sandwich tern *Sterna sandvicensis*

[152] https://publications.naturalengland.org.uk/file/6520392904605696 [accessed 17/10/2023]
[153] Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9011011&HasCA=1&NumMarineSeasonality=18&SiteNameDisplay=Chichester%20and%20Langstone%20Harbours%20SPA#SiteInfo [Accessed on 02/04/2024]

Waterbird assemblage:

6.154 Over winter the area regularly supports 72,666 waterbirds (5 year peak mean 2009/10-2013/14).

Ramsar features[154]

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: 76,480 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6:

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

6.156 Species with peak counts in spring / autumn:

- Ringed plover *Charadrius hiaticula*
- Black-tailed godwit *Limosa limosa islandica*
- Common redshank *Tringa totanus*

6.157 Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*
- Common shelduck *Tadorna tadorna*
- Grey plover *Pluvialis squatarola*
- Dunlin *Calidris alpina alpina*

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

6.159 Species regularly supported during the breeding season:

- Little tern Sterna *albifrons albifrons*

## SPA Conservation Objectives[155]

*6.160 "With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

- *The extent and distribution of the habitats of the qualifying features,*

[154] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11013.pdf [Accessed on 02/04/2024]
[155] Available at: https://publications.naturalengland.org.uk/publication/5789102905491456 [Accessed on 02/04/2024]

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

## Threats / Pressures to Integrity of SPA[156]

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological Resource Use
- Change in land management
- Inappropriate pest control
- Air Pollution: Impact of atmospheric nitrogen disposition
- Hydrological changes
- Direct impact from 3rd party

# Duncton to Bignor Escarpment SAC

## Reasons for Designation[157]

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

- *Asperulo-Fagetum* beech forests

## Conservation Objectives[158]

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

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

- *The extent and distribution of qualifying natural habitats,*

[156] Available at: https://publications.naturalengland.org.uk/publication/4692013588938752 [Accessed on 02/04/2024]
[157] Available at: https://sac.jncc.gov.uk/site/UK0030138 [Accessed on 02/04/2024]
[158] Available at: https://publications.naturalengland.org.uk/publication/6492790347268096 [Accessed on 02/04/2024]

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

## Threats / Pressures to Site Integrity[159]

6.165 No current or historic issues affecting the designated feature of this SAC have been identified in Natural England's Site Improvement Plan (SIP).

# East Hampshire Hangers SAC

## Reasons for Designation[160]

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

- *Asperulo-Fagetum* beech forests
- *Tilio-Acerion* forests of slopes, screes and ravines (* priority feature)

6.167 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)
- *Taxus baccata* woods of the British Isles (* priority feature)

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

- Early gentian *Gentianella anglica*

## Conservation Objectives[161]

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

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

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

[159] Available at: https://publications.naturalengland.org.uk/publication/5623422855938048[Accessed on 02/04/2024]
[160] Available at: https://sac.jncc.gov.uk/site/UK0012723 [Accessed on 02/04/2024]
[161] Available at: https://publications.naturalengland.org.uk/publication/6500658190483456 [Accessed on 02/04/2024]

- *The distribution of qualifying species within the site."*

## Threats / Pressures to Site Integrity[162]

- Air Pollution: Risk of atmospheric nitrogen deposition
- Invasive species
- Forestry and woodland management

# Ebernoe Common SAC

## Reasons for Designation[163]

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

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

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

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

## Conservation Objectives[164]

6.173 i

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

## Threats / Pressures to Site Integrity[165]

- Forestry and woodland management
- Offsite habitat availability / management (Loss of Functionally Linked Land)
- Habitat fragmentation
- Change in land management
- Hydrological changes
- Air Pollution: Risk of atmospheric nitrogen deposition

[162] Available at: https://publications.naturalengland.org.uk/publication/5890345141272576 [Accessed on 02/04/2024]
[163] Available at: https://sac.jncc.gov.uk/site/UK0012715 [Accessed on 02/04/02024]
[164] Available at: https://publications.naturalengland.org.uk/publication/6255629165395968 [Accessed on 02/04/2024]
[165] Available at: https://publications.naturalengland.org.uk/publication/6364242571689984 [Accessed on 02/04/2024]

- Public access / disturbance

# Emer Bog SAC

## Reasons for Designation[166]

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

- Transition mires and quaking bogs

## Conservation Objectives[167]

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

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

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

## Threats / Pressures to Site Integrity[168]

- Public access / disturbance
- Hydrological changes
- Air pollution: Impact of atmospheric nitrogen deposition

# Kingley Vale SAC

## Reasons for Designation[169]

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

- Taxus *baccata* woods of the British Isles (* priority feature)

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

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)

[166] Available at: https://sac.jncc.gov.uk/site/UK0030147 [Accessed on 02/04/2024]
[167] Available at: https://publications.naturalengland.org.uk/publication/4900551749795840 [Accessed on 02/04/2024]
[168] Available at: https://publications.naturalengland.org.uk/publication/6367668705689600 [Accessed on 02/04/2024]
[169] Available at: https://sac.jncc.gov.uk/site/UK0012767 [Accessed on 02/04/2024]

## Conservation Objectives[170]

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

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

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

## Threats / Pressures to Site Integrity[171]

- Deer
- Undergrazing
- Agriculture: Other
- Air Pollution: Impact of atmospheric nitrogen deposition

# Lewes Downs SAC

## Reasons for Designation[172]

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

- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

## Conservation Objectives[173]

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

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

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

[170] Available at: https://publications.naturalengland.org.uk/publication/5727834794360832 [Accessed on 02/04/2024]
[171] Available at: 6393220716036096 [Accessed on 02/04/2024]
[172] Available at: https://sac.jncc.gov.uk/site/UK0012832 [Accessed on 02/04/2024]
[173] Available at: https://publications.naturalengland.org.uk/publication/4618459505754112 [Accessed on 02/04/2024]

## Threats / Pressures to Site Integrity[174]

- Game management: Pheasant rearing
- Undergrazing
- Public access / disturbance
- Air Pollution: Impact of atmospheric nitrogen deposition

# The Mens SAC

## Reasons for Designation

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

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

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

- Barbastelle Barbastella barbastellus

## Conservation Objectives[175]

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

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

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

## Threats / Pressures to Site Integrity[176]

- Forestry and woodland management
- Habitat connectivity
- Invasive species

[174] Available at: https://publications.naturalengland.org.uk/publication/5857326774878208 [Accessed on 02/04/2024]
[175] Available at: https://publications.naturalengland.org.uk/publication/5642356338458624 [Accessed on 02/04/2024]
[176] Available at: https://publications.naturalengland.org.uk/publication/5548316158853120 [Accessed on 02/04/2024]

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

# Pagham Harbour SPA / Ramsar

## Reasons for Designation

SPA features[177]

6.188 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.

Breeding:

- Little Tern Sterna albifrons
- Common Tern Sterna hirundo

Over winter:

- Ruff Philomachus pugnax
- Little Egret *Egretta garzetta*

6.189 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)

Ramsar criteria[178]

6.190 The site qualifies as a Ramsar site for the criterion shown in Table 8-2.

[177] Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9012041&HasCA=1&NumMarineSeasonality=4&SiteNameDisplay=Pagham%20Harbour%20SPA [Accessed on 02/04/2024]
[178] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11052.pdf [Accessed on 02/04/2024]

**Table 9–2: 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:*<br>• Black-tailed godwit *Limosa limosa islandica*: |

## SAC Conservation Objectives[179]

6.191 *"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

## Threats / Pressures to Site Integrity[180]

- Physical modification
- Public access / disturbance
- Water pollution
- Fisheries: Commercial marine and estuarine
- Fisheries: Recreational marine and estuarine
- Change in land management

# Pevensey Levels SAC / Ramsar

## Reasons for Designation

SAC features[181]

6.193 Annex I species that are a primary reason for selection of this site:

- Ramshorn snail *Anisus vorticulus*

[179] Available at: https://publications.naturalengland.org.uk/publication/6147434560356352 [Accessed on 02/04/2024]
[180] Available at: https://publications.naturalengland.org.uk/publication/5799069091889152 [Accessed on 02/04/2024]
[181] Available at: https://sac.jncc.gov.uk/site/UK0030367 [Accessed on 02/04/2024]

Ramsar criteria[182]

6.194 The site qualifies as a Ramsar site for the following two criteria.

Ramsar Criterion 2:

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

Ramsar 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.

## SAC Conservation Objectives[183]

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

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

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

## Threats / Pressures to Site Integrity[184]

- Inappropriate water levels
- Invasive species
- Water pollution

# Portsmouth Harbour SPA / Ramsar

## Reasons for Designation

SPA features[185]

[182] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11053.pdf [Accessed on 02/04/2024]
[183] Available at: https://publications.naturalengland.org.uk/publication/6293054151458816 [Accessed on 02/04/2024]
[184] Available at: https://publications.naturalengland.org.uk/publication/6057793526169600 [Accessed on 02/04/2024]
[185] Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9011051&HasCA=1&NumMarineSeasonality=4&SiteNameDisplay=Portsmouth%20Harbour%20SPA [Accessed on 02/04/2024]

6.197 Portsmouth 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.

6.198 Over winter:

- Black-tailed godwit *Limosa limosa islandica*
- Dark-bellied brent goose *Branta bernicla bernicla*
- Dunlin Calidris *alpina alpina*
- Red-breasted merganser *Mergus serrator*

Ramsar criteria[186]

6.199 The site qualifies as a Ramsar for the following criteria.

Ramsar criterion 3:

- The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha spp*. and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species.

Ramsar criterion 6:

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

6.201 Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*;

## SPA Conservation Objectives[187]

*6.202 "With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*

[186] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11055.pdf [Accessed on 02/04/2024]
[187] Available at: https://publications.naturalengland.org.uk/publication/4857883850178560 [Accessed on 02/04/2024]

- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

## Threats / Pressures to Site Integrity[188]

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological Resource Use
- Change in land management
- Inappropriate pest control
- Air Pollution: Impact of atmospheric nitrogen disposition
- Hydrological changes
- Direct impact from 3rd party

# River Itchen SAC

## Reasons for Designation[189]

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

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

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

- Southern damselfly *Coenagrion mercuriale*
- Bullhead *Cottus gobio*

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

- White-clawed crayfish *Austropotamobius pallipes*
- Otter *Lutra lutra*
- Atlantic salmon *Salmo salar*
- Brook lamprey *Lampetra planeri*

[188] Available at: https://publications.naturalengland.org.uk/publication/4692013588938752 [Accessed on 02/04/2024]
[189] Available at: https://sac.jncc.gov.uk/site/UK0012599 [Accessed on 02/04/2024]

## Conservation Objectives[190]

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

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

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

## Threats / Pressures to Site Integrity[191]

- Water pollution
- Physical modification
- Siltation
- Overgrazing
- Water abstraction
- Inappropriate weed control
- Hydrological changes
- Inappropriate water levels
- Change in land management
- Inappropriate cutting / mowing
- Invasive species
- Undergrazing
- Inappropriate ditch management
- Inappropriate scrub control
- Forestry and woodland management

[190] Available at: https://publications.naturalengland.org.uk/publication/5130124110331904 [Accessed on 02/04/2024]
[191] Available at: https://publications.naturalengland.org.uk/publication/5404054607888384 [Accessed on 02/04/2024]

# Rook Clift SAC

## Reasons for Designation[192]

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

- *Tilio-Acerion* forests of slopes, screes and ravines (* priority feature)

## Conservation Objectives[193]

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

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

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

## Threats / Pressures to Site Integrity[194]

- Deer
- Forestry and woodland management
- Feature location / extent / condition unknown

# Shortheath Common SAC

## Reasons for Designation[195]

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

- Transition mires and quaking bogs

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

- European dry heaths
- Bog woodland (* priority feature)

## Conservation Objectives[196]

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

[192] Available at: https://sac.jncc.gov.uk/site/UK0030058 [Accessed on 02/04/2024]
[193] Available at: https://publications.naturalengland.org.uk/publication/6335772969926656 [Accessed on 02/04/2024]
[194] Available at: https://publications.naturalengland.org.uk/publication/6352739575529472 [Accessed on 02/04/2024]
[195] Available at: https://sac.jncc.gov.uk/site/UK0030275 [Accessed on 02/04/2024]
[196] Available at: https://publications.naturalengland.org.uk/publication/4851353352404992[Accessed on 02/04/2024]

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

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

## Threats / Pressures to Site Integrity[197]

- Inappropriate scrub control
- Public access / disturbance
- Direct impact from 3rd party
- Air Pollution: Impact of atmospheric nitrogen deposition

# Singleton and Cocking Tunnels SAC

## Reasons for Designation[198]

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

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

## Conservation Objectives[199]

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

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

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

## Threats / Pressures to Site Integrity[200]

- Habitat connectivity

[197] Available at: https://publications.naturalengland.org.uk/publication/6257070747680768 [Accessed on 02/04/2024]
[198] Available at: https://sac.jncc.gov.uk/site/UK0030337 [Accessed on 02/04/2024]
[199] Available at: https://publications.naturalengland.org.uk/publication/6518329883754496 [Accessed on 02/04/2024]
[200] Available at: https://publications.naturalengland.org.uk/publication/5755291169718272 [Accessed on 02/04/2024]

- Habitat fragmentation
- Public access / disturbance
- Air Pollution: Risk of atmospheric nitrogen deposition

# Solent and Dorset SPA

## Reasons for Designation

6.219 The site qualifies under Article 4 of the Birds Directive (2009/147/EC) for the following species listed in Annex I of the Birds Directive:

Breeding

- Sandwich tern *Sterna sandvicensis*
- Common tern *Sterna hirundo*
- Little tern *Sterna albifrons*

## Conservation Objectives[201]

*6.220 "With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to nature change;*

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

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

## Threats / Pressures to Site Integrity

- Water pollution
- Disturbance from activity

# Solent & Southampton Water SPA / Ramsar

## Reasons for Designation

SPA features[202]

[201] Available at: https://publications.naturalengland.org.uk/publication/5294923917033472 [Accessed on 02/04/2024]
[202] Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK9011061&HasCA=1&NumMarineSeasonality=9&SiteNameDisplay=Solent%20and%20Southampton%20Water%20SPA [Accessed on 02/04/2024]

6.222 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

- Black-tailed godwit *Limosa limosa islandica*
- Dark-bellied brent goose *Branta bernicla bernicla*
- Ringed plover *Charadrius hiaticula*
- Teal Anas crecca

Breeding

- Common tern *Sterna hirundo*
- Little tern *Sterna albifrons*
- Mediterranean gull *Ichthyaetus melanocephalus*
- Roseate tern *Sterna dougallii*
- Sandwich tern Sterna sandvicensis

Waterbird assemblage:

6.223 Over winter the area regularly supports 43,987 waterbirds (5 year peak mean 2009/10-2013/14).

Ramsar criteria[203]

Ramsar criterion 1:

- The site is one of the few major sheltered channels between a substantial island and mainland in European waters, exhibiting an unusual strong double tidal flow and has long periods of slack water at high and low tide. It includes many wetland habitats characteristic of the biogeographic region: saline lagoons, saltmarshes, estuaries, intertidal flats, shallow coastal waters, grazing marshes, reedbeds, coastal woodland and rocky boulder reefs.

Ramsar criterion 2:

- The site supports an important assemblage of rare plants and invertebrates. At least 33 British Red Data Book invertebrates and at least eight British Red Data Book plants are represented on site.

Ramsar criterion 5:

- Assemblages of international importance – Species with peak counts in winter: 51,343 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6:

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

[203] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11063.pdf [Accessed on 02/04/2024]

6.225 Species with peak counts in spring / autumn:

- Ringed plover *Charadrius hiaticula*

6.226 Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*
- Eurasian teal *Anas crecca*
- Black-tailed godwit *Limosa limosa islandica*

## SPA Conservation Objectives[204]

*6.227* "*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

## Threats / Pressures to Site Integrity[205]

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological Resource Use
- Change in land management
- Inappropriate pest control
- Air Pollution: Impact of atmospheric nitrogen disposition
- Hydrological changes

[204] Available at: https://publications.naturalengland.org.uk/publication/6567218288525312 [Accessed on 02/04/2024]
[205] Available at: https://publications.naturalengland.org.uk/publication/4692013588938752 [Accessed on 02/04/2024]

- Direct impact from 3rd party

# Solent Maritime SAC

## Reasons for Designation[206]

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

- Estuaries
- Spartina swards (*Spartinion maritimae*)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

6.230 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 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"")"

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

- Desmoulin's whorl snail *Vertigo moulinsiana*

## Conservation Objectives[207]

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

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

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

[206] Available at: https://sac.jncc.gov.uk/site/UK0030059 [Accessed on 02/04/2024]
[207] Available at: https://publications.naturalengland.org.uk/publication/5762436174970880 [Accessed on 02/04/2024]

- *The populations of qualifying species, and,*
- *The distribution of qualifying species within the site*."

## Threats / Pressures to Site Integrity[208]

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological Resource Use
- Change in land management
- Inappropriate pest control
- Air Pollution: Impact of atmospheric nitrogen disposition
- Hydrological changes
- Direct impact from 3rd party

# Thames Basin Heaths SPA

## Reasons for Designation[209]

6.234 This site qualifies under Article 4 of Directive 2009/147/EC by supporting populations of European importance of the following species listed on Annex II of the Directive:

Breeding

- European nightjar *Caprimulgus europaeus*
- Dartford warbler *Sylvia undata*

## Conservation Objectives[210]

*6.235* "*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

[208] Available at: https://publications.naturalengland.org.uk/publication/4692013588938752 [Accessed on 02/04/2024]
[209] Available at: https://publications.naturalengland.org.uk/publication/4952859267301376 [Accessed on 02/04/2024]
[210] Available at: https://publications.naturalengland.org.uk/publication/4952859267301376 [Accessed on 02/04/2024]

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

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

## Threats / Pressures to Site Integrity[211]

- Public access / disturbance
- Undergrazing
- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Feature location / extent / condition unknown
- Military
- Habitat fragmentation

# Thursley, Hankley & Frensham Commons SPA

## Reasons for Designation[212]

6.237 This site qualifies under Article 4 of Directive 2009/147/EC by supporting populations of European importance of the following species listed on Annex II of the Directive:

Breeding

- European nightjar *Caprimulgus europaeus*
- Woodlark *Lullula arborea*
- Dartford warbler *Sylvia undata*

[211] Available at: https://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed on 02/04/2024]
[212] Available at: https://publications.naturalengland.org.uk/publication/5735025425252352 [Accessed on 02/04/2024]

## Conservation Objectives[213]

6.238 "*With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

## Threats / Pressures to Site Integrity[214]

- Public access / disturbance
- Undergrazing
- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Feature location / extent / condition unknown
- Military
- Habitat fragmentation

# Thursley, Ash, Pirbright & Chobham SAC

## Reasons for Designation[215]

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

- Northern Atlantic wet heaths with *Erica tetralix*
- European dry heaths
- Depressions on peat substrates of the *Rhynchosporion*

[213] Available at: https://publications.naturalengland.org.uk/publication/5735025425252352 [Accessed on 02/04/2024]
[214] Available at: https://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed on 02/04/2024]
[215] Available at: https://sac.jncc.gov.uk/site/UK0012793 [Accessed on 02/04/2024]

## Conservation Objectives[216]

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

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

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

## Threats / Pressures to Site Integrity[217]

- Public access / disturbance
- Undergrazing
- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Feature location / extent / condition unknown
- Military
- Habitat fragmentation

# Thursley and Ockley Bogs Ramsar

## Reasons for Designation[218]

6.243 The site qualifies as a Ramsar for the following criteria.

Ramsar criterion 2:

- Supports a community of rare wetland invertebrate species including notable numbers of breeding dragonflies.

Ramsar criterion 3:

- It is one of few sites in Britain to support all six native reptile species. The site also supports nationally important breeding populations of European nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*.

[216] Available at: https://publications.naturalengland.org.uk/publication/5141075941392384 [Accessed on 02/04/2024]
[217] Available at: https://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed on 02/04/2024]
[218] Available at: https://jncc.gov.uk/jncc-assets/RIS/UK11074.pdf [Accessed on 02/04/2024]

## Threats and Pressures[219]

6.244 No threats or pressures identified on the Ramsar Information Sheet. However, as a bog habitat it will innately be vulnerable to changes in hydrological conditions.

# Wealden Heaths Phase II SPA

## Reasons for Designation[220]

6.245 This site qualifies under Article 4 of Directive 2009/147/EC by supporting populations of European importance of the following species listed on Annex II of the Directive:

Breeding

- European nightjar *Caprimulgus europaeus*
- Woodlark *Lullula arborea*
- Dartford warbler *Sylvia undata*

## Conservation Objectives[221]

*6.246 "With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;*

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

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

## Threats / Pressures to Site Integrity[222]

- Change in land management
- Invasive species
- Hydrological changes
- Feature location/extent / condition unknown
- Public access/disturbance
- Military

[219] Available at https://rsis.ramsar.org/RISapp/files/RISrep/GB647RIS.pdf {Accessed on 01/10/2024]
[220] Available at: https://publications.naturalengland.org.uk/publication/5729030657540096 [Accessed on 02/04/2024]
[221] Available at: https://publications.naturalengland.org.uk/publication/5729030657540096 [Accessed on 02/04/2024]
[222] Available at: https://publications.naturalengland.org.uk/publication/5431913779036160 [Accessed on 02/04/2024]

- Air Pollution: Impact of atmospheric nitrogen deposition
- Wildfire/arson

# Woolmer Forest SAC

## Reasons for Designation[223]

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

- Natural dystrophic lakes and ponds
- European dry heaths

6.249 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- Northern Atlantic wet heaths with *Erica tetralix*
- Transition mires and quaking bogs

## Conservation Objectives[224]

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

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

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

## Threats / Pressures to Site Integrity[225]

- Change in land management
- Invasive species
- Hydrological changes
- Feature location/extent / condition unknown
- Public access/disturbance
- Military
- Air Pollution: Impact of atmospheric nitrogen deposition
- Wildfire/arson

[223] Available at: https://sac.jncc.gov.uk/site/UK0030304 [Accessed on 02/04/2024]
[224] Available at: https://publications.naturalengland.org.uk/publication/4583742731452416 [Accessed on 02/04/2024]
[225] Available at: https://publications.naturalengland.org.uk/publication/5431913779036160 [Accessed on 02/04/2024]

# Appendix C Test of Likely Significant Effects

Where the Likely Significant Effects column is coloured green, this means that the policy or allocation does not have any potentially linking impact pathways to any Habitats Site and will not result in a Likely Significant Effect. These policies or allocations will not be discussed further. Where the Likely Significant Effects column is coloured orange, this means that the policy or allocation does have the potential to provide a linking impact pathway to a Habitats Site, and could potentially result in a Likely Significant Effect. These policies or allocations will be subject to Appropriate Assessment in Chapter 6.

## Test Of Likely Significant Effects of the Plan Policies

**Table 9–3 Test of Likely Significant Effects of the Plan Policies**

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| Core Policy SDC1: Furthering National Park Purposes | This is a core policy.<br><br>The policy outlines that development proposals should further the purposes of the National Park, which is to conserve and enhance natural beauty, wildlife and cultural heritage. There is a presumption in favour of sustainable development, and it should be considered with cumulative impacts recognised, both inside and outside, relevant to the park. | No HRA implications.<br>This outlines policy for furthering the purpose of the National Park, which is to conserve and enhance natural beauty, wildlife and cultural heritage and is a development management policy.<br>There are no impact pathways present. |
| Core Policy SDC2: Development Strategy | This is a core policy.<br>The policy outlines the criteria for when development will be supported. Criteria include scale and nature of the proposed development in the context of the landscape, making best use of the suitable and available previously developed land, and making efficient and appropriate use of the land. It provides | Potential HRA implications<br><br>This is a policy relating to development strategy. It provides development management criteria and guidelines. It states that the policy includes a list of settlements inside and outside of the National Park, with settlement boundaries within the National Park. |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| | criteria where development outside of settlement boundaries will be considered. | This is provided on a separate spreadsheet at the time of writing the Reg 19 HRA. Each allocation will be screened separately based on its location; however, as this is the policy that provides the allocations, it is screened in for AA. |
| Core Policy SDC3: Regenerative Development and Ecosystem Services | This is a core policy.<br>It identifies that development proposals will be permitted where they use regenerative design to restore ecosystem services and have an overall positive impact on biodiversity, human health and the environment. This will be achieved through applying the principles of nature-led place-based design, enhancing how natural and human systems work together, and creating healthy and equitable communities, and by delivering opportunities by sustainably managing and contributing to the regeneration of land and water environments. | No HRA implications.<br>This is a positive development management policy that outlines the need to have an overall positive impact on biodiversity and the environment.<br>There are no linking impact pathways present. |
| Core Policy SDC4: Major Development | A core policy relating to major development.<br>It outlines what constitutes a major development and how the Authority will determine whether it is a major development.<br>It outlines that major development will be refused within the National Park, except under certain specific criteria that have been identified, including the need for the development and its economic benefits, the cost, scope, and scale of developing it outside the Park, and the detrimental effect on the environment and landscape. Major development proposals will be | No HRA implications.<br>This is a development management policy governing major developments.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | required to demonstrate how they will result in a healthy and sustainable place that improves health and wellbeing for existing communities and future users. | |
| Strategic Policy SDL1: Landscape Character | A strategic policy that details criteria under which development will be permitted in relation to landscape character. | No HRA implications.<br><br>This is a strategic policy relating to landscape character.<br>There are no linking impact pathways present. |
| Strategic Policy SDL2: Design | A policy that details design principles that development will be required to adhere to. It also establishes minimum standards for the quality of living environments in residential developments. | No HRA implications.<br><br>This is a development management policy relating to landscape character.<br>There are no linking impact pathways present. |
| Strategic Policy SDL3: Safeguarding Views | A policy that provides criteria to ensure development preserves the visual integrity, identity and scenic quality of the National Park, by conserving and enhancing key views and views of key features. | No HRA implications.<br><br>This is a development management policy relating to the safeguarding of views.<br>There are no linking impact pathways present. |
| Strategic Policy SDL4: Relative Tranquillity | A policy that identifies that development proposals will only be permitted where they conserve and enhance relative tranquillity and identifies impacts which will be considered. | No HRA implications.<br><br>This is a development management policy relating to relative tranquillity.<br>There are no linking impact pathways present. |
| Strategic Policy SDL5: Dark Night Skies | A strategic policy that identifies that development proposals will be permitted where they conserve and | No HRA implications. |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| | enhance the intrinsic quality of dark night skies and the integrity of the Dark Sky Core. Development proposals must demonstrate that all opportunities to reduce light pollution have been explored, and must ensure that the measured and observed sky quality in the surrounding area is not negatively impacted, with due regard to the identified hierarchy. Lighting, which is proposed to be installed, must meet or exceed the level of protection appropriate to the environmental zone | This is a strategic development management policy relating to promoting dark night skies. This is a positive policy that, by its nature, will benefit designated bat species.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDL6: Historic Environment and Cultural Heritage | A development management policy requiring the safeguarding of heritage assets and their setting. This is to be done via a requirement for heritage impact statements, supporting proposals for the enhancement or reuse of Heritage Assets, and providing permission for proposals that ensure the conservation of heritage assets that would not otherwise meet the standards of other planning policies, where this meets certain criteria. | No HRA implications.<br>This is a development management policy relating to the historic environment.<br>There are no linking impact pathways present. |
| Strategic Policy SDL7: Listed Buildings | A policy that restricts the development of proposals that affect listed buildings unless they preserve and enhance the significance of the listed building and its setting, or any harm is outweighed by public benefit and appropriate mitigation is provided.<br>Development proposals will be refused planning permission and/or listed building consent where they cause substantial harm to a listed building or its setting. | No HRA implications.<br><br>This is a development management policy relating to listed buildings.<br><br>There are no linking impact pathways present |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| Strategic Policy SDL8: Conservation Areas | A policy that requires proposals within conservation areas to preserve or enhance the special architectural or historic interest, character or appearance of the conservation area. Sufficient information to make an informed assessment of this should be provided with the proposal.<br>Proposals within conservation areas resulting in the complete or substantial demolition of buildings will not be supported unless the current building does not make a positive contribution to the interest, character, and appearance of the conservation area, and the replacement would make an equal or greater contribution to these values. | No HRA implications.<br><br>This is a development management policy relating to conservation areas.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDL9: Archaeology | A policy that controls development that may impact archaeological heritage assets.<br>Development proposals will be permitted where they do not cause harm to archaeological heritage assets and/or their setting. Sufficient information is required to allow an informed assessment.<br>This policy makes a presumption in favour of in-situ preservation of scheduled monuments and equivalently significant archaeological heritage assets.<br>Development proposals that will cause unavoidable harm to these assets will only be permitted if there is clear justification that public benefits outweigh the harm, and if there is no less harmful option and the harm has been minimised. Where this happens, preservation by record will be required. | No HRA implications.<br><br>This is a development management policy relating to Archaeological Heritage Assets.<br><br>There are no linking impact pathways present |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| Strategic Policy SDN1: Nature Recovery | A strategic policy that requires development to conserve and enhance biodiversity, geodiversity and spils, giving regard to ecological networks and areas with high potential for priority habitat restoration and creation. This should be demonstrated through an assessment with UpToDate ecological information.<br>Development proposals with a primary goal of conserving, enhancing or restoring biodiversity will be supported where consistent with the landscape character and contributing to nature recovery and climate resistance.<br>Development proposals must also demonstrate Biodiversity Net Gain in addition to any required mitigation, with contribution to the provision of blue and green infrastructure. Proposals for this net gain must meet certain criteria including feasibility and a demonstration of appropriate management being secured a minimum of 30 years. | No HRA implications.<br>This is a positive strategic policy that provides for the requirement that development proposals must have regard for biodiversity and geodiversity.<br>There are no linking impact pathways present. |
| Strategic Policy SDN2: Designated Sites Hierarchy | A strategic policy that sets a hierarchy of designated sites for use in the determination of development proposals, with the highest level of protection given to internationally designated sites. For internationally designated sites, proposals with the potential to impact one or more of these sites must be subject to an HRA. Proposals with an adverse effect will be refused unless there are no alternatives, there are imperative reasons of overriding public interest, and adequate compensatory provision is secured. | No HRA implications.<br><br>This is a strategic policy that sets out a hierarchy for protected sites and outlines protections for each level of this hierarchy. This is a positive policy that explicitly requires an HRA where a development proposal is considered to have a likely significant effect on an internationally designated site, thereby providing sufficient protection for European designated sites. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | | This is a key policy in providing explicit protection to European designated sites.<br><br>There are no linking impact pathways present |
| Strategic Policy SDN3: The Sussex Bat Special Areas of Conservation (SAC) | Development proposals on greenfield sites and sites that support or are in close proximity to suitable commuting and foraging habitat (including grassland and mature vegetative linear features such as woodlands, hedgerows, riverine and wetland habitats) within the following ranges of The Mens SAC, Ebernoe Common SAC and Singleton & Cocking Tunnels SAC as shown on the Policies Map, should have due regard to the possibility that Barbastelle and Bechstein's Bats will be utilising the site. Such proposals will be required to incorporate undertake necessary robust surveys and an ecological assessment of direct and indirect impacts to the and ensure that key features (such as foraging habitat and commuting routes), and which would include details of the measures proposed to avoid and/or fully mitigate any identified harm are retained to ensure these features are conserved and enhanced, in addition to provide a suitable buffer to safeguard against disturbance, and take opportunities to for characteristic habitat creation to link flightlines and features .<br>a) 6.5km: Key conservation area – all impacts to bats must be considered given that habitats within this zone are considered critical for sustaining the populations of bats within the SACs; and | No HRA implications.<br>This is a development management policy that provides explicit protection for the Sussex Bat SAC sites. It outlines the required avoidance and mitigation strategies that are to be adhered to.<br>This is a key positive hook policy.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | b) 12km: Wider conservation area – significant impacts or severance to flightlines to be considered.<br><br>Proposed use or development of the tunnels comprising the Singleton & Cocking Tunnels SAC will be required to demonstrate that there is no adverse effect on the interest features, including hibernation habitat for Barbastelle and Bechstein's Bats, or on the integrity of the site. | |
| Strategic Policy SDN4: The Arun Valley Special Protection Area (SPA) | Development proposals on greenfield sites within 6.5 km of the Arun Valley SPA, as shown on the Policies Map, must undertake an appraisal as to whether the land is suitable for wintering Bewick's swan. If it is suitable, then appropriate surveys must be undertaken to determine whether the fields are of importance to the swan population. If so, and likely significant adverse effects on the designated site cannot be avoided, development proposals must demonstrate through a site-specific Habitats Regulations<br><br>Assessment that effects are adequately mitigated and, as a last resort, compensated for to ensure that no adverse effects on the integrity of the Arun Valley SPA and Ramsar site result.<br><br>Mitigation in the form of appropriate alternative habitat is to be agreed with the Local Planning Authority and Natural England and delivered before development can proceed. | No HRA implications.<br>This is a development management policy that provides explicit protection for the Arun Valley SPA in relation to its functionally linked land located outside of the footprint of the designated site. It outlines in what circumstances surveys are required and what to do if a land parcel is confirmed to support a significant population of Bewick's Swan. This is a key positive hook policy.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| Strategic Policy SDN5: Wealden Heaths Complex | 1. Development proposals resulting in a net increase in residential units within the 0 - 400m 'exclusion zone' from the boundary of the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC boundaries as shown on the Policies Map, where mitigation measures are unlikely to be capable of protecting the integrity of the designated sites will not be permitted unless in exceptional circumstances where an Appropriate Assessment demonstrates that development would have an adverse effect on the integrity of the designated sites and has been agreed by the Local Planning Authority in consultation with Natural England.<br>2. Development proposals resulting in a net increase in residential units within the 400m - 5km zone from the boundary of the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC as shown on the Policies Map must demonstrate that development would not have adverse effect on the integrity of the designations and recreational disturbance impacts are satisfactorily mitigated through:<br>a. A financial contribution to the delivery of strategic mitigation through the Wealden Heaths Strategic Access Management and Monitoring (SAMM) Strategy; and<br>b. Where development proposals are for a net increase in residential units of 50 or more, the provision of Suitable Alternative Natural Green Space | No HRA implications.<br>This is a development management policy that provides explicit protection for the Wealden Heaths Phase II SPA in relation to urbanisation and recreational pressure. It outlines in what avoidance and mitigation strategy is required to ensure no likely significant effects result. This is a key positive kook policy.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | (SANG), or a financial contribution to a strategic SANG, which is acceptable to provide mitigation for the development, is agreed with the Local Planning Authority and Natural England, in place prior to occupation, and provided in perpetuity.<br>3. In the absence of a financial contribution toward SAMM mitigation, an appropriate assessment is required to demonstrate that any 'in combination' impacts which are likely to have a significant adverse effect can be avoided or can be satisfactorily mitigated through a developer-provided package of measures and agreed with the Local Planning Authority and Natural England, in place prior to occupation and provided in perpetuity. | |
| Strategic Policy SDN6: The Solent Coast Special Protection Areas (SPAs) | Development proposals resulting in a net increase in residential units, within the Solent Coast SPAs (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, will be permitted where 'in combination' effects of recreation on the Solent Coastal SPAs are satisfactorily mitigated through the provision of an appropriate financial contribution to the delivery of strategic mitigation through the Bird Aware Solent Strategy. Some other types of development (such as care homes, student accommodation) may also need to address recreational disturbance both alone and in- | No HRA implications.<br>This is a development management policy that provides explicit protection for the Solent Coast SPAs in relation to recreational pressure. It outlines in what avoidance and mitigation strategy is required to ensure no likely significant effects result. This is a key positive kook policy.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | combination and this development will be assessed on a case-by-case basis.<br><br>In the absence of a financial contribution toward mitigation, an appropriate assessment is required to demonstrate that any 'in combination' impacts which are likely to have a significant adverse effect can be avoided or can be satisfactorily mitigated through a developer-provided package of measures and agreed with the Local Planning Authority and Natural England, in place prior to occupation and provided in perpetuity. | |
| Strategic Policy SDN7: Nutrient Neutrality | Development involving an overnight stay (including dwellings, Gypsy, Traveller and Travelling Showpeople plots and pitches, and all forms of holiday accommodation), and tourism attractions of a nature that could bring visitors from outside the catchment, that discharges into the SPAs, SACs and Ramsar sites of the Solent and River Itchen (either surface water, non-mains drainage development or through wastewater treatment works) will be required to demonstrate that there will be no adverse effect on the integrity on these designations by being nutrient neutral for the lifetime of the development, in accordance with guidance provided by Natural England and supported by a nutrient budget using the most up-to-date Natural England calculator, either by its own means or by means of agreed mitigation measures, through: | No HRA implications.<br>This is a development management policy that provides explicit protection for the Solent Coast SPAs and SACs and the River Itchen SAC in relation to nutrient neutrality. It outlines in what avoidance and mitigation strategy is required to ensure no likely significant effects result.<br>This is a key positive hook policy.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | A financial contribution towards a strategic mitigation scheme, and/or<br>A developer-provided on-site solution agreed with Natural England.<br><br>Other development proposals than those for overnight stays may impact the water quality of the SPAs, SACs and Ramsar sites of the Solent and River Itchen and these must demonstrate that adverse effects on the integrity of these designated sites are avoided, and where they cannot be avoided are suitability mitigated for, or as a last resorted compensated for. Such development proposals will be assessed on a case-by-case basis.<br><br>Development proposals for mitigation must be agreed with the Local Planning Authority and Natural England and will be supported where they are located in the relevant catchment in relation to the development they are to serve, conserve and enhance landscape character, and take opportunities to deliver wider environmental benefits such as for biodiversity, making a positive contribution to the ecological network. | |
| Strategic Policy SDN8: Trees, Woodland, Hedgerows and Scrub | A policy concerning trees, woodland, hedgerows and scrub.<br>This policy supports proposals that conserve hedgerows, woodland, trees and scrub and requires full survey where these would be affected. | No HRA implications.<br>This is a development management policy concerning trees, woodland, hedgerows and scrub.<br>This is a positive policy which seeks to protect the natural environment. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | This policy requires buffer zones around woodland, trees, hedgerows and scrub, requiring appropriate replacement or compensation where loss is unavoidable and exceptional circumstances for the loss of protected trees.<br>Proposals must demonstrate protection measures prior to works, incorporating opportunities for natural regeneration, restoration or new planting where appropriate, using native species. New roads should be tree-lined where appropriate. | There are no linking impact pathways present |
| Strategic Policy SDN9: Sustainable Construction | A policy promoting sustainable construction, including proposals achieving net zero operational carbon, internal maximum water consumption, and the use of sustainable materials by applying certain criteria. | No HRA implications.<br><br>This is a development management policy focused on enhancing environmental standards through building criteria.<br><br>There are no impact pathways. |
| Strategic Policy SDN10: Renewable Energy | This is a policy concerning renewable energy.<br>This policy supports renewable energy schemes if they are appropriate, retain other land uses where possible, make provision for removal if the site ceases to be operational, does not restrict public access or result in the permanent loss of Grade 1, 2 or 3a agricultural land (unless exceptionally justified).<br>Small-scale renewable energy for individual properties will be permitted if suitably sited, appropriately sized and not causing adverse impacts. Community-led renewable and low-carbon schemes will be supported. | No HRA implications<br><br>This is a positive development management policy, as it seeks to contribute to reducing greenhouse gas emissions, thereby improving air quality.<br>This policy does not identify the type, location or extent of any development. Depending on the development, there is potential for significant effects; however, this policy ensures the protection of wildlife. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | Solar panels on existing roofs, carparks and brownfield land are supported.<br>This policy supports renewable energy projects on the following sites, as identified in the Policies, where they are community-led, subject to further technical work on grid connections and impact on the National Park and neighbouring uses:<br>a) Land east of Langrish Primary School – ground mounted solar arrays;<br>b) Tolmare Farm, Findon – rooftop solar; and<br>c) Land at Longridge Avenue, Saltdean – ground mounted solar arrays.<br>d) Land between A32 and Policeman's Lane, Privett – ground mounted solar arrays; and,<br>e) Lancing College – ground mounted solar arrays. | Any wind-turbine renewable energy proposals would need to take into account the proximity of Habitats sites designated for bats and birds.<br><br>The solar array locations identified in the policy would not lead to likely significant effects on any SAC, SPA or Ramsar sites.<br><br>There are no linking impact pathways present |
| Strategic Policy SDW1: Protection of the Water Environment | A development policy that protects the water environment. This will be done by proposals demonstrating a catchment and landscape-led approach, prioritising the delivery of nature-based solutions to mitigate or prevent adverse impact to the water environment during and post development.<br>Development proposals are required conserve, enhance and/or restore the character, significance, access and biodiversity value of surface water features and the water quality and quantity and the natural functioning of groundwater, surface water and water courses. They must provide appropriate buffer zones | No HRA implications.<br>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.<br>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. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | for watercourses and support relevant Catchment Management Plans and Local Nature Recovery Strategies where appropriate.<br>Developments must avoid risk of pollution and if in a Groundwater Source Protection Zone avoid adverse impacts of water quality or supply.<br>Development proposals for the provision of reservoirs or natural flood management measures that aid demand management, water efficiency and water storage, including contributing to the recharge of the aquifer, will be permitted where they are compatible with the National Park purposes. | There are no linking impact pathways present. |
| Strategic Policy SDW2: Flood Risk Management | A strategic proposal requiring development proposals to avoid flood risk and use a management measure to reduce the impact and extent of flooding.<br>Development proposals should, where required by national policy and guidance, be accompanied by a site-specific Flood Risk Assessment (FRA).<br>Proposed flood protection, mitigation, and adaptation measures should be supported by a delivery programme that includes any phasing, a management schedule, the identification of the body responsible for maintenance, and evidence of funding and maintenance in perpetuity. | No HRA Implications.<br>This is a positive strategic 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 required.<br>There are no linking impact pathways present. |
| Strategic Policy SDW3: Sustainable Drainage | A policy that permits development where there is no increase in surface water run-off, with brownfield sites reducing it. | No HRA implications<br>This is a positive development management policy in that encourages the use of SuDS, and prevents increased surface water runoff that could have a |

| Policy | Policy Description | Likely Significant Effects Test |
|---|---|---|
| | Proposals must maximise opportunities for above ground multifunctional surface water management and drainage, including Sustainable Drainage Systems (SuDS), with major developments providing a SuDS management train.<br>Surface water management and drainage should maintain and improve water quality, manage water quantity, contribute to blue and green infrastructure,<br>Use above ground solutions and natural flood management methods and be effective minimising the need for pumping and other supporting infrastructure;<br>Where SuDS are provided, arrangements must be put in place for their whole life management and maintenance. | detrimental effect upon internationally designated sites.<br>There are no linking impact pathways present |
| Strategic Policy SDW4: The Coast | A strategic policy that prevents development in the Sussex Heritage Coast area and the undeveloped coastal zone of the National Park, unless they:<br>Are appropriate, conserving and enhancing the character of the Heritage Coast/undeveloped National Park coastline; or<br>Are necessary for the operational needs of activities in support of the Heritage Coast.<br>And;<br>Are consistent with the Beachy Head to Selsey Bill Shoreline Management Plan, or its replacement;<br>Conserve and enhance coastal access to/from the coast and along the coastline; | No HRA implications.<br>This is a strategic policy that prevents development in the Sussex Heritage Coast or the undeveloped coast area.<br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | Cause no adverse impact on the Beachy Head West and Beachy Head East Marine Conservation Zones and should ensure their conservation and, where possible, enhancement. | |
| Strategic Policy SDW5: Pollution and Air Quality | Policy that requires development not to cause pollution that would result in negative effects on people or the environment, including cumulative effects.<br>If a proposal would impact an air quality management area or lead to the expansion of or the creation of new AQMAs, it must consider any existing air quality management plan and provide mitigation measures as required.<br>Development must adhere to best practices to minimise dust and pollutant levels during the development process. | No HRA implications.<br><br>This is a positive development management policy that aims to manage atmospheric pollution by ensuring that development proposals will not have a significant adverse effect on the natural environment, now or in the foreseeable future.<br><br>There are no linking impact pathways present |
| Strategic Policy SDW6: Contaminated Land | A development management plan is required for development proposals on sites with known or suspected contamination or the potential to contaminate nearby land, to submit evidence regarding investigations and remedial measures sufficient to ensure that any unacceptable risk to human health or the environment is removed prior to development commencement. | No HRA implications.<br><br>A development management policy relating to contaminated land.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDH1: Housing Supply | This policy outlines the quantum of net new dwellings to be provided during the Plan period. It is noted that no quantum is provided at Regulation 18. This detail will be provided at Regulation 19. | Potential HRA implications.<br>This policy provides for a quantum of residential development to be provided by the Local Plan. making a provision of approximately 6,137 new dwellings over the plan period. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | This policy identifies how this housing will be delivered (i.e. through the development of strategic sites and allocation of land in the Local Plan and NDPs, the implementation of planning permissions and windfall development). It provides development management policy text relating to Neighbourhood Plans and the loss of C3 dwellings. | The policy identifies how residential sites will be delivered, including through Local Plan allocations.<br>Potential linking impact pathways:<br>- Recreational pressure<br>- Air quality<br>- Water quality<br>- Loss of Functionally Linked Land<br>- Urbanisation |
| Strategic Policy SDH2: Mix of Homes | A policy that requires a balanced mix of dwellings in residential development programs.<br>Planning permission for developments that deviate from the anticipated mix should demonstrate evidence of different local needs or site-specific considerations that necessitate a different mix to ensure National Park Purpose 1 is met.<br>Development for older people's and specialist housing is supported where there is a local need for the housing mix to include this. | No HRA implications.<br>This is a strategic policy that sets a requirement for a balanced mix of dwellings in residential developments. This policy does not set any quantum or location for growth.<br>There are no linking impact pathways present. |
| Strategic Policy SDH3: Accessible and Adaptable Homes | A strategic policy that outlines criteria relating to the accessibility and adaptability of homes, external spaces and parking that development proposals must adhere to. | No HRA implications.<br>This is a strategic policy relating to accessible homes.<br>There are no linking impact pathways present. |
| Strategic Policy SDH4: Specialist and Older Persons' Accommodation | This is a development management policy relating to the provision of older person and specialist accommodation, provided certain criteria are adhered to. | Potential HRA implications.<br><br>This policy outlines several potential locations for residential development, as identified in the Local |

| Policy | Policy Description | Likely Significant Effects Test |
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| | The policy also identified the following sites as suitable for providing specialist care accommodation as part of a mixed tenure development or sole specialist accommodation:<br>Land west of Liphook/Land at Westlands Park<br>County Hall, St Anne's Crescent, Lewes<br>Alfriston Court, Slow Land, Alfriston<br>Midhurst Community Hospital and 1-2 Rotherfield Mews, Easebourne<br>Land south of Paddock Way, Petersfield<br>Land at Farnham and Station Roads, Liss | Plan. The policy does not provide a quantum for this development. This may be written within the allocation itself.<br><br>Potential linking impact pathways:<br>- Recreational pressure<br>- Air quality<br>- Water quality<br>- Water flow, velocity and volume<br>- Loss of Functionally Linked Land<br>- Urbanisation |
| Strategic Policy SDH5: Affordable Homes | A strategic policy to support the delivery of affordable housing. This policy states that developments of 10 or more dwellings must provide at least 40% affordable homes when built on greenfield sites and 30% when built on brownfield sites, with lower requirements for smaller developments.<br>Affordable housing should be indistinguishable from market housing and spread throughout the development. Occupancy conditions will be applied to ensure that local affordable housing needs are met. Development that intensifies affordable housing will be permitted provided that the new homes are affordable, embodied carbon is considered, the new homes have improved climate change and water resilience, and there is early engagement with existing tenants. | No HRA implications.<br><br>This is a development management policy relating to the provision of affordable housing.<br><br>There are no linking impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| Strategic Policy SDH6: Rural Exception Sites and Rural Estates Housing | A strategic policy that permits rural exception sites, provided they meet certain criteria. These include being 100% affordable housing in perpetuity (or 70% if community-led), considering all reasonable options for the site, including factoring in landscape and ecosystem services.<br>There will be requirements on occupancy of affordable housing to ensure local needs are met. | No HRA implications.<br><br>This is a strategic policy that sets criteria for the development of rural exception sites. This policy does not allocate any development or set any quantum or location for growth.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDH7: Replacement and Subdivision of Dwellings | A policy concerning replacement dwellings and subdivisions.<br>Development proposals for the replacement of one dwelling with a single new dwelling will be permitted where the floorspace does not increase by more than 30% and the new development is not detrimental or overbearing. Replacement with multiple dwellings or subdivision must also have sufficient space and amenity, while being suitably small in scale.<br>Where approved future development may be managed by the removal of permitted development rights. | Potential HRA implications.<br><br>This policy allows one dwelling to be replaced by multiple dwellings, thereby affecting the quantum of residential development to be provided in the Local Plan. Any net additional dwellings would be windfall.<br><br>Potential linking impact pathways:<br>- Recreational pressure<br>- Air quality<br>- Water quality<br>- Water flow, velocity and volume<br>- Loss of Functionally Linked Land<br>- Urbanisation |
| Strategic Policy SDH8: Householder Development | A policy that sets criteria for householder developments. These include respecting the character of the local area, not increasing the floorspace of the existing dwelling by more than approximately 30% for extensions. Annexes should be ancillary to the main | Potential HRA implications<br><br>This is a development management policy that sets criteria for householder development of annexes, extensions, and outbuildings. This policy does not |

| Policy | Policy Description | Likely Significant Effects Test |
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| | dwelling, and outbuildings should be required for uses incidental to the host dwelling. | specify a quantum or location for growth, but it does potentially allow for an increase in the population size of an individual dwelling. |
| Strategic Policy SDH9: New Rural Workers' Dwellings | A policy that sets criteria for the development of rural workers' dwellings. These criteria include being essential to the nature of the work, with full consideration given to the conversion of existing buildings, and being well related to existing buildings within the enterprise. Criteria are also described for:<br>New and permanent rural worker dwellings<br>Removal of occupancy conditions<br>Temporary dwellings<br>Removal of permitted development rights | Potential HRA implications<br><br>This is a development management policy that sets criteria for the development of rural enterprise dwellings. This policy does not allocate any development or set a specific quantum or location for growth; however, it does allow for an increase in residential dwellings, albeit in low numbers (e.g., a single dwelling). |
| Strategic Policy SDH10: Gypsies, Travellers and Travelling Showpeople | A strategic policy that safeguards permanent sites for gypsies, travellers and travelling showpeople. This policy also allocates a total of 37 pitches.<br>Land west of Liphook – 14 pitches (SDA31);<br>New Barn Stables, Binsted - 1 pitch (SDA37);<br>Land north of Kings Lane, Coldwaltham – 2 pitches (SDA43);<br>Offham Barns, Offham – 4 pitches (SD83); and<br>This policy also sets criteria for the development of unallocated sites to meet the needs of gypsies travellers and travelling showpeople. These include meeting local needs, avoiding over-concentration in a single location, and providing sufficient amenities. | Potential HRA implications.<br><br>This policy provides for a quantum of Gypsy, Traveller, and Travelling Showpeople residential development. This policy allocates 37 pitches.The policy identifies how residential sites will be delivered, including through Local Plan allocations.<br><br>Potential linking impact pathways:<br>- Recreational pressure<br>- Air quality<br>- Water quality- Loss of Functionally Linked Land<br>- Urbanisation |

| Policy | Policy Description | Likely Significant Effects Test |
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| Strategic Policy SDE1: Economic Development | The policy states that development proposals that foster the economic and social well-being of local communities will be permitted where they meet one or more of the criteria outlined in the policy. As well as detailing that B2 and B8 premises can be changed to new E(g) offices and safeguarding of all existing employment (Class B2, B8 and/or E(g)) sites and allocations that are fit for purpose from development for other uses. | No HRA implications.<br><br>This is a development management policy that safeguards existing employment uses and outlines criteria for where further employment development can be permitted, but does not allocate any specific employment development within the policy itself.<br><br>There are no impact pathways present. |
| Strategic Policy SDE2: Agricultural Development, Diversification and Conversion of Rural Buildings | A policy that sets criteria for permitting development which supports the regenerative land management of the National Park's farmland and forests, enables the long-term viability of the agricultural and forestry unit and supports the green rural economy whilst furthering the purposes of the National Park. This includes criteria for:<br>New buildings or structures.<br>New or improved access tracks for forestry or agriculture.<br>Farm or forestry diversification.<br>Conversion of redundant agricultural or forestry buildings outside of defined settlement boundaries. | No HRA implications.<br>This is a development management policy that sets criteria for the development of agricultural and forestry buildings, as well as forestry access routes, farm and forestry diversification, and the conversion of redundant agricultural and forestry buildings. This policy does not allocate any development or set any quantum or location for growth.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDE3: Winemaking and Wine Tourism | The policy outlines criteria for supporting proposals in winemaking and viticulture development that promote regenerative land management, enable the long-term viability of the enterprise, and contribute to the green rural economy, all while advancing the purposes of the National Park. The policy includes criteria for: | No HRA implications.<br><br>This is a development management policy relating to the development of viticulture and winemaking facilities. It does not allocate any development or set any quantum or location of growth. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | New, extended and/or improved winemaking activities (or wineries) and associated infrastructure.<br>Expansion of viticulture and winemaking activities as part of an agricultural diversification scheme. | There are no linking impact pathways present. |
| Strategic Policy SDE4: Hierarchy of Town and Village Centres | A strategic policy that sets a hierarchy of centres for the development of town centre uses. This is as follows:<br>a) Market Town Centres: Petersfield, Midhurst, and Lewes<br>b) Larger Village Centre: Liss<br>c) Smaller Village Centres: Alfriston, Ditchling, Fernhurst and Findon | No HRA implications<br><br>This policy aims to regulate development within town and village centres rather than specify amounts or locations for development.<br><br>There are no linking impact pathways present. |
| Strategic Policy SDE5: Development in Town and Village Centres | A policy that regulates development in town and village centres. With criteria for development proposals for the main town centre uses, in particular those that promote or protect local markets and retailers linked to local supply chains across the National Park. These will be permitted, provided they do not harm the retail function of the centre, and are compatible with its scale and historic nature. Community-led developments and enhancements to the public realm, as well as the greater use of these areas for community activities and seating, will be supported in principle.The policy also has criteria for:<br>Loss of floorspace in ground floor units (Class E)<br>Evening economy proposals<br>Development proposals for Class E in smaller village centres. | No HRA implications.<br><br>This is a policy that manages development within town centres. This policy does not allocate any development and does not set any quantum or locations for growth.<br><br>There are no linking impact pathways present |

| Policy | Policy Description | Likely Significant Effects Test |
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| Strategic Policy SDE6: Shops Outside Centres | This policy outlines the criteria for development outside town and village centres. The policy provides criteria for:<br>Small convenience stores.<br>Loss of ground floor units in Class E or F2(a)<br>New farm or nursery shops or extensions to these.<br>Impact assessments for Class E developments. | No HRA implications.<br><br>This is a development management policy related to the development of shops outside centres and does not allocate any development or specify any location or scale of growth.<br><br>There are no impact pathways present. |
| Strategic Policy SDE7: Regenerative Tourism | This is a strategic policy<br>The policy outlines criteria for development proposals for visitor accommodation, visitor attractions and recreation facilities. These are permitted under certain criteria, including enhancing and regenerating the places and communities on which they operate, making a positive contribution to the national park, enhancing accessibility, amenity, biodiversity, design, landscape and movement, making good use of existing buildings and structures, and supporting the vitality of town and village centres.<br>The policy outlines criteria for:<br>Alterations and extensions to existing visitor/accommodation, attractions and/or facilities.<br>New visitor accommodation, attractions and/or facilities.<br>Proposals resulting in the partial or full loss of existing visitor accommodation, attraction and/or facilities. | Potential HRA implications<br><br>This is a strategic policy concerning both the development of tourism and visitor facilities as well as their loss and the impact of other development on tourism uses.<br><br>This policy does not specify any location or quantum of development. Moreover, it specifically supports sustainable tourism.<br><br>Nonetheless, increased tourism facilities present the following potential impact pathways that are discussed in the main report:<br><br>• Recreational pressure<br>• Atmospheric pollution<br>• Water quality<br>• Water quantity |

| Policy | Policy Description | Likely Significant Effects Test |
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| | Detraction, disadvantage or prejudice of enjoyment of existing visitor activities or contribution to existing negative impacts associated with high visitor numbers. | |
| Strategic Policy SDE8: Equestrian Development | A policy requiring equestrian development proposals to: be of an appropriate location, scale and sitting, avoid removing historic field boundaries and where possible avoid field subdivisions and fencing, avoid creating water pollution, reuse existing buildings where possible, locate new buildings adjacent to existing ones, be well located with respect to transport and infrastructure, provide hard and soft landscaping consistent with the local landscape character and demonstrate a conservation based land management approach. | Potential HRA implications<br><br>This is a development management policy that does not allocate development or provide a specific location, and it stipulates that the scale and intensity of use must be compatible with the landscape and its unique qualities.<br><br>However, equestrian activity within a designated site has the potential to cause a likely significant effect through increased nutrient inputs, habitat abrasion and disturbance to qualifying species.<br><br>This will therefore be discussed further within the body of the report |
| Strategic Policy SDE9: Shop Fronts & Advertisements | A policy outlining criteria for new or altered shop frontages and advertisements.<br>This policy includes a presumption against internally lit logos and/or flashing or moving image signage/logo or advertisements, as well as shutters or other features that obscure window displays, and external lighting where businesses don't operate during the evening. | No HRA implications.<br><br>This is a development management policy relating to shop fronts and advertisements.<br><br>There are no impact pathways present. |
| Strategic Policy SDG1: Community Facilities | A policy concerning community facilities<br>Proposals for new community facilities or enhancements and expansions to existing facilities will | No HRA implications. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | be permitted if there is a local need, the development is of an appropriate scale, there is community engagement, they are accessible and inclusive, and sufficient consideration has been given to shared use, reuse, or redevelopment of existing buildings.<br>Proposals resulting in a loss of community facilities must demonstrate a lack of market demand for a commercially run facility, or a lack of local need for a community or publicly owned facility, or there must be provision of equivalent or improved community facilities without causing an unreasonable shortfall and where a partial loss, it must be demonstrated necessary to support the viability of the existing facility. | This is a development management policy relating to the development or loss of community facilities. The policy does not allocate any sites, nor a quantum or location for the development of community facilities.<br><br>There are no impact pathways present. |
| Strategic Policy SDG2: Green and Blue Infrastructure | A strategic policy that supports development, which provides new and/or conserves, connects, enhances and/or restores existing green and blue infrastructure assets, corridors and links the overall network.<br>The policy outlines criteria, including but not limited to, that green and blue infrastructure proposals must contribute to accessibility, character, connection, multifunctionality and variety.<br>Developments that harm the green and blue infrastructure network will not be permitted unless the harm can be avoided or sufficient measures are incorporated to mitigate or offset any negative effects. | No HRA implications.<br><br>This is a strategic policy that promotes the inclusion of green and blue infrastructure in developments and prevents their loss.<br><br>There are no impact pathways present. |
| Strategic Policy SDG3: Public Open Space, Sport and Recreational Facilities | A policy requiring the provision of public open space for residential developments with over 10 dwellings.<br>Also includes criteria for: | No HRA implications. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | New and extended or improved public open space/sports and recreational facilities.<br>New buildings or play surfaces<br>Whole or partial loss of public open space/sports and recreation facilities<br>New or extended allotments, burial grounds and/or cemeteries. | This is a development management policy concerning the provision and protection of public spaces and sports facilities, as well as the provision of burial sites and cemeteries. This policy does not allocate development, set a quantum or a location for growth.<br><br>There are no impact pathways present. |
| Strategic Policy SDG4: Local Green Spaces | A policy that designates and protects 55 existing areas of green space as Local Green Spaces. Development will not be permitted within these areas except under very special circumstances. | No HRA implications.<br><br>This is a development management policy that protects existing green areas from future development by designating them as Local Green Spaces. This policy does not allocate any development; it protects areas from development and does not set any quantum or location for growth.<br><br>There are no impact pathways present. |
| Strategic Policy SDT1: Vision-led Transport Approach | Development proposals will be permitted if they minimise travel and support sustainable transport.<br>Development proposals that will lead to significant additional journeys must be located near existing centres and routes and provide a transport assessment.<br>Development proposals must demonstrate the continued safe and efficient operation of the strategic and local road networks. | No HRA implications<br><br>This is a strategic policy that aims to manage development in a manner that promotes sustainable transportation and reduces travel requirements. This is a positive policy that has the potential to limit the Plan's contribution to atmospheric pollution. This policy does not allocate any development or set any quantum or location for growth. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | A range of improvements to public transport infrastructure is supported, including waiting facilities and bicycle parking.<br>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. | As such, no impact pathways are present. |
| Strategic Policy SDT2: Active Travel Routes | This is a policy for active travel routes. The policy outlines criteria for:<br>New and enhanced active travel routes and wayfinding<br>Safeguarding disused railway lines for existing and future use as active travel routes<br>Safeguarding corridors within the National Park for future restoration to their respective historic uses. | No HRA implications.<br><br>This is a strategic policy which promotes the safeguarding and future use of active travel routes. This policy does not allocate any development or set any quantum or location for growth.<br>As such, no impact pathways are present. |
| Strategic Policy SDT3: Highway and Public Realm, Design | A policy concerning the public realm.<br>Development must protect and enhance highway safety, and must not compromise the biodiversity, landscape, and amenity value of historic roads.<br>Site design must prioritise the safety and amenity of all road users, with a particular focus on active travel.<br>Street design must be context-sensitive, considering both the building's location and access points.<br>Public art is supported where appropriately designed and located. | No HRA implications.<br><br>This is a development management policy for the public realm, highway design and public art. Whilst the design of a highway could have the potential to alter atmospheric contributions, this policy does not set any quantum or location for development.<br>There are no linking impact pathways present. |
| Strategic Policy SDT4: Parking Provision | A policy which sets requirements for the provision of parking. | No HRA implications. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | Proposals for public parking should achieve traffic or recreation management benefits, be part of a traffic management scheme that gives preference to sustainable travel and be close to main roads and public rights of way.<br>Developments must provide adequate cycle and vehicle parking to meet the needs of that development.<br>All parking should be suitably located and incorporate sustainable drainage.<br>Electric vehicle and bike charging should be provided in parking where feasible | 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.<br>There are no linking impact pathways present. |
| Strategic Policy SDT5: Infrastructure | A strategic policy setting requirements for the development of infrastructure.<br>The development of new, improved, or supporting infrastructure must represent the least environmentally harmful option and avoid, minimise, and mitigate impacts on the environment, landscape, and people.<br>Development will only be permitted where appropriate infrastructure provision is secured, and infrastructure provision should be phased to ensure timely provision. | No HRA implications<br>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 to be deemed acceptable. This policy does not allocate any development or set a quantum or location for growth.<br>There are no linking impact pathways present. |
| Strategic Policy SDT6: Telecommunications Infrastructure | A policy setting criteria for the provision of telecommunications infrastructure and a requirement for broadband provision for all residential properties.<br>Telecommunication infrastructure must meet needs that cannot be met via existing infrastructure, be the least harmful site of the realistic options and provide | No HRA implications.<br><br>This is a development management policy concerned with telecommunications provision. This policy does not set any quantum or location for development.<br>There are no impact pathways present. |

| Policy | Policy Description | Likely Significant Effects Test |
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| | suitable mitigation and enhancement measures for the landscape and ecology of the site.<br>All new residential dwellings should be served by a superfast broadband connection or an equivalent alternative technology, installed on an open access basis. | |

# Test Of Likely Significant Effects of the Plan Allocations

**Table 9–4 Test of Likely Significant Effects of the SDLP (2019) Site Allocations Proposed to be carried forward**

| Site allocation | Type of Development | Dwellings | Employment Floorspace | Other | HRA Implications |
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| SDA30: Shoreham Cement Works | Mixed Use | 400 | 62,000 sqm offices (E(g)), industrial / warehousing (B2/B8) with minimum 10% offices; and 4,000 sqm retail, community space and other neighbourhood facilities (E(a-f) and F) | | No HRA Implications<br><br>There are no Habitats Sites within 10 km of this allocation. The closest sites are:<br><br>15.5 km from Castle Hill SAC<br>16.1 km from Arun Valley SPA and Ramsar<br><br>Castle Hill and Arun Valley SAC have an average recreational core catchment of 5km.<br><br>There are no significant roads within 200 meters of Castle Hill SAC, and the Arun Valley SPA/Ramsar is not vulnerable to atmospheric nitrogen deposition.<br><br>Due to the distances involved, there are no relevant impact pathways. |
| SDA1: North Street Quarter (LE040)<br><br>This includes the new separate allocations: | Mixed Use | 770 | Area A: 3500 sqm of business, employment and flexible workspace, medical and health services, leisure uses, retail and restaurants (sub-classes may be controlled through conditions); a hotel (C1); and retail, community space | | Potential likely significant effects<br><br>0.5 km from Lewes Downs SAC<br>5.2 km from Castle Hill SAC<br><br>Castle Hill and Lewes Downs SAC have an average recreational core catchment of 5 km. |

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| - Former Bus Station, Lewes<br>- 3 East Gate Centre, Lewes<br>- East Gate Carpark, Lewes | | | and other neighbourhood facilities (E(a-f) and F).<br><br>Area B: 198 sqm commercial (e)<br><br>Area C: 400 sqm of Commercial (E(a) and (b)) | | There are no significant roads within 200 m of Castle Hill SAC, so it is not vulnerable to atmospheric nitrogen deposition.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Lewes Downs SAC)<br>• Air pollution (Lewes Downs SAC) |
| SDA33: Kings Ride, Alfriston | Residential | 7 | 0 | | No HRA implications<br><br>9.0 km from Pevensey Levels SPA, SAC and Ramsar<br><br>Pevensey Levels SAC/Ramsar are likely to have an average recreational core catchment area of 5km.<br><br>Pevensey levels SAC/Ramsar is not vulnerable to air pollution.<br><br>Due to the distance, there are no linking impact pathways. |
| SDA36: Land at Clements Close, Binsted | Residential | 10 | 0 | | Potential likely significant effects<br><br>1.2 km from East Hampshire Hangers SAC<br>3.0 km from Wealden Heaths Phase II SPA<br>3.7 km from Shortheath Common SAC<br>6.6 km from Thursley, Hankley & Frensham Commons SPA |

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| | | | | | 6.6 km from Thursley, Ash, Pirbright & Chobham SAC<br>7.5 km from Woolmer Forest SAC<br>9.4 km from Thames Basin Heaths SPA<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC, Shortheath Common SAC, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational Pressure (East Hampshire Hangers SAC, Wealden Heaths Phase II SPA, Shortheath Common SAC)<br>• Air pollution (Wealden Heaths Phase II SPA, Shortheath Common, Thursley, Hankley & Frensham Commons SPA, Thursley, Ash, Pirbright, & Cobham SAC, Woolmer Forest SAC, and Thames Basin Heaths SPA) |
| SDA37 New Barn Stables, | Gypsy & traveller | 0 | 0 | 1 additional permanent | Potential likely significant effects<br><br>1.0 km from East Hampshire Hangers SAC |

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| The Street, Binsted | | | | Gypsy and Traveller pitch | 3.0 km from the Wealden Heaths Phase II SPA<br>3.8 km from Shortheath Common SAC<br>6.2 km from Thursley, Hankley & Frensham Commons SPA<br>6.2 km from Thursley, Ash, Pirbright & Chobham SAC<br>7.5 km from Woolmer Forest SAC<br>9.1 km Thames Basin Heaths SPA<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC, Shortheath Common SAC, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational Pressure (East Hampshire Hangers SAC, Wealden Heaths Phase II SPA, Shortheath Common SAC)<br>• Air pollution (Wealden Heaths Phase II SPA, Shortheath Common, Thursley, Hankley & Frensham Commons SPA, Thursley, Ash, Pirbright, & Cobham SAC, |

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| | | | | | Woolmer Forest SAC, and Thames Basin Heaths SPA) |
| SDA40: Land South of the A272 at Hinton Marsh, Cheriton | Residential | 14 | 0 | | Potential likely significant effects<br><br>0.12 km from River Itchen SAC<br><br>The following impact pathways have been identified:<br><br>• Water quality – nutrient neutrality (River Itchen SAC, Solent Habitats Sites).<br>• Air pollution (River Itchen SAC, Solent Habitats Sites). |
| SDA42: Land South of London Road, Coldwaltham | Residential | 30 | 280sqm shop (Class E(a)) | | Potential likely significant effects<br><br>0.09 km from Arun Valley SPA and Ramsar<br>0.41 km from Arun Valley SAC<br>3.4 km from Duncton and Bignor Escarpment SAC<br>5.5 km from The Mens SAC<br>10.1 km from Ebernoe Common<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of The Mens SAC and Ebernoe Common SAC and within 5km of Arun Valley SPA and Ramsar, therefore, there is the potential for a linking impact pathway. |

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| | | | | | Arun Valley is not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to this Habitat Site.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Arun Valley SPA/SAC/Ramsar, Duncton to Bignor Escarpment SAC)<br>• Loss of functionally linked land (The Mens SAC, Ebernoe Common SAC, Arun Valley SPA/Ramsar)<br>• Air pollution (Duncton to Bignor Escarpment SAC, The Mens SAC, Ebernoe Common SAC)<br>• Water Quality (Arun Valley SPA/SAC/Ramsar) |
| SDA45: Land at Park Lane, Droxford | Residential | 9 | | | Potential likely significant effects<br><br>9.1 km from River Itchen SAC<br>9.8km from Solent & Southampton Water SPA<br>9.8km from Solent Maritime SAC<br><br>The following impact pathways have been identified:<br><br>• Water quality – nutrient neutrality (River Itchen SAC, Solent Habitats Sites).<br>Air pollution (River Itchen SAC, Solent Habitats Sites). |

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| SDA47: Land at Elm Rise, Findon | Residential | 16 | | | No HRA implications.<br><br>9.3km from the Arun Valley SPA, SAC and Ramsar site.<br><br>Arun Valley SPA/SAC/Ramsar are likely to have an average recreational core catchment area of 5 km.<br><br>Arun Valley SPA has a 5 km zone of impact for functionally linked land.<br><br>Arun Valley SPA/SAC/Ramsar is not vulnerable to air pollution.<br><br>Due to the distance, there are no linking impact pathways.<br><br>Due to the distances involved, there are no linking impact pathways present. |
| SDA48: Soldiers Field House, Findon | Residential | 12 | | | No HRA implications.<br><br>9.6km from the Arun Valley SPA, SAC and Ramsar site.<br><br>Arun Valley SPA/SAC/Ramsar are likely to have an average recreational core catchment area of 5 km.<br><br>Arun Valley SPA has a 5 km zone of impact for functionally linked land. |

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| | | | | | Arun Valley SPA/SAC/Ramsar is not vulnerable to air pollution.<br><br>Due to the distance, there are no linking impact pathways.<br><br>Due to the distances involved, there are no linking impact pathways present. |
| SDA52: Land at Petersfield Road, Greatham | Residential | 37 | 280 sqm shop (E(a)) | | Likely Significant Effects<br><br>600 m from Wealden Heaths Phase II SPA<br>1.4 km from Woolmer Forest SAC<br>1.5 km from East Hampshire Hangers SAC<br>5.2 km from Shortheath Common SAC.<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC, Shortheath Common SAC, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment. |

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| | | | | | The following impact pathways have been identified:<br>• Recreational Pressure (Wealden Heaths Phase II SPA, Woolmer Forest SAC, East Hampshire Hangers SAC)<br>• Air pollution (Wealden Heaths Phase II SPA, Shortheath Common, Woolmer Forest SAC) |
| SDA53: Land at Itchen Abbas House, Itchen Abbas | Residential | 9 | 0 | | Potential likely significant effects<br><br>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.<br>The following impact pathways have been identified:<br><br>• Water quality – nutrient neutrality (River Itchen SAC, Solent Habitats Sites).<br>• Air pollution (River Itchen SAC, Solent Habitats Sites). |
| SDA2: Land at Old Malling Farm, Lewes | Residential | 226 | 0 | | Potential likely significant effects<br><br>950 m from Lewes Down SAC<br>5.3 km from Castle Hill SAC<br><br>The SACs are likely to have an average recreational core catchment of 5km.<br><br>There are no major roads within 200m of Castle Hill SAC; therefore, there is no linking impact pathway with air pollution to this Habitat Sites. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Lewes Down SAC)<br>• Air pollution (Lewes Down SAC) |
| SDA3: Malling Brooks, Lewes | Employment | 0 | 4,340m2 | | Likely Significant Effects<br><br>100 m from Lewes Downs SAC.<br>5.8 km from Castle Hill SAC<br><br>This is an employment allocation, so there are no residential recreational pressure issues. Castle Hill SAC does not have any major roads within 200m.<br><br>The following impact pathways have been identified:<br><br>• Air quality (Lewes Downs SAC)<br><br>This is an allocation carried over from the SDLP (2019). This allocation was made for 7,040 $m^2$ of employment floorspace but has been partially built out since that plan was adopted. |

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| SDA16: Holmbush Caravan Park, Midhurst | Residential | 50 | | | Potential likely significant effects<br><br>3.5km from Singleton and Cocking Tunnels SAC<br>6.3km from Rook Clift SAC<br>8.2km from Duncton to Bignor Escarpment SAC<br>8.8 km from Kingley Vale SAC<br>9.4 km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. As Kingley Vale only has a single car park, the recreational catchment is likely to be only 2 km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified: |

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| | | | | | • Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of Functionally Linked Land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Duncton and Bignor Escarpment SAC, Ebernoe Common SAC) |
| SDA17: Land at the Fairway, Midhurst | Residential | 9 | 0 | | Potential likely significant effects<br><br>3.6 km from Singleton and Cocking Tunnels SAC<br>6.5 km from Rook Clift SAC<br>8.2 km from Duncton and Bignor Escarpment SAC<br>8.9 Kingley Vale<br>9.5 km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. As Kingley Vale only has a single car park, the recreational catchment is likely to be only 2 km.<br><br>The site is located within 12 km of the Singleton and Cocking Tunnels SAC and Ebernoe Common SAC; therefore, there is potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact |

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| | | | | | pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of Functionally Linked Land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Kingley Vale SAC, Duncton and Bignor Escarpment SAC, Ebernoe Common SAC) |
| SDA64: Offham Barns, Offham | Gypsy & Traveller | | | 4 permanent Gypsy and Traveller pitches | Potential likely significant effect<br>2.8 km from Lewes Downs SAC<br>6.2 km from Castle Hill SAC<br><br>Castle Hill and Lewes Downs SAC are likely to have a 5 km recreational core catchment.<br><br>Both are likely vulnerable to air pollution; however, there are no major roads within 200 m of Castle Hill SAC, so air pollution is unlikely to affect this SAC.<br>The following impact pathways have been identified:<br><br>• Recreational Pressure (Lewes Downs SAC) |

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| | | | | | • Air Pollution (Lewes Downs SAC) |
| SDA69: Land at Ketchers Field, Selborne | Residential | 6 | 0 | | Likely Significant Effects<br><br>0.3km from East Hampshire Hangers SAC<br>3.9km from Shortheath Common SAC<br>4.0km from Wealden Heaths Phase II SPA<br>4.0km from Woolmer Forest SAC<br><br>Woolmer Forest and Wealden Heaths and Shortheath Common have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>Each of the Habitats sites within 10km is susceptible to air pollution impacts.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (East Hampshire Hangers SAC, Wealden Heaths SPA, Woolmer Forest SAC, Shortheath Common SAC)<br>• Air pollution (East Hampshire Hangers SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC, Shortheath Common SAC) |

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| SDA70: Land at Pulens Lane, Sheet | Residential | 19 | | | Potential likely significant effects<br><br>3.2 km from East Hampshire Hangers<br>4.8 km from Butser Hill SAC<br>5.5 km from Wealden Heaths Phase II SPA<br>7.7 km from Rook Clift SAC<br>7.8 km from Woolmer Forest SAC<br><br>Woolmer Forest, Wealden Heaths, and Shortheath Common, as well as Butser Hill and Rook Clift, have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>Each of the Habitat Sites within 10km is susceptible to air pollution impacts. However, there are no major roads within 200m of Rook Clift SAC.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Butser Hill SAC)<br>• Air Pollution (East Hampshire Hangers SAC, Butser Hill SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC) |

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| SDA74: Land at Loppers Ash, South Harting | Residential | 7 | | | Potential likely significant effects<br><br>2.9 km from Rook Clift SAC<br>6.6 km from Butser Hill SAC<br>8.6 km from Singleton and Cocking Tunnels SAC<br>7.2 km from Kingley Vale SAC<br>8.5 km from East Hampshire Hangers SAC<br>10 km from Wealden Heaths Phase II SPA<br><br>Most of the Habitats Sites have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>Each of the Habitat Sites within 10km is susceptible to air pollution impacts except for Singleton and Cocking Tunnels, which are not vulnerable, and there are no major roads within 200m of Rook Clift SAC.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Rook Clift SAC)<br>• Air Pollution (East Hampshire Hangers SAC, Butser Hill SAC, Wealden Heaths Phase II SPA, Kingley Vale SAC) |

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| | | | | | • Loss of functionally linked land (Singleton and Cocking Tunnels) |
| SDA73: Land North of the Forge, South Harting | Residential | 7 | | | Potential likely significant effects<br><br>2.9 km from Rook Clift SAC<br>6.6 km from Butser Hill SAC<br>8.6 km from Singleton and Cocking Tunnels SAC<br>7.2 km from Kingley Vale SAC<br>8.5 km from East Hampshire Hangers SAC<br>10 km from Wealden Heaths Phase II SPA<br><br>Most of the Habitats Sites have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC has a catchment area of up to 2km due to the lack of parking.<br><br>Each of the Habitat Sites within 10km is susceptible to air pollution impacts except for Singleton and Cocking Tunnels, which are not vulnerable, and there are no major roads within 200m of Rook Clift SAC.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Rook Clift SAC) |

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| | | | | | • Air Pollution (East Hampshire Hangers SAC, Butser Hill SAC, Wealden Heaths Phase II SPA, Kingley Vale SAC)<br>• Loss of functionally linked land (Singleton and Cocking Tunnels) |
| SDA75: Stedham Sawmill, Stedham | Residential | 16 | | | Potential likely significant effects<br><br>5.1 km from Singleton and Cocking Tunnels SAC<br>5.2 km from Rook Clift SAC<br>9.1 km from Kingley Vale SAC<br>9.1 km from Wealden Heaths Phase II SPA<br>11.1 km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. As Kingley Vale only has a single car park, the recreational catchment is likely to be only 2 km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment. |

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| | | | | | The following impact pathways have been identified:<br>• Air pollution (Kingley Vale SAC, Wealden Heaths Phase II SPA, Ebernoe Common SAC)<br>• Loss of Functionally Linked Land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC) |
| SDA76: Land South of Church Road, Steep | Residential | 9 | | | Potential likely significant effects<br><br>740 m from East Hampshire Hangers SAC<br>4.6 km from Butser Hill SAC<br>5.5 km from Wealden Heaths Phase II SPA<br>7.7 km from Woolmer Forest SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km. However, East Hampshire Hangers SAC, due to a lack of a car park, has a recreational catchment of only 2 km.<br><br>All Habitats Sites are vulnerable to air pollution<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational Pressure (East Hampshire Hangers SAC |

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| | | | | | • Air pollution (East Hampshire Hangers SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC, Butser Hill SAC) |

**Table 9–5 Test of Likely Significant Effects of the Plan Potential Site Allocations**

| Site Name | Settlement | Type of Development | Dwellings | Other | HRA Implications |
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| SDA79: Land north of Dodds Lane | Swanmore | Housing | 15 | | Potential likely significant effects<br><br>The Solent Habitats sites are located 6.6km from the site.<br><br>No other Habitats Sites are located within 10 km of the site.<br><br>Linking impact pathways identified are:<br>• Water Quality (nutrient neutrality)<br><br>Although the Solent Habitats sites are vulnerable to air quality issues, the separation between the National Park boundaries and the Solent Habitats sites is considerable and therefore unlikely to be significantly affected by the Local Plan. The allocation is also not within the recreational catchment (5.6 km). |
| SDA65: Land at Old Green Farm | Owslebury | Housing | 7 | | Potential likely significant effects |

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| | | | | | River Itchen SAC is located 3.2km from the site.<br><br>No other Habitats Sites are located within 10km of the site. However, due to the River Itchen discharging into the Solent, impact pathways have been identified relating to the Solent Sites as well.<br><br>Linking impact pathways identified are:<br>• Atmospheric Pollution (River Itchen)<br>• Water Quality (nutrient neutrality) (River Itchen SAC, Solent Habitats Sites)<br>• Water Quantity (River Itchen SAC)<br><br>Although the Solent Habitats sites are vulnerable to air quality issues, the separation between the National Park boundaries and the Solent Habitats sites is considerable and therefore unlikely to be significantly affected by the Local Plan. The allocation is also not within the recreational catchment (5.6 km). |
| SDA80: Land north of Hewlett Close | Twyford | Housing | 15 | | Potential likely significant effects<br><br>River Itchen SAC is located 0.4km from the site. |

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| | | | | | No other Habitats Sites are located within 10km of the site. However, due to the River Itchen discharging into the Solent, impact pathways have been identified relating to the Solent Sites as well.<br><br>Linking impact pathways identified are:<br>• Atmospheric Pollution (River Itchen)<br>• Water Quality (nutrient neutrality) (River Itchen SAC, Solent Habitats Sites)<br>• Water Quantity (River Itchen SAC)<br><br>Although the Solent Habitats sites are vulnerable to air quality issues, the separation between the National Park boundaries and the Solent Habitats sites is considerable and therefore unlikely to be significantly affected by the Local Plan. The allocation is also not within the recreational catchment (5.6 km). |
| SDA71 Land off Merryfield Road | Sheet | Housing | 8 | | Potential likely significant effects<br><br>2.8km from East Hampshire Hangers SAC<br>4.5km from Butser Hill SAC<br>5.8km from Wealden Heaths Phase II SPA<br>7.9km from Woolmer Forest SAC |

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| | | | | | 8.2km from Rook Clift SAC<br><br>No other Habitats Sites are located within 10 km of the site.<br><br>Wealden Heaths Phase II SPA & Woolmer Forest SAC has a documented recreational core catchment of 5km and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to lack of car parks East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>Although East Hampshire Hangers SAC and Rook Clift are vulnerable to atmospheric pollution, there are no significant roads within 200m of the SACs, and therefore, no linking impact pathway.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The impact pathways identified are:<br>• Recreational pressure (Butser Hill SAC)<br>• Atmospheric pollution (Wealden Health Phase II SPA, Woolmer Forest SAC, Butser Hill SAC) |

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| SDA11: Land south of Paddock Way | Petersfield | C2/C3 care home/flats | 150 | | Potential likely significant effects<br><br>1.9km from Butser Hill SAC<br>3km from East Hampshire hangers SAC<br>8km from Wealden Heaths Phase II SPA<br>8.9km from Rook Clift SAC<br><br>Wealden Heaths Phase II SPA has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC) |

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| | | | | | • Air pollution (Butser Hill SAC, Wealden Health Phase II SPA) |
| SDA12: Land at Drum Court, The Spain | Petersfield | Housing | 21 | | Potential likely significant effects<br><br>2.7km from East Hampshire hangers SAC<br>3km from Butster Hill SAC<br>7km from Wealden Heaths Phase II SPA<br>8.9km from Rook Clift SAC<br>9.2km from Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment |

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| | | | | | The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA14: Land at Festival Hall | Petersfield | Mixed Use | 20 | 875m2 local shops and 875m2 food and drink (hot food takeaway) | Potential likely significant effects<br><br>2.8km from East Hampshire hangers SAC<br>3.4km from Butster Hill SAC<br>6.6km from Wealden Heaths Phase II SPA<br>8.3km from Rook Clift SAC<br>8.8km from Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no |

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| | | | | | linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA13: The Courtyard, Heath Road | Petersfield | Mixed Use | 8 | | Potential likely significant effects<br><br>2.8km from East Hampshire hangers SAC<br>3.4km from Butster Hill SAC<br>6.6km from Wealden Heaths Phase II SPA<br>8.3km from Rook Clift SAC<br>8.8km from Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC |

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| | | | | | has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA15: Windward, Reservoir Lane | Petersfield | Housing | 5 | | Potential likely significant effects<br><br>1.8km from East Hampshire hangers SAC<br>4.3km from Butster Hill SAC<br>5.6km from Wealden Heaths Phase II SPA<br>7.8km from Woolmer Forest SAC<br>9.1km from Rook Clift SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a |

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| | | | | | documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km. Due to the requirement to walk to East Hangers SAC, and with the A3 presenting a major barrier for walking routes. It is deemed that this site will not have a linking impact pathway recreationally.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |

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| SDA10: Land at Penns Place | Petersfield | Mixed Use | 35 | Sports hub including provision of 2 additional sports pitches | Potential likely significant effects<br><br>3.6km from East Hampshire hangers SAC<br>4.7km from Butster Hill SAC<br>5.6km from Wealden Heaths Phase II SPA<br>6.8km from Rook Clift SAC<br>7.7km from Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified: |

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| | | | | | • Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA28: Land at Farnham & Station Roads | West Liss | Housing | 65 | 60 bed Care Home | Potential likely significant effects<br><br>1.0km from Wealden Heaths Phase II SPA<br>2km from East Hampshire Hangers SAC<br>3.2km from Woolmer Forest SAC<br>8.8km from Butser Hill SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC is also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km. Due to the requirement to walk to East Hangers SAC, and with the A3 presenting a major barrier for walking routes. It is deemed that this site will not have a linking impact pathway recreationally. |

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| | | | | | There are no major roads within 200m of East Hampshire Hangers SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Wealden Health Phase II SPA, Woolmer Forest SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA78: Land north of Winchester Road | Stroud | Housing | 18 | | Potential likely significant effects<br><br>1.7km from East Hampshire Hangers SAC<br>2.4km from Butser Hill SAC<br>8km from Wealden Heaths Phase II SPA<br>9.9km from Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Butser Hill SAC is also likely to have an average |

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| | | | | | recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC, East Hampshire Hangers SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA, Woolmer Forest SAC) |
| SDA32: Land at Westlands | Liphook | Housing | 8 | | Potential likely significant effects<br><br>0.5km from Wealden Heaths Phase II SPA<br>1km from Woolmer Forest SAC<br>6.4km from East Hampshire Hangers SAC<br>7km from Shortheath Common SAC<br>8km from Thursley, Ash Pirbright & Chobham SAC |

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| | | | | | 8km from Thursley, Hankley & Frensham Commons SPA<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC have a documented recreational core catchment of 5km, and Shortheath Common and Thursley SAC & SPA are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Shortheath Common, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Wealden Health Phase II SPA, Woolmer Forest SAC)<br>• Air pollution (Wealden Health Phase II SPA, Woolmer Forest SAC, Thursley, Ash Pirbright & Chobham SAC, Thursley, Hankley & Frensham Commons SPA) |

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| SDA31: Land west of Liphook | Liphook | Mixed Use | 414-380 | 4 permanent Gypsy and Traveller pitches, SANG (with car park), open space, GP surgery (with car park), railway station car park, performance/theatre buildings for Bohunt School, playing pitches (incl. football) for Bohunt School, and a 65-bed care home. | Potential likely significant effects<br><br>0.3km from Wealden Heaths Phase II SPA<br>0.8km from Woolmer Forest SAC<br>6.2km from East Hampshire Hangers SAC<br>6.8km from Shortheath Common SAC<br>7.9km from Thursley, Ash Pirbright & Chobham SAC<br>7.9km from Thursley, Hankley & Frensham Commons SPA<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC have a documented recreational core catchment of 5km, and Shortheath Common and Thursley SAC & SPA are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Shortheath Common, therefore, there is no linking impact pathway with air pollution to these Habitat Sites. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Urbanisation (Wealden Heath Phase II SPA)<br>• Recreation (Wealden Health Phase II SPA, Woolmer Forest SAC)<br>• Air pollution (Wealden Health Phase II SPA, Woolmer Forest SAC, Thursley, Ash Pirbright & Chobham SAC, Thursley, Hankley & Frensham Commons SPA) |
| SDA38: Land south of Lovell Gardens | Binsted | Housing | 12 | | Potential likely significant effects<br><br>1.2km East Hampshire Hangers SAC<br>3.1km from Wealden Heaths Phase II SPA<br>3.7km from Shortheath Common SAC<br>6.6km from Thursley, Ash Pirbright & Chobham SAC<br>6.6km from Thursley, Hankley & Frensham Commons SPA<br>7.5km Woolmer Forest SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC have a documented recreational core catchment of 5km, and Shortheath |

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| | | | | | Common and Thursley SAC & SPA are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Shortheath Common, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Wealden Health Phase II SPA, Shortheath Common SAC, East Hampshire Hangers SAC)<br>• Air pollution (Wealden Health Phase II SPA, Woolmer Forest SAC, Thursley, Ash Pirbright & Chobham SAC, Thursley, Hankley & Frensham Commons SPA) |
| SDA59: Land West of The Street | Lodsworth | Housing | 10 | | Potential likely significant effects<br><br>4.5km from Ebernoe Common SAC |

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| | | | | | 7.6km from Singleton & Cocking Tunnels SAC<br>7km from Duncton to Bignor Escarpment SAC<br>8.4km from The Mens SAC<br><br>Ebernoe Common, Singleton & Cocking Tunnes, The Mens, and Duncton to Bignore Escarpment SAC are all likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>The site is within 12 km of all three bat sites and, therefore, there is the potential for a linking impact pathway to all three.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Singleton & Cocking Tunnels SAC, The Mens SAC, Duncton to Bignor Escarpment SAC) |

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| | | | | | • Loss of functionally linked land (Ebernoe Common SAC, Singleton & Cocking Tunnels SAC, The Mens SAC). |
| SDA46: Land at Hawksfold | Fernhurst | Housing | 7 | | Potential likely significant effects<br><br>7.2km from Ebernoe Common SAC<br>7.4km from Wealden Heaths Phase II SPA<br>8km from Woolmer Forest SAC<br>11.5km from Singleton and Cocking Tunnels SAC<br><br>Wealden Heaths Phase II SPA and Woolmer Forest SAC has a documented recreational core catchment of 5km, and Ebernoe Common and Singleton and Cocking Tunnels are also likely to have an average recreational core catchment of 5km.<br><br>Singleton and Cocking Tunnels SAC are not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC) |
| SDA26: Land at Rotherbridge Lane | Petworth | Housing | 7 | | Potential likely Significant effects<br><br>4.0km from The Mens SAC<br>4.4km from Ebernoe Common SAC<br>4.5km from Duncton to Bignor Escarpment SAC<br>6.8km to Arun Valley SPA and Ramsar<br>7.1km to Arun Valley SAC<br>10.7km from Singleton and Cocking SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>Singleton and Cocking Tunnels SAC are not vulnerable to air pollution. |

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| | | | | | The site is within 12 km of Singleton and Cocking Tunnels SAC, Ebernoe Common SAC and The Mens SAC, therefore, there is the potential for a linking impact pathway. However, the site is outside of the Arun Valley 5km functionally linked land zone of influence.<br><br>Arun Valley SPA/SAC/Ramsar and Singleton to Cocking Tunnels are not vulnerable to air pollution, therefore there is no linking impact pathway<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (The Mens SAC, Ebernoe Common SAC, Duncton to Bignor Escarpment SAC)<br>• Loss of functionally linked land (The Mens SAC, Ebernoe Common SAC, Singleton and Cocking Tunnels SAC)<br>• Air pollution (Ebernoe Common SAC, The Mens SAC, Dunction to Bignore Escarpment SAC) |

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| SDA27: Land north of Northend Close | Petworth | Housing | 18 | | Potential likely Significant effects<br><br>2.8km from Ebernoe Common SAC<br>3.2km from The Mens SAC<br>6.1km from Duncton to Bignor Escarpment SAC<br>7.7km to Arun Valley SPA and Ramsar<br>8.1km to Arun Valley SAC<br>11.8km from Singleton and Cocking SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>Singleton and Cocking Tunnels SAC are not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC, Ebernoe Common SAC and The Mens SAC, therefore, there is the potential for a linking impact pathway. However, the site is outside of the Arun Valley 5km functionally linked land zone of influence.<br><br>Arun Valley SPA/SAC/Ramsar and Singleton to Cocking Tunnels are not vulnerable to air pollution, therefore there is no linking impact pathway. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (The Mens SAC, Ebernoe Common SAC, Duncton to Bignor Escarpment SAC)<br>• Loss of functionally linked land (The Mens SAC, Ebernoe Common SAC, Singleton and Cocking Tunnels SAC)<br>• Air pollution (Ebernoe Common SAC, The Mens SAC, Duncton to Bignore Escarpment SAC) |
| SDA62: Land west of Valentines Lea, | Northchapel | Housing | 25 | | Potential likely Significant effects<br><br>2.1km from Ebernoe Common SAC<br>8.5km from The Mens SAC<br>7.5km from Wealden Heaths Phase II SPA<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Ebernoe Common SAC and The Mens SAC, therefore, there is the potential for a linking impact pathway. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Ebernoe Common SAC)<br>• Loss of functionally linked land (The Mens SAC, Ebernoe Common SAC, Wealden Heaths Phase II SPA)<br>• Air pollution (Ebernoe Common SAC, The Mens SAC, Wealden Heath Phase II SPA) |
| SDA22 Land adjacent Former Easebourne School | Easebourne | Housing | 10 | | Likely significant effects present<br><br>6.4km from Singleton and Cocking Tunnels SAC<br>7.1km from Ebernoe Common SAC<br>8.8km from Duncton to Bignor Escarpement SAC<br>8.9km from Rook Clift SAC<br>11.4km from The Mens SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC, Ebernoe Common SAC and The Mens SAC |

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| | | | | | therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC, The Mens SAC)<br>• Air pollution (Ebernoe Common SAC, The Mens SAC, Duncton to Bignor Escarpment SAC) |
| SDA24: Land west of Budgenor Lodge | Easebourne | Housing | 20 | | Potential likely significant effects<br><br>6.2km from Singleton and Cocking Tunnels SAC<br>7.9km from Ebernoe Common SAC<br>8.2km from Rook Clift SAC<br>9.7km from Duncton and Bignor Escarpment SAC |

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| | | | | | 9.8km from Wealden Heaths Phase II SPA<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC, and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC, The Mens SAC)<br>• Air pollution (Ebernoe Common SAC, Wealden Heaths Phase II |

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| | | | | | SPA, Duncton to Bignor Escarpment SAC) |
| SDA23: Midhurst Community Hospital and 1-2 Rotherfield Mews | Easebourne | Housing and C2/C3 care home/flats | 60 C3 retirement flats or 35 C5 Houses | 60 C2 Care home beds | Potential likely significant effect<br><br>5.3km from Singleton and Cocking Tunnels SAC<br>7.7km from Rook Clift SAC<br>8.2km from Ebernoe Common SAC<br>9.0km from Duncton and Bignor Escarpment SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment. |

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| | | | | | The following impact pathways have been identified:<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Duncton to Bignor Escarpment SAC) |
| SDA21: Land east of Pitsham Lane, | Midhurst | Housing | 75 | | Potential likely significant effects<br><br>3.0km from Singleton and Cocking Tunnels SAC<br>5.6km from Rook Clift SAC<br>8.4km from Duncton and Bignor Escarpment SAC<br>8.2km from Kingley Vale SAC<br>9.9km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and |

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| | | | | | Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Duncton to Bignor Escarpment SAC, Kingley Vale SAC) |
| SDA18: Land adj The Grange Car Park, | Midhurst | Housing | 10 | | Potential likely significant effects<br><br>4.3km from Singleton and Cocking Tunnels SAC<br>6.8km from Rook Clift SAC<br>8.7km from Duncton and Bignor Escarpment SAC<br>9.5km from Kingley Vale SAC<br>9.0km from Ebernoe Common SAC |

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| | | | | | All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Duncton to Bignor Escarpment SAC, Kingley Vale SAC) |

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| SDA20: Former Bus Depot, Pitsham Lane | Midhurst | Housing | 6 | | Potential likely significant effects<br><br>3.0km from Singleton and Cocking Tunnels SAC<br>5.6km from Rook Clift SAC<br>8.4km from Duncton and Bignor Escarpment SAC<br>8.2km from Kingley Vale SAC<br>9.9km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment. |

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| | | | | | The following impact pathways have been identified:<br>• Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Duncton to Bignor Escarpment SAC, Kingley Vale SAC) |
| SDA19: Land at Forest Road | Midhurst | Housing | 5 | | Potential likely significant effects<br><br>3.5km from Singleton and Cocking Tunnels SAC<br>6.1km from Rook Clift SAC<br>8.7km from Duncton and Bignor Escarpment SAC<br>8.6km from Kingley Vale SAC<br>9.8km from Ebernoe Common SAC<br><br>All the SPAs and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC and Ebernoe Common SAC, therefore, there is the potential for a linking impact pathway. |

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| | | | | | There are no major roads within 200m of Rook Clift SAC, and Singleton and Cocking Tunnels are not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Singleton and Cocking Tunnels SAC)<br>• Loss of functionally linked land (Singleton and Cocking Tunnels SAC, Ebernoe Common SAC)<br>• Air pollution (Ebernoe Common SAC, Duncton to Bignor Escarpment SAC, Kingley Vale SAC) |
| SDA39: Land East of Coombe Crescent | Bury | Housing | 15 | | Potential likely significant effects<br><br>0.9km from Arun Valley SAC/SPA/Ramsar<br>2.1km from Duncton to Bignor Escarpment<br>8.7km from The Mens SAC |

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| | | | | | All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of The Mens SAC, therefore, there is the potential for a linking impact pathway.<br><br>Arun Valley is not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to this Habitat Site.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Arun Valley SPA/SAC/Ramsar, Duncton to Bignore Escarpment SAC)<br>• Loss of functionally linked land (The Mens SAC, Arun Valley SPA/Ramsar)<br>• Air pollution (Duncton to Bignor Escarpment SAC, The Mens SAC)<br>• Water Quality (Arun Valley SPA/SAC/Ramsar) |
| | Findon | Housing | 20 | | No HRA Implications<br><br>9.6km from Arun Valley SAC/SPA/Ramsar |

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| | | | | | There are no other Habitats sites within 10km.<br><br>The SPA/Ramsar and SAC have a recreational core catchment of 5km and a functionally linked land zone of influence of 5km as well. The sites are not vulnerable to atmospheric pollution.<br><br>Due to the distances involved, there are no relevant impact pathways. |
| SDA72: Land off Steepdown Road, | Sompting | Housing C2/C3 | 30 | | No HRA Implications<br><br>The site is over 10km from all habitat sites.<br><br>Due to the distances involved, there are no relevant impact pathways. |
| SDA57: Audiburn Farm, Aschombe Lane | Kingston | Housing | 5 | | Potential likely significant effects<br><br>2.1km from Castle Hill SAC<br>3.2km from Lewes Downs SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km. |

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| | | | | | There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC, Castle Hill SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |
| SDA56: Land at Beaumont, Wellgreen Lane | Kingston | Housing | 5 | | Potential likely significant effects<br><br>2.3km from Castle Hill SAC<br>3.4km from Lewes Downs SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC, Castle Hill SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |

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| SDA44: Land at Beechwood Lane, | Cooksbridge | Housing | 30 | | Potential likely significant effects present<br><br>3.1km from Lewes Downs SAC<br>6.7km from Castle Hill SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |
| SDA5: East Sussex College, Mountfield Road | Lewes | Housing | 200 | | Potential likely significant effects<br><br>0.6km from Lewes Downs SAC<br>4.8km from Castle Hill SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km. |

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| | | | | | There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC, Castle Hill SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |
| SDA7: Land behind the White Hart, 55 High Street | Lewes | Housing | 5 | | Potential likely significant effects<br><br>0.9km from Lewes Downs SAC<br>4.9km from Castle Hill SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC, Castle Hill SAC) |

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| | | | | | • Atmospheric pollution (Lewes Downs SAC) |
| SDA6: Springman House, 8 North Street | Lewes | Housing | 13 | | Potential likely significant effects<br><br>0.7km from Lewes Downs SAC<br>5.1km from Castle Hill SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average recreational core catchment area of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |
| SDA4: County Hall, St Anne's Crescent | Lewes | Housing | 248 | | Potential likely significant effects<br><br>1.5km from Lewes Downs SAC<br>4.1km from Castle Hill SAC<br><br>Lewes Downs SAC and Castle Hill SAC are likely to have an average |

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| | | | | | recreational core catchment area of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC, therefore, there is no linking impact pathway.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Lewes Downs SAC, Castle Hill SAC)<br>• Atmospheric pollution (Lewes Downs SAC) |
| SDA34: Alfriston Court | Alfriston | C2 care home | 20 | | Potential likely significant effects<br><br>8.4km from Pevensy Levels SAC/Ramsar<br>8.6km from Lewes Downs SAC<br><br>Lewes Downs SAC and Pevensey Levels SAC/Ramsar are likely to have an average recreational core catchment area of 5km.<br><br>Pevensey levels SAC/Ramsar is not vulnerable to air pollution.<br><br>The following impact pathways have been identified: |

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| | | | | | • Atmospheric pollution (Lewes Downs SAC) |
| SDA35: East Street Farm | Amberley | Housing | 20 | | Likely significant effects present<br><br>0.1km from Arun Valley SAC/SPA/Ramsar<br>3.9km from Duncton to Bignor Escarpment SAC<br>8.7km from The Mens SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of The Mens SAC, therefore, there is the potential for a linking impact pathway.<br><br>Arun Valley is not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to this Habitat Site.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Arun Valley SPA/SAC/Ramsar, Duncton to Bignor Escarpment SAC) |

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| | | | | | • Loss of functionally linked land (The Mens SAC, Arun Valley SPA/Ramsar)<br>• Air pollution (Duncton to Bignor Escarpment SAC, The Mens SAC)<br>• Water Quality (Arun Valley SPA/SAC/Ramsar) |
| SDA54: Land east of Lodge Lane | Keymer | Housing | 30 | | No HRA Implications<br><br>9.1km from Castle Hill SAC<br><br>Castle Hill SAC has an average recreational core catchment of 5km.<br><br>There are no significant roads within 200m of Castle Hill SAC.<br><br>Due to the distances involved, there are no relevant impact pathways. |
| SDA8 Land at rear of Causeway House | Petersfield | Housing | 40 | | Potential likely significant effects<br><br>2.5 km from Butser Hill SAC<br>3.5 km from East Hampshire Hangers SAC<br>7.9 km from Wealden Heaths Phase II SPA<br>8.3 km from Rook Clift SAC |

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| | | | | | Wealden Heaths Phase II SPA has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA) |
| SDA9 Land South of The Causeway | Petersfield | Housing | 30 | | Potential likely significant effects<br><br>1.6 km from Butser Hill SAC<br>3.5 km from East Hampshire Hangers SAC |

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| | | | | | 8.5 km from Wealden Heaths Phase II SPA<br>8.8 km from Rook Clift SAC<br><br>Wealden Heaths Phase II SPA has a documented recreational core catchment of 5km, and Butser Hill SAC and Rook Clift SAC are also likely to have an average recreational core catchment of 5km. Due to a lack of car parks, East Hampshire Hangers SAC has a likely core recreational catchment of 2km.<br><br>There are no major roads within 200m of East Hampshire Hangers SAC and Rook Clift SAC, therefore, there is no linking impact pathway with air pollution to these Habitat Sites.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreation (Butser Hill SAC)<br>• Air pollution (Butser Hill SAC, Wealden Health Phase II SPA) |
| SDA25 Land south of Herbert Shiner School | Petworth | Housing | 75 | | Potential likely significant effects |

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| | | | | | 3.5 km from The Mens SAC<br>4.4 km from Ebernoe Common SAC<br>4.6 km from Duncton and Bignor Escarpment SAC<br>6.4 km from Arun Valley SPA<br>6.7 km from Arun Valley SAC/Ramsar<br>11.0 km from Singleton and Cocking Tunnels SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>Singleton and Cocking Tunnels SAC are not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC, Ebernoe Common SAC and The Mens SAC, therefore, there is the potential for a linking impact pathway. However, the site is outside of the Arun Valley 5km functionally linked land zone of influence.<br><br>Arun Valley SPA/SAC/Ramsar and Singleton to Cocking Tunnels are not vulnerable to air pollution, therefore there is no linking impact pathway. |

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| | | | | | The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (The Mens SAC, Ebernoe Common SAC, Duncton to Bignor Escarpment SAC)<br>• Loss of functionally linked land (The Mens SAC, Ebernoe Common SAC, Singleton and Cocking Tunnels SAC)<br>• Air pollution (Ebernoe Common SAC, The Mens SAC, Duncton to Bignor Escarpment SAC) |
| SDA29 Land at Copper Beeches, Silver Birch and Heathmount, Hill Brow | Liss | Housing | 25 | | Potential likely significant effects<br><br>1.9 km from Wealden Heaths Phase II SPA<br>3.6 km from Woolmer Forest SAC<br>4.6 km from East Hampshire Hangers SAC<br>8.8 km from Shortheath Common SAC<br>9.1 km from Rook Clift SAC<br>9.7 km from Butser Hill SAC<br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km. Except for East Hampshire Hangers which is reduced to 2 km due to lack of parking. |

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| | | | | | There are no major roads within 200m of Rook Clift SAC, so this is not vulnerable to air pollution.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br><br>• Recreational pressure (Wealden Heaths Phase II SPA, Woolmer Forest SAC)<br>• Air pollution (Wealden Heaths Phase II SPA, Woolmer Forest SAC, East Hampshire Hangers SAC, Shortheath Common SAC, Butser Hill SAC) |
| SDA49 Land south of Soldiers Field House | Findon | Housing | 8 | | Potential likely significant effects<br><br>9.6 km from Arun Valley SPA/SAC/Ramsar<br><br>Arun Valley has a recreational pressure core zone of 5 km as well as a functionally linked zone of 5 km.<br><br>The following impact pathways have been identified: |

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| | | | | | • Air pollution (Arun Valley SPA, SAC, Ramsar) |
| SDA51 Land south of Findon (Wyatt's Field) | Findon | Housing | 20 | | Potential likely significant effects<br><br>9.7 km from Arun Valley SPA/SAC/Ramsar<br><br>The following impact pathways have been identified:<br>• Air pollution (Arun Valley SPA, SAC, Ramsar) |
| SDA55 Land at Southdowns Farm | Keymer | Housing | 10 | | No HRA implications<br><br>Due to the distance and the lack of major roads within 200m of Castle Hill SAC, there are no linking impact pathways. |
| SDA58 Hoe Court | Lancing | Housing | 50 | | No HRA implications<br><br>Due to the distance, there are no linking impact pathways. |
| SDA60 Land at Fernhurst Road | Milland | Housing | 13 | | Potential likely significant effects<br><br>3.9 km from Wealden Heaths Phase II SPA<br>5.2 km from Woolmer Forest SAC<br>8.5 km from Rook Clift SAC |

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| | | | | | 10.5 km from Singleton and Cocking Tunnels SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>There are no major roads within 200m of Rook Clift SAC, so this is not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC therefore, there is the potential for a linking impact pathway.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Wealden Heaths Phase II SPA)<br>• Air pollution (Wealden Heaths Phase II SPA, Woolmer Forest SAC)<br>• Functionally Linked Land (Singleton & Cocking Tunnels SAC) |
| SDA61 Land at Rake Road | Milland | Housing | 8 | | Potential likely significant effects |

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| | | | | | 3.8 km from Wealden Heaths Phase II SPA<br>5.3 km from Woolmer Forest SAC<br>8.8 km from Rook Clift SAC<br>10.5 km from Singleton and Cocking Tunnels SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>There are no major roads within 200m of Rook Clift SAC, so this is not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC therefore, there is the potential for a linking impact pathway.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Wealden Heaths Phase II SPA)<br>• Air pollution (Wealden Heaths Phase II SPA, Woolmer Forest SAC) |

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| | | | | | • Functionally Linked Land (Singleton & Cocking Tunnels SAC) |
| SDA67 1-4 Parsonage Estate | Rogate | Housing | 8 | | Potential likely significant effects<br><br>4.6 km from East Hampshire Hangers SAC<br>5.4 km from Rook Clift SAC<br>5.9 km from Wealden Heaths Phase II SPA<br>7.5 km from Woolmer Forest SAC<br>8.8 km from Butser Hill SAC<br>9.4 km from Singleton and Cocking Tunnels SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km. Except East Hampshire Hangers which has a zone of 2 km due to lack of parking.<br><br>Singleton and Cocking Tunnels SAC are not vulnerable to air pollution.<br><br>The site is within 12 km of Singleton and Cocking Tunnels SAC therefore, there is the potential for a linking impact pathway.<br><br>There are no major roads within 200m of Rook Clift SAC and Singleton to |

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|---|---|---|---|---|---|
| | | | | | Cocking Tunnels are not vulnerable to air pollution, therefore there is no linking impact pathway.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Air pollution (Butser Hill SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC, East Hampshire Hangers SAC)<br>• Functionally linked Land (Singleton and Cocking Tunnels SAC) |
| SDA68 Clayton Court | Hill Brow | Housing | 16 | | Potential likely significant effects<br><br>1.9 km from Wealden Heaths Phase II SPA<br>3.6 km from Woolmer Forest SAC<br>4.6 km from East Hampshire Hangers SAC<br>8.8 km from Shortheath Common SAC<br>9.1 km from Rook Clift SAC<br>9.7 km from Butser Hill SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km. Except East |

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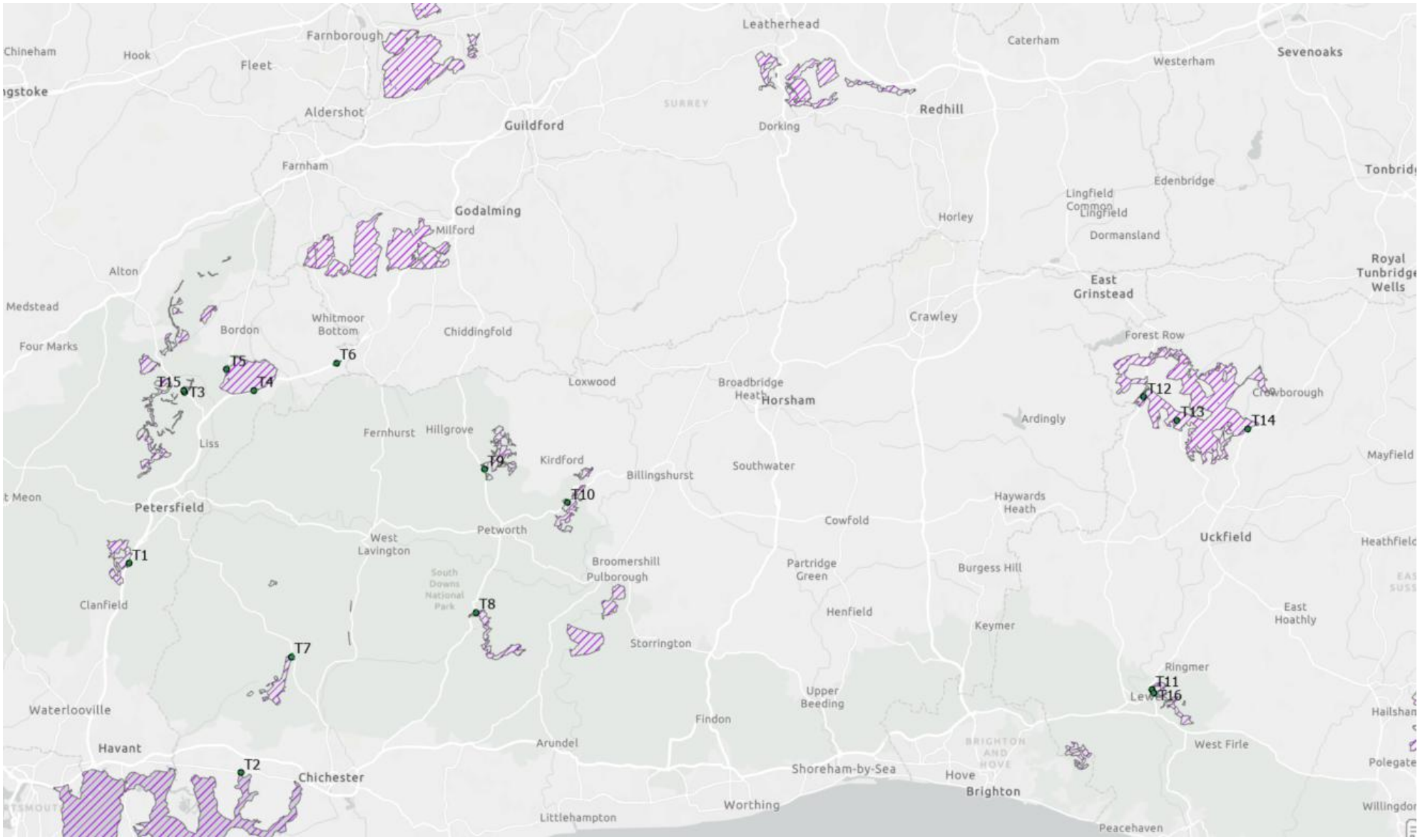
| | | | | | Hampshire Hangers which has a zone of 2 km due to lack of parking.<br><br>There are no major roads within 200m of Rook Clift SAC therefore there is no linking impact pathway.<br><br>The site is not within a hydrologically sensitive catchment.<br><br>The following impact pathways have been identified:<br>• Air pollution (Butser Hill SAC, Wealden Heaths Phase II SPA, Woolmer Forest SAC, East Hampshire Hangers SAC, Shortheath Common SAC)<br>• Recreational pressure (Wealden Heaths Phase II SPA, Woolmer Forest SAC) |
| SDA77 Land at Horsham Road | Steyning | Housing | 60 | | No HRA implications<br><br>Due to the distance, there are no linking impact pathways. |
| SDA43: Land north of Kings Lane | Coldwaltham | Gypsy and Traveller | | | Potential likely significant effects<br><br>0.7 km from Arun Valley SPA<br>2.0 km from Arun Valley SAC and Ramsar |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 4.7 km from The Mens SAC<br>5.6 km from Duncton to Bignor Escarpment<br>9.5 km from Ebernoe Common SAC<br><br>All the SPAs/Ramsar and SACs are likely to have an average recreational core catchment of 5km.<br><br>The site is within 12 km of The Mens SAC and within 5 km of Arun Valley, therefore, there is the potential for a linking impact pathway for functionally linked land.<br><br>Arun Valley is not vulnerable to atmospheric pollution; therefore, there is no linking impact pathway with air pollution to this Habitat Site.<br><br>The following impact pathways have been identified:<br>• Recreational pressure (Arun Valley SPA/SAC/Ramsar, The Mens SAC)<br>• Loss of functionally linked land (The Mens SAC, Arun Valley SPA/Ramsar)<br>• Air pollution (Duncton to Bignor Escarpment SAC, The Mens SAC, Ebernoe Common SAC) |

| | | | | | |
|---|---|---|---|---|---|
| Land east of Langrish Primary School | Langrish | Renewable energy | | Ground-mounted solar | 1.9 km from East Hampshire Hangers SAC<br>2.1 km from Butser Hill SAC<br>8 km from Wealden Heaths Phase II SPA<br><br>No residential or employment component. Not within any functionally linked land. Once constructed very little impact to surrounding wildlife or Habitats sites. |
| Tolmare Farm | Findon | Renewable energy | | Roof-mounted solar | 7.8 km from Arun Valley SPA SAC and Ramsar<br><br>No residential or employment component. Not within any functionally linked land. Once constructed very little impact to surrounding wildlife or Habitats sites. |
| Land at Longridge Avenue | Saltdean | Renewable energy | | Ground-mounted solar | 3.1 km from Castle Hill SAC<br>8.1 km from Lewes Downs SAC<br><br>No residential or employment component. Not within any functionally linked land. Once constructed very little impact to surrounding wildlife or Habitats sites. |
| Land between A32 and | Privett | Renewable energy | | Ground-mounted solar | 6.6 km from East Hampshire Hangers SAC |

| | | | | | |
|---|---|---|---|---|---|
| Policeman's Lane | | | | | 7.2 km from River Itchen SAC<br>7.7 km from Butser Hill SAC<br><br>No residential or employment component. Not within any functionally linked land. Once constructed very little impact to surrounding wildlife or Habitats sites. |
| Lancing College | Lancing | Renewable energy | | Ground-mounted solar | Not within 10 km of any Habitats Site<br><br>Due to distance there is no linking impact pathways. |

# Appendix D Air Quality Modelling Transect Figure


Chineham
Hook
Fleet
Farnborough
Aldershot
Guildford
Farnham
Godalming
Milford
Alton
Medstead
Four Marks
Bordon
Whitmoor Bottom
Chiddingfold
Liss
Fernhurst
Hillgrove
Loxwood
Kirdford
Billingshurst
Petersfield
Petworth
West Lavington
Clanfield
Broomershill
Pulborough
Storrington
Waterlooville
Havant
Chichester
Arundel
Findon
Upper Beeding
Shoreham-by-Sea
Worthing
Littlehampton
Hove
Brighton
Peacehaven
Broadbridge Heath
Horsham
Southwater
Leatherhead
Dorking
Redhill
Caterham
Westerham
Sevenoaks
Lingfield Common
Lingfield
Dormansland
Edenbridge
Horley
Crawley
East Grinstead
Forest Row
Crowborough
Ardingly
Haywards Heath
Cowfold
Partridge Green
Burgess Hill
Henfield
Keymer
Uckfield
East Hoathly
Ringmer
West Firle
Mayfield
Royal Tunbridge Wells
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16

# Appendix E Air Quality Modelling Results

| | | Total Annual Mean NOX (µg/m3) | | | | Total Annual Mean NH3 (µg/m3) | | | | Total Annual Mean N Dep (bgd + road NO2 + road NH3) (kg/ha/year) | | | | Total Annual Mean N Acid Dep (bgd + road NO2 + road NH3) (keq/ha/year) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Road Link** | **Distance From Road (m)** | **2024** | **2040 Future Base** | **2040 DM** | **2040 DS** | **2024** | **2040 Future Base** | **2040 DM** | **2040 DS** | **2024** | **2040 Future Base** | **2040 DM** | **2040 DS** | **2024** | **2040 Future Base** | **2040 DM** | **2040 DS** |
| T1_Grassland_31.9m | | 16.59688 | 5.92279 | 6.022305 | 6.027792 | 1.27754 | 1.130668 | 1.160368 | 1.162044 | 16.89461 | 14.50407 | 14.66551 | 14.67423 | 1.206748 | 1.035997 | 1.047528 | 1.048151 |
| T1_Grassland_40m | | 15.27806 | 5.822646 | 5.906588 | 5.911226 | 1.220037 | 1.098879 | 1.123574 | 1.12497 | 16.50739 | 14.33177 | 14.46578 | 14.47304 | 1.17909 | 1.02369 | 1.033262 | 1.033781 |
| T1_Grassland_50m | | 14.10206 | 5.733332 | 5.803201 | 5.807065 | 1.169566 | 1.070975 | 1.09122 | 1.092365 | 16.16654 | 14.17967 | 14.29054 | 14.2965 | 1.154744 | 1.012825 | 1.020745 | 1.02117 |
| T1_Grassland_60m | | 13.23612 | 5.667561 | 5.726917 | 5.730204 | 1.132967 | 1.050738 | 1.067715 | 1.068676 | 15.91743 | 14.07024 | 14.16272 | 14.16772 | 1.13695 | 1.005009 | 1.011615 | 1.011972 |
| T1_Grassland_70m | | 12.57202 | 5.617114 | 5.668309 | 5.671147 | 1.105269 | 1.035423 | 1.049898 | 1.050718 | 15.7272 | 13.9864 | 14.06587 | 14.07013 | 1.123362 | 0.99902 | 1.004697 | 1.005002 |
| T1_Grassland_80m | | 12.04294 | 5.57692 | 5.621542 | 5.624018 | 1.083462 | 1.023364 | 1.03585 | 1.036558 | 15.5788 | 13.92089 | 13.99002 | 13.9937 | 1.112763 | 0.994342 | 0.999279 | 0.999542 |
| T1_Grassland_90m | | 11.61303 | 5.544261 | 5.583488 | 5.585666 | 1.065929 | 1.013668 | 1.024542 | 1.025158 | 15.45823 | 13.86908 | 13.92842 | 13.93162 | 1.104151 | 0.99064 | 0.994879 | 0.995108 |
| T1_Grassland_100m | | 11.25797 | 5.517286 | 5.552025 | 5.553953 | 1.05159 | 1.005739 | 1.015284 | 1.015825 | 15.35847 | 13.82504 | 13.87748 | 13.88029 | 1.097025 | 0.987495 | 0.99124 | 0.991441 |
| T1_Grassland_110m | | 10.95926 | 5.494589 | 5.525525 | 5.527242 | 1.039628 | 0.999124 | 1.007554 | 1.008032 | 15.27527 | 13.78924 | 13.83588 | 13.83837 | 1.091082 | 0.984938 | 0.988269 | 0.988447 |
| T1_Grassland_120m | | 10.70545 | 5.475304 | 5.502991 | 5.504529 | 1.029549 | 0.99355 | 1.001037 | 1.001462 | 15.20605 | 13.75886 | 13.80059 | 13.8028 | 1.086138 | 0.982768 | 0.985749 | 0.985906 |
| T1_Grassland_130m | | 10.48843 | 5.458815 | 5.483715 | 5.485097 | 1.020996 | 0.98882 | 0.995504 | 0.995883 | 15.14618 | 13.73286 | 13.77042 | 13.77239 | 1.081861 | 0.980911 | 0.983594 | 0.983734 |
| T1_Grassland_140m | | 10.30037 | 5.444526 | 5.467002 | 5.46825 | 1.013637 | 0.984749 | 0.990741 | 0.991081 | 15.09531 | 13.7117 | 13.74426 | 13.74602 | 1.078228 | 0.979399 | 0.981725 | 0.981851 |
| T1_Grassland_150m | | 10.13686 | 5.432103 | 5.452468 | 5.453597 | 1.007281 | 0.981235 | 0.986628 | 0.986933 | 15.05106 | 13.69202 | 13.72146 | 13.72305 | 1.075067 | 0.977994 | 0.980097 | 0.98021 |
| T1_Grassland_160m | | 9.99375 | 5.421228 | 5.439745 | 5.440772 | 1.001755 | 0.978178 | 0.98305 | 0.983326 | 15.01252 | 13.67613 | 13.70146 | 13.7043 | 1.072315 | 0.976858 | 0.978668 | 0.97887 |
| T1_Grassland_170m | | 9.868267 | 5.411694 | 5.428589 | 5.429526 | 0.996939 | 0.975515 | 0.979933 | 0.980183 | 14.97908 | 13.66088 | 13.68525 | 13.68655 | 1.069926 | 0.975769 | 0.97751 | 0.977603 |
| T1_Grassland_180m | | 9.757103 | 5.403246 | 5.418706 | 5.419563 | 0.992697 | 0.973169 | 0.977187 | 0.977415 | 14.94862 | 13.64868 | 13.66957 | 13.67076 | 1.06775 | 0.974898 | 0.97639 | 0.976475 |
| T1_Grassland_190m | | 9.658431 | 5.395748 | 5.409935 | 5.410722 | 0.988953 | 0.971098 | 0.974765 | 0.974972 | 14.92216 | 13.63651 | 13.65698 | 13.65805 | 1.06586 | 0.974029 | 0.975491 | 0.975568 |
| T1_Grassland_200m | | 9.570793 | 5.389089 | 5.402147 | 5.402871 | 0.985647 | 0.969269 | 0.972626 | 0.972815 | 14.89936 | 13.627 | 13.64585 | 13.64684 | 1.064232 | 0.973349 | 0.974696 | 0.974766 |
| T1_Forest_31.9m | | 16.59688 | 5.92279 | 6.022305 | 6.027792 | 1.27754 | 1.130668 | 1.160368 | 1.162044 | 29.22031 | 25.90491 | 26.15107 | 26.16414 | 2.087148 | 1.850336 | 1.867919 | 1.868852 |
| T1_Forest_40m | | 15.27806 | 5.822646 | 5.906588 | 5.911226 | 1.220037 | 1.098879 | 1.123574 | 1.12497 | 28.58909 | 25.64246 | 25.84668 | 25.85757 | 2.042061 | 1.831589 | 1.846176 | 1.846954 |
| T1_Forest_50m | | 14.10206 | 5.733332 | 5.803201 | 5.807065 | 1.169566 | 1.070975 | 1.09122 | 1.092365 | 28.03301 | 25.41031 | 25.57982 | 25.58875 | 2.002342 | 1.815007 | 1.827115 | 1.827753 |
| T1_Forest_60m | | 13.23612 | 5.667561 | 5.726917 | 5.730204 | 1.132967 | 1.050738 | 1.067715 | 1.068676 | 27.62574 | 25.24376 | 25.38488 | 25.39237 | 1.973252 | 1.803111 | 1.813191 | 1.813726 |
| T1_Forest_70m | | 12.57202 | 5.617114 | 5.668309 | 5.671147 | 1.105269 | 1.035423 | 1.049898 | 1.050718 | 27.314 | 25.1156 | 25.2372 | 25.2436 | 1.950984 | 1.793957 | 1.802643 | 1.8031 |
| T1_Forest_80m | | 12.04294 | 5.57692 | 5.621542 | 5.624018 | 1.083462 | 1.023364 | 1.03585 | 1.036558 | 27.0714 | 25.01574 | 25.12183 | 25.12735 | 1.933656 | 1.786824 | 1.794402 | 1.794796 |
| T1_Forest_90m | | 11.61303 | 5.544261 | 5.583488 | 5.585666 | 1.065929 | 1.013668 | 1.024542 | 1.025158 | 26.87375 | 24.93721 | 25.02783 | 25.03263 | 1.919538 | 1.781215 | 1.787688 | 1.788031 |
| T1_Forest_100m | | 11.25797 | 5.517286 | 5.552025 | 5.553953 | 1.05159 | 1.005739 | 1.015284 | 1.015825 | 26.7097 | 24.86956 | 24.94981 | 24.95403 | 1.907821 | 1.776383 | 1.782115 | 1.782417 |
| T1_Forest_110m | | 10.95926 | 5.494589 | 5.525525 | 5.527242 | 1.039628 | 0.999124 | 1.007554 | 1.008032 | 26.5729 | 24.81506 | 24.88662 | 24.89035 | 1.898049 | 1.77249 | 1.777602 | 1.777868 |
| T1_Forest_120m | | 10.70545 | 5.475304 | 5.502991 | 5.504529 | 1.029549 | 0.99355 | 1.001037 | 1.001462 | 26.45948 | 24.76869 | 24.83289 | 24.8362 | 1.889948 | 1.769178 | 1.773764 | 1.774 |
| T1_Forest_130m | | 10.48843 | 5.458815 | 5.483715 | 5.485097 | 1.020996 | 0.98882 | 0.995504 | 0.995883 | 26.36087 | 24.72889 | 24.78683 | 24.78979 | 1.882904 | 1.766335 | 1.770474 | 1.770685 |
| T1_Forest_140m | | 10.30037 | 5.444526 | 5.467002 | 5.46825 | 1.013637 | 0.984749 | 0.990741 | 0.991081 | 26.27736 | 24.69714 | 24.74678 | 24.74943 | 1.87694 | 1.764068 | 1.767613 | 1.767802 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1_Forest_150m | 10.13686 | 5.432103 | 5.452468 | 5.453597 | 1.007281 | 0.981235 | 0.986628 | 0.986933 | 26.20459 | 24.66683 | 24.7118 | 24.71418 | 1.871742 | 1.761902 | 1.765114 | 1.765284 |
| T1_Forest_160m | 9.99375 | 5.421228 | 5.439745 | 5.440772 | 1.001755 | 0.978178 | 0.98305 | 0.983326 | 26.14119 | 24.64299 | 24.68099 | 24.68604 | 1.867213 | 1.760199 | 1.762914 | 1.763275 |
| T1_Forest_170m | 9.868267 | 5.411694 | 5.428589 | 5.429526 | 0.996939 | 0.975515 | 0.979933 | 0.980183 | 26.08622 | 24.61931 | 24.65668 | 24.65863 | 1.863287 | 1.758508 | 1.761177 | 1.761316 |
| T1_Forest_180m | 9.757103 | 5.403246 | 5.418706 | 5.419563 | 0.992697 | 0.973169 | 0.977187 | 0.977415 | 26.03574 | 24.60102 | 24.63236 | 24.63414 | 1.859681 | 1.757201 | 1.75944 | 1.759567 |
| T1_Forest_190m | 9.658431 | 5.395748 | 5.409935 | 5.410722 | 0.988953 | 0.971098 | 0.974765 | 0.974972 | 25.99204 | 24.58197 | 24.61346 | 24.61508 | 1.856559 | 1.755841 | 1.758091 | 1.758206 |
| T1_Forest_200m | 9.570793 | 5.389089 | 5.402147 | 5.402871 | 0.985647 | 0.969269 | 0.972626 | 0.972815 | 25.95465 | 24.5677 | 24.59678 | 24.59826 | 1.853888 | 1.754822 | 1.756899 | 1.757004 |
| T2_5.5m | 13.76572 | 6.822654 | 6.859977 | 6.862165 | 1.387649 | 1.29993 | 1.313261 | 1.314135 | 13.02557 | 11.20583 | 11.27656 | 11.2825 | 0.930391 | 0.80041 | 0.805462 | 0.805887 |
| T2_10m | 12.82095 | 6.760099 | 6.788257 | 6.789912 | 1.341323 | 1.276478 | 1.286362 | 1.28701 | 12.72028 | 11.07829 | 11.13248 | 11.13585 | 0.908584 | 0.7913 | 0.795171 | 0.795412 |
| T2_20m | 11.76719 | 6.690328 | 6.708225 | 6.709279 | 1.290847 | 1.250927 | 1.257036 | 1.257438 | 12.38641 | 10.94122 | 10.97439 | 10.97648 | 0.884736 | 0.781509 | 0.783879 | 0.784028 |
| T2_30m | 11.25019 | 6.656097 | 6.668946 | 6.669704 | 1.266748 | 1.238728 | 1.243029 | 1.243312 | 12.22469 | 10.87498 | 10.89875 | 10.90022 | 0.873185 | 0.776778 | 0.778476 | 0.778581 |
| T2_40m | 10.94342 | 6.635785 | 6.645638 | 6.646221 | 1.252741 | 1.231637 | 1.234886 | 1.2351 | 12.13085 | 10.83671 | 10.85501 | 10.85612 | 0.866482 | 0.774045 | 0.775351 | 0.775431 |
| T2_50m | 10.74053 | 6.622352 | 6.63022 | 6.630687 | 1.24363 | 1.227024 | 1.229588 | 1.229758 | 12.06947 | 10.81273 | 10.82606 | 10.82694 | 0.862098 | 0.772331 | 0.773284 | 0.773347 |
| T2_60m | 10.59688 | 6.61284 | 6.619301 | 6.619685 | 1.237268 | 1.223804 | 1.225889 | 1.226026 | 12.02659 | 10.79458 | 10.80542 | 10.80614 | 0.859035 | 0.771035 | 0.77181 | 0.771861 |
| T2_70m | 10.49002 | 6.605765 | 6.611177 | 6.611499 | 1.232591 | 1.221437 | 1.223168 | 1.223282 | 11.99527 | 10.78227 | 10.79127 | 10.79187 | 0.856798 | 0.770156 | 0.770799 | 0.770842 |
| T2_80m | 10.40795 | 6.600331 | 6.604933 | 6.605208 | 1.229035 | 1.219636 | 1.221098 | 1.221195 | 11.97118 | 10.77291 | 10.78051 | 10.78101 | 0.855078 | 0.769487 | 0.77003 | 0.770066 |
| T2_90m | 10.34321 | 6.596045 | 6.600006 | 6.600243 | 1.226255 | 1.218229 | 1.21948 | 1.219562 | 11.95112 | 10.76419 | 10.77069 | 10.77252 | 0.853645 | 0.768865 | 0.769329 | 0.76946 |
| T2_100m | 10.29118 | 6.592599 | 6.596043 | 6.59625 | 1.224036 | 1.217106 | 1.218187 | 1.218259 | 11.93679 | 10.75835 | 10.76397 | 10.76435 | 0.852621 | 0.768448 | 0.768849 | 0.768876 |
| T2_110m | 10.24858 | 6.589779 | 6.592799 | 6.59298 | 1.222232 | 1.216193 | 1.217136 | 1.217199 | 11.92461 | 10.7536 | 10.75851 | 10.75883 | 0.851751 | 0.768108 | 0.768459 | 0.768482 |
| T2_120m | 10.21332 | 6.587444 | 6.590111 | 6.590271 | 1.220747 | 1.215441 | 1.216271 | 1.216326 | 11.91408 | 10.74969 | 10.75401 | 10.75429 | 0.850999 | 0.767829 | 0.768137 | 0.768158 |
| T2_130m | 10.18376 | 6.585487 | 6.587857 | 6.587999 | 1.219508 | 1.214814 | 1.215548 | 1.215597 | 11.90624 | 10.74643 | 10.75025 | 10.7505 | 0.850439 | 0.767596 | 0.767869 | 0.767887 |
| T2_140m | 10.15874 | 6.58383 | 6.585947 | 6.586075 | 1.218463 | 1.214285 | 1.214939 | 1.214982 | 11.89801 | 10.74368 | 10.74708 | 10.74731 | 0.849851 | 0.7674 | 0.767643 | 0.767659 |
| T2_150m | 10.13739 | 6.582417 | 6.584318 | 6.584433 | 1.217575 | 1.213835 | 1.214421 | 1.21446 | 11.89199 | 10.74134 | 10.74439 | 10.74459 | 0.849421 | 0.767233 | 0.76745 | 0.767465 |
| T2_160m | 10.11906 | 6.581203 | 6.582919 | 6.583022 | 1.216815 | 1.213451 | 1.213977 | 1.214012 | 11.88664 | 10.73934 | 10.74208 | 10.74226 | 0.849039 | 0.76709 | 0.767285 | 0.767298 |
| T2_170m | 10.1032 | 6.580153 | 6.581708 | 6.581802 | 1.21616 | 1.213119 | 1.213595 | 1.213626 | 11.88323 | 10.73762 | 10.74009 | 10.74026 | 0.848795 | 0.766967 | 0.767143 | 0.767155 |
| T2_180m | 10.08939 | 6.579239 | 6.580653 | 6.580739 | 1.21559 | 1.21283 | 1.213262 | 1.213291 | 11.87887 | 10.73472 | 10.73836 | 10.73851 | 0.848484 | 0.766759 | 0.76702 | 0.76703 |
| T2_190m | 10.07731 | 6.578439 | 6.57973 | 6.579808 | 1.215092 | 1.212579 | 1.212972 | 1.212998 | 11.87488 | 10.73341 | 10.73545 | 10.73559 | 0.848199 | 0.766666 | 0.766812 | 0.766822 |
| T2_200m | 10.06669 | 6.577735 | 6.578919 | 6.57899 | 1.214656 | 1.212358 | 1.212717 | 1.212741 | 11.87261 | 10.73226 | 10.73413 | 10.73425 | 0.848037 | 0.766584 | 0.766717 | 0.766726 |
| T3_Grassland_3.25m | 15.81991 | 5.343285 | 5.40104 | 5.41842 | 1.347284 | 1.157275 | 1.177148 | 1.185558 | 17.29788 | 14.64803 | 14.75557 | 14.7993 | 1.235553 | 1.046279 | 1.053961 | 1.057085 |
| T3_Grassland_10m | 12.18281 | 5.122163 | 5.15535 | 5.165388 | 1.181687 | 1.077587 | 1.088581 | 1.093244 | 16.19177 | 14.21825 | 14.27682 | 14.30247 | 1.156546 | 1.015581 | 1.019765 | 1.021597 |
| T3_Grassland_20m | 10.28254 | 5.006633 | 5.026853 | 5.03299 | 1.098041 | 1.037335 | 1.043793 | 1.046535 | 15.62661 | 14.00054 | 14.03553 | 14.04978 | 1.116178 | 1.000031 | 1.002529 | 1.003548 |
| T3_Grassland_30m | 9.442853 | 4.955584 | 4.970036 | 4.974431 | 1.062197 | 1.020087 | 1.024588 | 1.026499 | 15.38142 | 13.90665 | 13.93146 | 13.9414 | 1.098664 | 0.993324 | 0.995096 | 0.995806 |
| T3_Forest_3.25m | 15.81991 | 5.343285 | 5.40104 | 5.41842 | 1.347284 | 1.157275 | 1.177148 | 1.185558 | 29.92872 | 26.20435 | 26.36805 | 26.43365 | 2.137748 | 1.871724 | 1.883417 | 1.888103 |
| T3_Forest_10m | 12.18281 | 5.122163 | 5.15535 | 5.165388 | 1.181687 | 1.077587 | 1.088581 | 1.093244 | 28.12956 | 25.55088 | 25.63953 | 25.6788 | 2.009238 | 1.825048 | 1.83138 | 1.834186 |
| T3_Forest_20m | 10.28254 | 5.006633 | 5.026853 | 5.03299 | 1.098041 | 1.037335 | 1.043793 | 1.046535 | 27.20742 | 25.21952 | 25.27279 | 25.29418 | 1.943372 | 1.80138 | 1.805185 | 1.806712 |
| T3_Forest_30m | 9.442853 | 4.955584 | 4.970036 | 4.974431 | 1.062197 | 1.020087 | 1.024588 | 1.026499 | 26.80604 | 25.07628 | 25.11428 | 25.12919 | 1.914702 | 1.791148 | 1.793863 | 1.794928 |
| T4_Grassland_10.15m | 24.56805 | 6.37674 | 6.571973 | 6.605626 | 1.650709 | 1.327882 | 1.390817 | 1.401944 | 19.24649 | 15.43979 | 15.78105 | 15.84171 | 1.374738 | 1.102833 | 1.127209 | 1.131542 |
| T4_Grassland_20m | 19.0844 | 5.955352 | 6.087707 | 6.110594 | 1.392295 | 1.183983 | 1.225251 | 1.232566 | 17.55133 | 14.66211 | 14.88651 | 14.92594 | 1.253657 | 1.047285 | 1.063313 | 1.06613 |
| T4_Grassland_30m | 16.29711 | 5.741097 | 5.84114 | 5.858484 | 1.264834 | 1.112993 | 1.143436 | 1.148844 | 16.70514 | 14.27896 | 14.44427 | 14.47239 | 1.193215 | 1.019918 | 1.031725 | 1.033734 |
| T4_Grassland_40m | 14.59552 | 5.610272 | 5.690349 | 5.70426 | 1.188766 | 1.070621 | 1.094524 | 1.098779 | 16.19478 | 14.04883 | 14.17872 | 14.20225 | 1.156761 | 1.00348 | 1.012758 | 1.014438 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T4_Grassland_50m | 13.44192 | 5.521568 | 5.587948 | 5.599501 | 1.138142 | 1.042419 | 1.061922 | 1.065398 | 15.85454 | 13.89658 | 14.00219 | 14.02027 | 1.132458 | 0.992605 | 1.000149 | 1.00144 |
| T4_Grassland_60m | 12.60237 | 5.457007 | 5.513305 | 5.523113 | 1.10188 | 1.022218 | 1.038535 | 1.041446 | 15.60858 | 13.78593 | 13.87498 | 13.89152 | 1.114889 | 0.984702 | 0.991062 | 0.992243 |
| T4_Grassland_70m | 11.9618 | 5.407743 | 5.456262 | 5.464722 | 1.074598 | 1.007018 | 1.020914 | 1.023395 | 15.42331 | 13.70409 | 13.77915 | 13.79345 | 1.101656 | 0.978856 | 0.984217 | 0.985239 |
| T4_Grassland_80m | 11.45598 | 5.368844 | 5.411156 | 5.418539 | 1.053324 | 0.995166 | 1.007157 | 1.0093 | 15.27768 | 13.63966 | 13.70482 | 13.71596 | 1.091254 | 0.974254 | 0.978908 | 0.979703 |
| T4_Grassland_90m | 11.04617 | 5.337321 | 5.374566 | 5.381068 | 1.036281 | 0.98567 | 0.996124 | 0.997993 | 15.16106 | 13.58748 | 13.64465 | 13.65576 | 1.082924 | 0.970527 | 0.97461 | 0.975404 |
| T4_Grassland_100m | 10.70785 | 5.3113 | 5.344328 | 5.350095 | 1.022356 | 0.977911 | 0.987102 | 0.988745 | 15.06485 | 13.54574 | 13.59633 | 13.60487 | 1.076052 | 0.967545 | 0.971159 | 0.971769 |
| T4_Grassland_110m | 10.42385 | 5.289456 | 5.318926 | 5.32407 | 1.010776 | 0.971459 | 0.979594 | 0.981048 | 14.98503 | 13.51079 | 13.55449 | 13.56345 | 1.070351 | 0.965049 | 0.96817 | 0.96881 |
| T4_Grassland_120m | 10.18274 | 5.27091 | 5.297342 | 5.301957 | 1.001028 | 0.966028 | 0.97327 | 0.974565 | 14.91754 | 13.48114 | 13.52021 | 13.52834 | 1.06553 | 0.962931 | 0.965721 | 0.966302 |
| T4_Grassland_130m | 9.975764 | 5.25499 | 5.278806 | 5.282964 | 0.992726 | 0.961402 | 0.967882 | 0.969041 | 14.86037 | 13.45569 | 13.49079 | 13.49821 | 1.061447 | 0.961113 | 0.96362 | 0.96415 |
| T4_Grassland_140m | 9.796491 | 5.241201 | 5.262745 | 5.266506 | 0.985587 | 0.957424 | 0.963248 | 0.96429 | 14.81065 | 13.43501 | 13.46669 | 13.47211 | 1.057895 | 0.959636 | 0.961899 | 0.962286 |
| T4_Grassland_150m | 9.640507 | 5.229202 | 5.248764 | 5.252179 | 0.979416 | 0.953986 | 0.959242 | 0.960181 | 14.76736 | 13.41573 | 13.44446 | 13.44934 | 1.054803 | 0.958258 | 0.960311 | 0.96066 |
| T4_Grassland_160m | 9.50369 | 5.218677 | 5.236501 | 5.23961 | 0.974038 | 0.950989 | 0.955749 | 0.956599 | 14.7296 | 13.39874 | 13.42489 | 13.42932 | 1.052106 | 0.957045 | 0.958913 | 0.959229 |
| T4_Grassland_170m | 9.383204 | 5.209409 | 5.2257 | 5.228541 | 0.969328 | 0.948365 | 0.95269 | 0.953463 | 14.69811 | 13.3851 | 13.40899 | 13.41301 | 1.049856 | 0.956071 | 0.957777 | 0.958064 |
| T4_Grassland_180m | 9.276564 | 5.201206 | 5.21614 | 5.218744 | 0.965183 | 0.946055 | 0.949998 | 0.950703 | 14.66815 | 13.37309 | 13.39359 | 13.39726 | 1.047717 | 0.955213 | 0.956677 | 0.956939 |
| T4_Grassland_190m | 9.181667 | 5.193906 | 5.207632 | 5.210024 | 0.961513 | 0.94401 | 0.947615 | 0.948259 | 14.64207 | 13.36105 | 13.3812 | 13.38455 | 1.045854 | 0.954353 | 0.955792 | 0.956031 |
| T4_Grassland_200m | 9.097122 | 5.187402 | 5.200053 | 5.202258 | 0.958259 | 0.942197 | 0.945502 | 0.946093 | 14.61955 | 13.35162 | 13.37021 | 13.37328 | 1.044245 | 0.95368 | 0.955007 | 0.955227 |
| T4_Forest_10.15m | 24.56805 | 6.37674 | 6.571973 | 6.605626 | 1.650709 | 1.327882 | 1.390817 | 1.401944 | 32.92063 | 27.19458 | 27.71447 | 27.80706 | 2.351455 | 1.942454 | 1.979589 | 1.986203 |
| T4_Forest_20m | 19.0844 | 5.955352 | 6.087707 | 6.110594 | 1.392295 | 1.183983 | 1.225251 | 1.232566 | 30.1771 | 26.01127 | 26.35346 | 26.41341 | 2.15549 | 1.857933 | 1.882375 | 1.886657 |
| T4_Forest_30m | 16.29711 | 5.741097 | 5.84114 | 5.858484 | 1.264834 | 1.112993 | 1.143436 | 1.148844 | 28.80301 | 25.42855 | 25.6805 | 25.72268 | 2.057341 | 1.81631 | 1.834307 | 1.83732 |
| T4_Forest_40m | 14.59552 | 5.610272 | 5.690349 | 5.70426 | 1.188766 | 1.070621 | 1.094524 | 1.098779 | 27.97187 | 25.07774 | 25.27579 | 25.31188 | 1.997975 | 1.791253 | 1.805399 | 1.807977 |
| T4_Forest_50m | 13.44192 | 5.521568 | 5.587948 | 5.599501 | 1.138142 | 1.042419 | 1.061922 | 1.065398 | 27.41751 | 24.84617 | 25.00699 | 25.0341 | 1.958378 | 1.774712 | 1.786199 | 1.788136 |
| T4_Forest_60m | 12.60237 | 5.457007 | 5.513305 | 5.523113 | 1.10188 | 1.022218 | 1.038535 | 1.041446 | 27.01576 | 24.677 | 24.81297 | 24.83858 | 1.929682 | 1.762629 | 1.772341 | 1.77417 |
| T4_Forest_70m | 11.9618 | 5.407743 | 5.456262 | 5.464722 | 1.074598 | 1.007018 | 1.020914 | 1.023395 | 26.71306 | 24.55264 | 24.66683 | 24.68908 | 1.908061 | 1.753746 | 1.761902 | 1.763492 |
| T4_Forest_80m | 11.45598 | 5.368844 | 5.411156 | 5.418539 | 1.053324 | 0.995166 | 1.007157 | 1.0093 | 26.47463 | 24.45439 | 24.55373 | 24.57044 | 1.89103 | 1.746728 | 1.753823 | 1.755017 |
| T4_Forest_90m | 11.04617 | 5.337321 | 5.374566 | 5.381068 | 1.036281 | 0.98567 | 0.996124 | 0.997993 | 26.28369 | 24.37452 | 24.46187 | 24.47934 | 1.877392 | 1.741023 | 1.747262 | 1.74851 |
| T4_Forest_100m | 10.70785 | 5.3113 | 5.344328 | 5.350095 | 1.022356 | 0.977911 | 0.987102 | 0.988745 | 26.12578 | 24.31111 | 24.38859 | 24.40141 | 1.866112 | 1.736494 | 1.742029 | 1.742944 |
| T4_Forest_110m | 10.42385 | 5.289456 | 5.318926 | 5.32407 | 1.010776 | 0.971459 | 0.979594 | 0.981048 | 25.99485 | 24.25788 | 24.32423 | 24.33848 | 1.85676 | 1.732692 | 1.737431 | 1.738449 |
| T4_Forest_120m | 10.18274 | 5.27091 | 5.297342 | 5.301957 | 1.001028 | 0.966028 | 0.97327 | 0.974565 | 25.88402 | 24.21262 | 24.27201 | 24.28501 | 1.848844 | 1.729459 | 1.733701 | 1.73463 |
| T4_Forest_130m | 9.975764 | 5.25499 | 5.278806 | 5.282964 | 0.992726 | 0.961402 | 0.967882 | 0.969041 | 25.79026 | 24.17363 | 24.22708 | 24.23902 | 1.842147 | 1.726674 | 1.730492 | 1.731345 |
| T4_Forest_140m | 9.796491 | 5.241201 | 5.262745 | 5.266506 | 0.985587 | 0.957424 | 0.963248 | 0.96429 | 25.70848 | 24.14261 | 24.19094 | 24.19906 | 1.836305 | 1.724458 | 1.72791 | 1.72849 |
| T4_Forest_150m | 9.640507 | 5.229202 | 5.248764 | 5.252179 | 0.979416 | 0.953986 | 0.959242 | 0.960181 | 25.63715 | 24.11289 | 24.15678 | 24.16411 | 1.83121 | 1.722335 | 1.725471 | 1.725994 |
| T4_Forest_160m | 9.50369 | 5.218677 | 5.236501 | 5.23961 | 0.974038 | 0.950989 | 0.955749 | 0.956599 | 25.57489 | 24.08661 | 24.12664 | 24.13327 | 1.826763 | 1.720458 | 1.723318 | 1.723792 |
| T4_Forest_170m | 9.383204 | 5.209409 | 5.2257 | 5.228541 | 0.969328 | 0.948365 | 0.95269 | 0.953463 | 25.52366 | 24.06614 | 24.10279 | 24.10881 | 1.823104 | 1.718997 | 1.721614 | 1.722044 |
| T4_Forest_180m | 9.276564 | 5.201206 | 5.21614 | 5.218744 | 0.965183 | 0.946055 | 0.949998 | 0.950703 | 25.47393 | 24.04813 | 24.07889 | 24.08438 | 1.819552 | 1.71771 | 1.719907 | 1.720299 |
| T4_Forest_190m | 9.181667 | 5.193906 | 5.207632 | 5.210024 | 0.961513 | 0.94401 | 0.947615 | 0.948259 | 25.4308 | 24.02928 | 24.0603 | 24.06532 | 1.816471 | 1.716363 | 1.718579 | 1.718938 |
| T4_Forest_200m | 9.097122 | 5.187402 | 5.200053 | 5.202258 | 0.958259 | 0.942197 | 0.945502 | 0.946093 | 25.39382 | 24.01514 | 24.04382 | 24.04842 | 1.81383 | 1.715353 | 1.717402 | 1.717731 |
| T5_Grassland_6.25m | 18.27616 | 5.681766 | 5.785966 | 5.809414 | 1.427222 | 1.187602 | 1.226186 | 1.23568 | 17.23615 | 14.21913 | 14.42677 | 14.47754 | 1.231144 | 1.015644 | 1.030475 | 1.034101 |
| T5_Grassland_10m | 15.7792 | 5.518732 | 5.598253 | 5.616196 | 1.302273 | 1.124107 | 1.153027 | 1.160155 | 16.42122 | 13.87636 | 14.03234 | 14.07081 | 1.172935 | 0.99116 | 1.002302 | 1.00505 |
| T5_Grassland_20m | 12.66565 | 5.315438 | 5.363862 | 5.374841 | 1.150171 | 1.046814 | 1.063827 | 1.068037 | 15.42029 | 13.46043 | 13.5531 | 13.57499 | 1.10144 | 0.961452 | 0.968071 | 0.969635 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5_Grassland_30m | 11.2804 | 5.22499 | 5.259417 | 5.267247 | 1.084525 | 1.013455 | 1.025264 | 1.028193 | 14.98373 | 13.28137 | 13.34417 | 13.3608 | 1.070258 | 0.948662 | 0.953148 | 0.954335 |
| T5_Grassland_40m | 10.49741 | 5.173866 | 5.200312 | 5.206341 | 1.048233 | 0.995013 | 1.003919 | 1.006132 | 14.74181 | 13.18127 | 13.23038 | 13.24189 | 1.052978 | 0.941512 | 0.94502 | 0.945841 |
| T5_Grassland_50m | 9.992658 | 5.14091 | 5.162162 | 5.167016 | 1.025249 | 0.983333 | 0.990385 | 0.99214 | 14.58729 | 13.11913 | 13.1572 | 13.16633 | 1.041941 | 0.937073 | 0.939793 | 0.940444 |
| T5_Grassland_60m | 9.639551 | 5.117855 | 5.135442 | 5.139464 | 1.009406 | 0.975282 | 0.981046 | 0.982482 | 14.47971 | 13.07447 | 13.10584 | 13.1133 | 1.034257 | 0.933883 | 0.936124 | 0.936657 |
| T5_Grassland_70m | 9.378914 | 5.100838 | 5.1157 | 5.1191 | 0.997859 | 0.969414 | 0.974233 | 0.975434 | 14.40147 | 13.04395 | 13.06901 | 13.07526 | 1.028668 | 0.931704 | 0.933493 | 0.933939 |
| T5_Grassland_80m | 9.178576 | 5.087758 | 5.10051 | 5.103428 | 0.989081 | 0.964954 | 0.96905 | 0.970071 | 14.34182 | 13.01936 | 13.04206 | 13.04737 | 1.024407 | 0.929947 | 0.931568 | 0.931947 |
| T5_Grassland_90m | 9.020454 | 5.077434 | 5.08851 | 5.091045 | 0.982219 | 0.961467 | 0.964995 | 0.965875 | 14.29494 | 12.99983 | 13.01958 | 13.02415 | 1.021059 | 0.928552 | 0.929962 | 0.930289 |
| T5_Grassland_100m | 8.892615 | 5.069088 | 5.078802 | 5.081024 | 0.976718 | 0.958672 | 0.961742 | 0.962508 | 14.25793 | 12.98529 | 13.00126 | 13.00664 | 1.018416 | 0.927513 | 0.928654 | 0.929038 |
| T5_Grassland_110m | 8.78717 | 5.062204 | 5.070791 | 5.072753 | 0.972215 | 0.956384 | 0.959079 | 0.959751 | 14.22752 | 12.97339 | 12.98741 | 12.9909 | 1.016243 | 0.926664 | 0.927665 | 0.927914 |
| T5_Grassland_120m | 8.699448 | 5.056477 | 5.064121 | 5.065867 | 0.968495 | 0.954493 | 0.956877 | 0.957471 | 14.20117 | 12.96216 | 12.97596 | 12.97905 | 1.014361 | 0.925861 | 0.926847 | 0.927068 |
| T5_Grassland_130m | 8.625331 | 5.051638 | 5.058484 | 5.060046 | 0.96537 | 0.952905 | 0.955027 | 0.955556 | 14.18073 | 12.95391 | 12.96494 | 12.96909 | 1.012901 | 0.925272 | 0.92606 | 0.926356 |
| T5_Grassland_140m | 8.562338 | 5.047526 | 5.053691 | 5.055096 | 0.962729 | 0.951563 | 0.953463 | 0.953936 | 14.16279 | 12.94693 | 12.95681 | 12.95927 | 1.01162 | 0.924773 | 0.925479 | 0.925655 |
| T5_Grassland_150m | 8.508271 | 5.043996 | 5.049577 | 5.050847 | 0.960473 | 0.950417 | 0.952127 | 0.952552 | 14.14686 | 12.94097 | 12.94986 | 12.95207 | 1.010482 | 0.924347 | 0.924983 | 0.925141 |
| T5_Grassland_160m | 8.461573 | 5.040948 | 5.046022 | 5.047175 | 0.958533 | 0.949431 | 0.950978 | 0.951362 | 14.13397 | 12.93584 | 12.94388 | 12.94588 | 1.009561 | 0.923981 | 0.924556 | 0.924698 |
| T5_Grassland_170m | 8.420854 | 5.03829 | 5.042923 | 5.043974 | 0.956848 | 0.948575 | 0.94998 | 0.950328 | 14.12241 | 12.92999 | 12.93869 | 12.94051 | 1.008736 | 0.923563 | 0.924185 | 0.924315 |
| T5_Grassland_180m | 8.385097 | 5.035957 | 5.040202 | 5.041164 | 0.955374 | 0.947826 | 0.949106 | 0.949424 | 14.11194 | 12.92609 | 12.93415 | 12.9358 | 1.007988 | 0.923285 | 0.923861 | 0.923979 |
| T5_Grassland_190m | 8.353582 | 5.0339 | 5.037804 | 5.038687 | 0.954079 | 0.947168 | 0.948339 | 0.94863 | 14.10241 | 12.92267 | 12.92877 | 12.93027 | 1.007307 | 0.923041 | 0.923476 | 0.923584 |
| T5_Grassland_200m | 8.325652 | 5.032077 | 5.035679 | 5.036492 | 0.952936 | 0.946587 | 0.947663 | 0.947929 | 14.09507 | 12.91965 | 12.92525 | 12.92663 | 1.006783 | 0.922825 | 0.923225 | 0.923323 |
| T5_Forest_6.25m | 18.27616 | 5.681766 | 5.785966 | 5.809414 | 1.427222 | 1.187602 | 1.226186 | 1.23568 | 29.91043 | 25.5729 | 25.88835 | 25.9653 | 2.136442 | 1.826621 | 1.849153 | 1.85465 |
| T5_Forest_10m | 15.7792 | 5.518732 | 5.598253 | 5.616196 | 1.302273 | 1.124107 | 1.153027 | 1.160155 | 28.59363 | 25.05153 | 25.28871 | 25.34721 | 2.042386 | 1.789381 | 1.806322 | 1.8105 |
| T5_Forest_20m | 12.66565 | 5.315438 | 5.363862 | 5.374841 | 1.150171 | 1.046814 | 1.063827 | 1.068037 | 26.97223 | 24.41965 | 24.56105 | 24.59389 | 1.926573 | 1.744247 | 1.754347 | 1.756692 |
| T5_Forest_30m | 11.2804 | 5.22499 | 5.259417 | 5.267247 | 1.084525 | 1.013455 | 1.025264 | 1.028193 | 26.263 | 24.14785 | 24.24286 | 24.2686 | 1.875913 | 1.724833 | 1.731619 | 1.733458 |
| T5_Forest_40m | 10.49741 | 5.173866 | 5.200312 | 5.206341 | 1.048233 | 0.995013 | 1.003919 | 1.006132 | 25.86972 | 23.9953 | 24.07057 | 24.08783 | 1.847822 | 1.713936 | 1.719313 | 1.720546 |
| T5_Forest_50m | 9.992658 | 5.14091 | 5.162162 | 5.167016 | 1.025249 | 0.983333 | 0.990385 | 0.99214 | 25.61794 | 23.9013 | 23.9592 | 23.97289 | 1.829838 | 1.707222 | 1.711358 | 1.712336 |
| T5_Forest_60m | 9.639551 | 5.117855 | 5.135442 | 5.139464 | 1.009406 | 0.975282 | 0.981046 | 0.982482 | 25.44216 | 23.8327 | 23.88056 | 23.89176 | 1.817283 | 1.702322 | 1.705741 | 1.70654 |
| T5_Forest_70m | 9.378914 | 5.100838 | 5.1157 | 5.1191 | 0.997859 | 0.969414 | 0.974233 | 0.975434 | 25.3144 | 23.78693 | 23.82452 | 23.83389 | 1.808157 | 1.699053 | 1.701738 | 1.702407 |
| T5_Forest_80m | 9.178576 | 5.087758 | 5.10051 | 5.103428 | 0.989081 | 0.964954 | 0.96905 | 0.970071 | 25.21693 | 23.74924 | 23.78409 | 23.79205 | 1.801195 | 1.696361 | 1.69885 | 1.699419 |
| T5_Forest_90m | 9.020454 | 5.077434 | 5.08851 | 5.091045 | 0.982219 | 0.961467 | 0.964995 | 0.965875 | 25.14021 | 23.71914 | 23.74956 | 23.75642 | 1.795715 | 1.694211 | 1.696384 | 1.696874 |
| T5_Forest_100m | 8.892615 | 5.069088 | 5.078802 | 5.081024 | 0.976718 | 0.958672 | 0.961742 | 0.962508 | 25.0799 | 23.69734 | 23.72129 | 23.73016 | 1.791407 | 1.692653 | 1.694364 | 1.694998 |
| T5_Forest_110m | 8.78717 | 5.062204 | 5.070791 | 5.072753 | 0.972215 | 0.956384 | 0.959079 | 0.959751 | 25.03028 | 23.67949 | 23.70052 | 23.70575 | 1.787863 | 1.691379 | 1.69288 | 1.693255 |
| T5_Forest_120m | 8.699448 | 5.056477 | 5.064121 | 5.065867 | 0.968495 | 0.954493 | 0.956877 | 0.957471 | 24.98676 | 23.66185 | 23.68334 | 23.68797 | 1.784754 | 1.690118 | 1.691654 | 1.691985 |
| T5_Forest_130m | 8.625331 | 5.051638 | 5.058484 | 5.060046 | 0.96537 | 0.952905 | 0.955027 | 0.955556 | 24.95369 | 23.64946 | 23.66601 | 23.67303 | 1.782392 | 1.689234 | 1.690416 | 1.690917 |
| T5_Forest_140m | 8.562338 | 5.047526 | 5.053691 | 5.055096 | 0.962729 | 0.951563 | 0.953463 | 0.953936 | 24.92439 | 23.63899 | 23.65381 | 23.6575 | 1.780299 | 1.688486 | 1.689545 | 1.689808 |
| T5_Forest_150m | 8.508271 | 5.043996 | 5.049577 | 5.050847 | 0.960473 | 0.950417 | 0.952127 | 0.952552 | 24.89809 | 23.63005 | 23.64339 | 23.64671 | 1.778421 | 1.687847 | 1.6888 | 1.689037 |
| T5_Forest_160m | 8.461573 | 5.040948 | 5.046022 | 5.047175 | 0.958533 | 0.949431 | 0.950978 | 0.951362 | 24.87716 | 23.62236 | 23.63443 | 23.63742 | 1.776926 | 1.687298 | 1.68816 | 1.688374 |
| T5_Forest_170m | 8.420854 | 5.03829 | 5.042923 | 5.043974 | 0.956848 | 0.948575 | 0.94998 | 0.950328 | 24.85822 | 23.61278 | 23.62664 | 23.62936 | 1.775573 | 1.686614 | 1.687604 | 1.687798 |
| T5_Forest_180m | 8.385097 | 5.035957 | 5.040202 | 5.041164 | 0.955374 | 0.947826 | 0.949106 | 0.949424 | 24.84091 | 23.60694 | 23.61983 | 23.62231 | 1.774337 | 1.686197 | 1.687117 | 1.687294 |
| T5_Forest_190m | 8.353582 | 5.0339 | 5.037804 | 5.038687 | 0.954079 | 0.947168 | 0.948339 | 0.94863 | 24.82501 | 23.60181 | 23.61095 | 23.61321 | 1.773201 | 1.68583 | 1.686483 | 1.686645 |
| T5_Forest_200m | 8.325652 | 5.032077 | 5.035679 | 5.036492 | 0.952936 | 0.946587 | 0.947663 | 0.947929 | 24.8132 | 23.59728 | 23.60567 | 23.60775 | 1.772357 | 1.685507 | 1.686106 | 1.686254 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T6_2.75m | 34.03703 | 7.202214 | 7.500049 | 7.549511 | 2.05661 | 1.532771 | 1.631891 | 1.648775 | 22.40297 | 17.03161 | 17.56803 | 17.65863 | 1.600199 | 1.216534 | 1.254849 | 1.261321 |
| T6_10m | 24.28137 | 6.458203 | 6.64728 | 6.678781 | 1.582438 | 1.269954 | 1.330413 | 1.340739 | 19.34228 | 15.61316 | 15.94155 | 15.99664 | 1.38158 | 1.115217 | 1.138673 | 1.142608 |
| T6_20m | 18.98179 | 6.053529 | 6.182471 | 6.204012 | 1.33459 | 1.132479 | 1.172294 | 1.179112 | 17.71327 | 14.87029 | 15.08713 | 15.12398 | 1.265223 | 1.062155 | 1.077643 | 1.080276 |
| T6_30m | 16.30945 | 5.849273 | 5.947502 | 5.963953 | 1.213564 | 1.06531 | 1.0949 | 1.099977 | 16.90753 | 14.50701 | 14.66788 | 14.69568 | 1.207671 | 1.036207 | 1.047697 | 1.049683 |
| T6_40m | 14.66438 | 5.723457 | 5.802557 | 5.81583 | 1.140806 | 1.024913 | 1.048282 | 1.052298 | 16.41859 | 14.28855 | 14.41567 | 14.43655 | 1.172747 | 1.020602 | 1.029682 | 1.031174 |
| T6_50m | 13.53527 | 5.637065 | 5.702874 | 5.713935 | 1.091819 | 0.997707 | 1.016838 | 1.020131 | 16.08826 | 14.14008 | 14.24516 | 14.26228 | 1.149152 | 1.009997 | 1.017503 | 1.018726 |
| T6_60m | 12.7066 | 5.573642 | 5.629578 | 5.638991 | 1.056454 | 0.978062 | 0.9941 | 0.996863 | 15.84696 | 14.03372 | 14.12132 | 14.13569 | 1.131917 | 1.002401 | 1.008658 | 1.009684 |
| T6_70m | 12.06934 | 5.524856 | 5.573115 | 5.581244 | 1.029653 | 0.963173 | 0.976841 | 0.979198 | 15.6642 | 13.9535 | 14.02737 | 14.04103 | 1.118862 | 0.99667 | 1.001947 | 1.002923 |
| T6_80m | 11.56453 | 5.486203 | 5.528312 | 5.53541 | 1.008695 | 0.951528 | 0.963327 | 0.965363 | 15.52161 | 13.89015 | 13.9543 | 13.96489 | 1.108678 | 0.992145 | 0.996728 | 0.997484 |
| T6_90m | 11.15399 | 5.454765 | 5.491822 | 5.498076 | 0.991852 | 0.942169 | 0.952452 | 0.954227 | 15.40603 | 13.83868 | 13.89495 | 13.90418 | 1.100422 | 0.988469 | 0.992489 | 0.993148 |
| T6_100m | 10.81369 | 5.428701 | 5.46154 | 5.467082 | 0.97804 | 0.934494 | 0.943525 | 0.945085 | 15.31041 | 13.79737 | 13.84713 | 13.85524 | 1.093592 | 0.985518 | 0.989073 | 0.989652 |
| T6_110m | 10.52749 | 5.40678 | 5.436044 | 5.440985 | 0.966539 | 0.928102 | 0.936085 | 0.937464 | 15.231 | 13.76273 | 13.80564 | 13.81421 | 1.08792 | 0.983044 | 0.986109 | 0.986722 |
| T6_120m | 10.28364 | 5.388101 | 5.414302 | 5.418724 | 0.956827 | 0.922704 | 0.929798 | 0.931023 | 15.1637 | 13.73326 | 13.77155 | 13.77792 | 1.083113 | 0.98094 | 0.983674 | 0.984129 |
| T6_130m | 10.07476 | 5.372101 | 5.395662 | 5.399639 | 0.948576 | 0.918119 | 0.924453 | 0.925547 | 15.1054 | 13.70802 | 13.74235 | 13.74804 | 1.078948 | 0.979136 | 0.981589 | 0.981995 |
| T6_140m | 9.894041 | 5.358257 | 5.379524 | 5.383115 | 0.941492 | 0.914182 | 0.919861 | 0.920842 | 15.05596 | 13.68614 | 13.71708 | 13.72358 | 1.075417 | 0.977574 | 0.979783 | 0.980248 |
| T6_150m | 9.736531 | 5.346189 | 5.365454 | 5.368706 | 0.935362 | 0.910774 | 0.915886 | 0.916769 | 15.01428 | 13.66843 | 13.69641 | 13.701 | 1.07244 | 0.976308 | 0.978307 | 0.978635 |
| T6_160m | 9.598261 | 5.335596 | 5.353098 | 5.356052 | 0.930016 | 0.907803 | 0.912419 | 0.913216 | 14.97668 | 13.65157 | 13.67698 | 13.68113 | 1.069754 | 0.975105 | 0.976919 | 0.977215 |
| T6_170m | 9.477066 | 5.326311 | 5.342262 | 5.344954 | 0.925357 | 0.905213 | 0.909397 | 0.910119 | 14.94406 | 13.63811 | 13.66126 | 13.66502 | 1.067424 | 0.974143 | 0.975797 | 0.976065 |
| T6_180m | 9.36993 | 5.318103 | 5.332683 | 5.335142 | 0.921262 | 0.902937 | 0.90674 | 0.907396 | 14.91436 | 13.62487 | 13.64605 | 13.64946 | 1.065303 | 0.973197 | 0.97471 | 0.974954 |
| T6_190m | 9.274766 | 5.310811 | 5.324173 | 5.326426 | 0.917646 | 0.900927 | 0.904394 | 0.904992 | 14.88996 | 13.61442 | 13.63385 | 13.63696 | 1.06356 | 0.972451 | 0.973838 | 0.974061 |
| T6_200m | 9.190182 | 5.30433 | 5.316608 | 5.318677 | 0.914446 | 0.899148 | 0.902317 | 0.902864 | 14.86632 | 13.60517 | 13.62165 | 13.62449 | 1.061872 | 0.97179 | 0.972967 | 0.97317 |
| T7_Grassland_147.25m | 8.207442 | 5.375069 | 5.375823 | 5.375877 | 0.975525 | 0.974367 | 0.97457 | 0.974585 | 14.39933 | 13.26911 | 13.27016 | 13.27024 | 1.028515 | 0.947786 | 0.947861 | 0.947867 |
| T7_Grassland_150m | 8.205935 | 5.374955 | 5.375693 | 5.375745 | 0.975463 | 0.974333 | 0.974531 | 0.974546 | 14.39901 | 13.26893 | 13.26996 | 13.27004 | 1.028492 | 0.947773 | 0.947847 | 0.947852 |
| T7_Grassland_160m | 8.20088 | 5.374574 | 5.375255 | 5.375304 | 0.975256 | 0.974221 | 0.974402 | 0.974415 | 14.39793 | 13.26835 | 13.26929 | 13.26936 | 1.028415 | 0.947732 | 0.947799 | 0.947804 |
| T7_Grassland_170m | 8.196482 | 5.374243 | 5.374874 | 5.37492 | 0.975076 | 0.974123 | 0.97429 | 0.974302 | 14.39699 | 13.26784 | 13.26871 | 13.26877 | 1.028348 | 0.947695 | 0.947757 | 0.947762 |
| T7_Grassland_180m | 8.192569 | 5.373948 | 5.374536 | 5.374578 | 0.974916 | 0.974037 | 0.974191 | 0.974202 | 14.39616 | 13.26739 | 13.26819 | 13.26825 | 1.028289 | 0.947663 | 0.947721 | 0.947725 |
| T7_Grassland_190m | 8.189102 | 5.373687 | 5.374235 | 5.374275 | 0.974775 | 0.973961 | 0.974104 | 0.974114 | 14.39403 | 13.267 | 13.26774 | 13.26779 | 1.028137 | 0.947635 | 0.947688 | 0.947692 |
| T7_Grassland_200m | 8.186009 | 5.373454 | 5.373967 | 5.374004 | 0.97465 | 0.973893 | 0.974026 | 0.974035 | 14.39338 | 13.26664 | 13.26733 | 13.26738 | 1.02809 | 0.94761 | 0.947659 | 0.947663 |
| T7_Forest_147.25m | 8.207442 | 5.375069 | 5.375823 | 5.375877 | 0.975525 | 0.974367 | 0.97457 | 0.974585 | 25.2714 | 24.13366 | 24.13525 | 24.13536 | 1.805085 | 1.723819 | 1.723932 | 1.723941 |
| T7_Forest_150m | 8.205935 | 5.374955 | 5.375693 | 5.375745 | 0.975463 | 0.974333 | 0.974531 | 0.974546 | 25.27091 | 24.1334 | 24.13494 | 24.13506 | 1.805051 | 1.7238 | 1.723911 | 1.723919 |
| T7_Forest_160m | 8.20088 | 5.374574 | 5.375255 | 5.375304 | 0.975256 | 0.974221 | 0.974402 | 0.974415 | 25.26929 | 24.13252 | 24.13394 | 24.13404 | 1.804935 | 1.723738 | 1.723839 | 1.723846 |
| T7_Forest_170m | 8.196482 | 5.374243 | 5.374874 | 5.37492 | 0.975076 | 0.974123 | 0.97429 | 0.974302 | 25.26789 | 24.13176 | 24.13306 | 24.13316 | 1.804835 | 1.723684 | 1.723777 | 1.723783 |
| T7_Forest_180m | 8.192569 | 5.373948 | 5.374536 | 5.374578 | 0.974916 | 0.974037 | 0.974191 | 0.974202 | 25.26665 | 24.13109 | 24.13229 | 24.13238 | 1.804746 | 1.723635 | 1.723721 | 1.723727 |
| T7_Forest_190m | 8.189102 | 5.373687 | 5.374235 | 5.374275 | 0.974775 | 0.973961 | 0.974104 | 0.974114 | 25.26265 | 24.13049 | 24.13161 | 24.13169 | 1.80446 | 1.723593 | 1.723672 | 1.723678 |
| T7_Forest_200m | 8.186009 | 5.373454 | 5.373967 | 5.374004 | 0.97465 | 0.973893 | 0.974026 | 0.974035 | 25.26167 | 24.12997 | 24.131 | 24.13108 | 1.804391 | 1.723555 | 1.723629 | 1.723634 |
| T8_0.1m | 13.11633 | 5.644743 | 5.691295 | 5.703796 | 1.191914 | 1.06823 | 1.086168 | 1.091333 | 26.84233 | 24.07899 | 24.22471 | 24.2679 | 1.917294 | 1.719914 | 1.730323 | 1.733407 |
| T8_10m | 9.731639 | 5.434486 | 5.450298 | 5.454566 | 1.024233 | 0.98523 | 0.991013 | 0.992684 | 25.05301 | 23.3997 | 23.4477 | 23.46074 | 1.789487 | 1.671394 | 1.674822 | 1.675753 |
| T8_20m | 9.018714 | 5.3902 | 5.399361 | 5.401837 | 0.99026 | 0.968414 | 0.971668 | 0.972609 | 24.68362 | 23.26273 | 23.28811 | 23.29835 | 1.763102 | 1.66161 | 1.663423 | 1.664155 |
| T8_30m | 8.709979 | 5.371021 | 5.377274 | 5.378963 | 0.97594 | 0.961326 | 0.963505 | 0.964136 | 24.52843 | 23.20454 | 23.22154 | 23.22646 | 1.752017 | 1.657454 | 1.658668 | 1.659019 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T8_40m | 8.539596 | 5.360437 | 5.365075 | 5.366327 | 0.968176 | 0.957483 | 0.959076 | 0.959537 | 24.44177 | 23.17457 | 23.187 | 23.19059 | 1.745827 | 1.655313 | 1.656201 | 1.656458 |
| T8_50m | 8.432355 | 5.353776 | 5.357393 | 5.358368 | 0.96335 | 0.955094 | 0.956322 | 0.956678 | 24.38963 | 23.15303 | 23.16262 | 23.16539 | 1.742102 | 1.653775 | 1.654459 | 1.654657 |
| T8_60m | 8.359225 | 5.349233 | 5.352153 | 5.35294 | 0.96009 | 0.95348 | 0.954462 | 0.954746 | 24.3526 | 23.14045 | 23.14811 | 23.15032 | 1.739457 | 1.652876 | 1.653423 | 1.653581 |
| T8_70m | 8.306661 | 5.345967 | 5.348387 | 5.349038 | 0.957765 | 0.95233 | 0.953136 | 0.953368 | 24.32866 | 23.13147 | 23.13776 | 23.13957 | 1.737748 | 1.652235 | 1.652684 | 1.652813 |
| T8_80m | 8.267288 | 5.343522 | 5.345567 | 5.346116 | 0.956035 | 0.951473 | 0.952149 | 0.952344 | 24.30937 | 23.12479 | 23.13006 | 23.13158 | 1.73637 | 1.651758 | 1.652134 | 1.652242 |
| T8_90m | 8.236911 | 5.341634 | 5.343391 | 5.343862 | 0.954708 | 0.950817 | 0.951392 | 0.951558 | 24.29322 | 23.11967 | 23.12416 | 23.12545 | 1.735216 | 1.651392 | 1.651712 | 1.651805 |
| T8_100m | 8.212792 | 5.340136 | 5.341664 | 5.342074 | 0.953661 | 0.950298 | 0.950795 | 0.950938 | 24.28215 | 23.11563 | 23.1195 | 23.12061 | 1.734426 | 1.651103 | 1.651379 | 1.651459 |
| T8_110m | 8.193289 | 5.338925 | 5.340269 | 5.340628 | 0.952818 | 0.949881 | 0.950314 | 0.950439 | 24.27268 | 23.10947 | 23.11575 | 23.11673 | 1.733749 | 1.650663 | 1.651112 | 1.651181 |
| T8_120m | 8.177293 | 5.337931 | 5.339124 | 5.339443 | 0.952131 | 0.949541 | 0.949922 | 0.950032 | 24.26442 | 23.10682 | 23.10979 | 23.11065 | 1.733159 | 1.650474 | 1.650686 | 1.650748 |
| T8_130m | 8.163953 | 5.337102 | 5.33817 | 5.338455 | 0.95156 | 0.949259 | 0.949597 | 0.949695 | 24.25997 | 23.10462 | 23.10726 | 23.10802 | 1.732841 | 1.650317 | 1.650505 | 1.65056 |
| T8_140m | 8.15272 | 5.336404 | 5.337367 | 5.337623 | 0.951082 | 0.949022 | 0.949325 | 0.949412 | 24.25334 | 23.10277 | 23.10514 | 23.10582 | 1.732368 | 1.650185 | 1.650354 | 1.650402 |
| T8_150m | 8.143205 | 5.335813 | 5.336686 | 5.336918 | 0.950679 | 0.948822 | 0.949095 | 0.949174 | 24.25019 | 23.10121 | 23.10334 | 23.10396 | 1.732143 | 1.650073 | 1.650226 | 1.650269 |
| T8_160m | 8.135009 | 5.335304 | 5.3361 | 5.336312 | 0.950333 | 0.948651 | 0.948898 | 0.948969 | 24.24459 | 23.09988 | 23.10181 | 23.10236 | 1.731743 | 1.649978 | 1.650116 | 1.650155 |
| T8_170m | 8.1279 | 5.334863 | 5.335592 | 5.335786 | 0.950034 | 0.948503 | 0.948728 | 0.948793 | 24.24227 | 23.09872 | 23.10048 | 23.10098 | 1.731577 | 1.649896 | 1.650021 | 1.650057 |
| T8_180m | 8.121664 | 5.334475 | 5.335147 | 5.335324 | 0.949773 | 0.948374 | 0.94858 | 0.948639 | 24.24023 | 23.09772 | 23.09932 | 23.09978 | 1.731431 | 1.649824 | 1.649938 | 1.649971 |
| T8_190m | 8.116212 | 5.334137 | 5.334757 | 5.334921 | 0.949546 | 0.948261 | 0.94845 | 0.948504 | 24.23556 | 23.09684 | 23.09831 | 23.09873 | 1.731097 | 1.649761 | 1.649866 | 1.649896 |
| T8_200m | 8.111395 | 5.333837 | 5.334413 | 5.334565 | 0.949346 | 0.948162 | 0.948336 | 0.948386 | 24.234 | 23.09607 | 23.09742 | 23.09781 | 1.730986 | 1.649706 | 1.649803 | 1.649831 |
| T9_1.25m | 15.93281 | 5.47752 | 5.560811 | 5.574159 | 1.378046 | 1.179683 | 1.211118 | 1.216623 | 27.75366 | 23.96703 | 24.22382 | 24.26966 | 1.982388 | 1.711917 | 1.730259 | 1.733533 |
| T9_10m | 11.19492 | 5.155349 | 5.192605 | 5.198596 | 1.137003 | 1.053566 | 1.066962 | 1.069314 | 25.20942 | 22.93691 | 23.0472 | 23.06555 | 1.800659 | 1.638338 | 1.646216 | 1.647526 |
| T9_20m | 9.728768 | 5.055651 | 5.078489 | 5.082168 | 1.064713 | 1.015742 | 1.023648 | 1.025038 | 24.43676 | 22.62739 | 22.69196 | 22.70279 | 1.745469 | 1.616229 | 1.620841 | 1.621615 |
| T9_30m | 9.083259 | 5.011757 | 5.028214 | 5.030867 | 1.033869 | 0.999604 | 1.005154 | 1.00613 | 24.10338 | 22.49571 | 22.539 | 22.54952 | 1.721656 | 1.606824 | 1.609916 | 1.610667 |
| T9_40m | 8.718964 | 4.986985 | 4.999835 | 5.001908 | 1.016851 | 0.9907 | 0.994948 | 0.995695 | 23.91844 | 22.42046 | 22.45649 | 22.46232 | 1.708446 | 1.601449 | 1.604022 | 1.604439 |
| T9_50m | 8.485285 | 4.971096 | 4.981622 | 4.983322 | 1.006127 | 0.985089 | 0.988512 | 0.989115 | 23.79999 | 22.37669 | 22.4034 | 22.4081 | 1.699986 | 1.598322 | 1.60023 | 1.600566 |
| T9_60m | 8.322245 | 4.960009 | 4.968909 | 4.970348 | 0.998752 | 0.98123 | 0.984086 | 0.984589 | 23.71926 | 22.34369 | 22.36597 | 22.37279 | 1.69422 | 1.595965 | 1.597556 | 1.598044 |
| T9_70m | 8.201124 | 4.951773 | 4.959463 | 4.960706 | 0.993343 | 0.9784 | 0.980838 | 0.981267 | 23.65967 | 22.32162 | 22.34063 | 22.34398 | 1.689963 | 1.594389 | 1.595747 | 1.595986 |
| T9_80m | 8.108665 | 4.945486 | 4.952249 | 4.953343 | 0.989258 | 0.976263 | 0.978385 | 0.978759 | 23.61331 | 22.30205 | 22.3215 | 22.32442 | 1.686652 | 1.592991 | 1.59438 | 1.594588 |
| T9_90m | 8.035466 | 4.940508 | 4.946537 | 4.947511 | 0.986056 | 0.974587 | 0.976461 | 0.976791 | 23.57963 | 22.28898 | 22.30359 | 22.30617 | 1.684246 | 1.592057 | 1.593101 | 1.593285 |
| T9_100m | 7.976093 | 4.936471 | 4.941901 | 4.942779 | 0.983481 | 0.97324 | 0.974914 | 0.975208 | 23.55085 | 22.27847 | 22.29153 | 22.29383 | 1.68219 | 1.591307 | 1.592239 | 1.592403 |
| T9_110m | 7.926858 | 4.933123 | 4.938056 | 4.938854 | 0.981363 | 0.972132 | 0.97364 | 0.973906 | 23.52563 | 22.26983 | 22.2816 | 22.28367 | 1.680389 | 1.590689 | 1.59153 | 1.591678 |
| T9_120m | 7.885219 | 4.930292 | 4.934805 | 4.935534 | 0.979585 | 0.971202 | 0.972572 | 0.972814 | 23.50596 | 22.26257 | 22.27326 | 22.27515 | 1.678984 | 1.590171 | 1.590935 | 1.591069 |
| T9_130m | 7.849588 | 4.927869 | 4.932022 | 4.932693 | 0.978074 | 0.970411 | 0.971664 | 0.971884 | 23.49127 | 22.25351 | 22.26618 | 22.2679 | 1.677935 | 1.589523 | 1.590428 | 1.590551 |
| T9_140m | 7.818892 | 4.925782 | 4.929624 | 4.930245 | 0.97678 | 0.969734 | 0.970886 | 0.971089 | 23.47538 | 22.24823 | 22.25721 | 22.26169 | 1.6768 | 1.589146 | 1.589788 | 1.590108 |
| T9_150m | 7.792011 | 4.923954 | 4.927524 | 4.928102 | 0.975654 | 0.969145 | 0.970209 | 0.970396 | 23.4637 | 22.24363 | 22.25193 | 22.25339 | 1.675965 | 1.588818 | 1.589411 | 1.589515 |
| T9_160m | 7.76854 | 4.922358 | 4.92569 | 4.926229 | 0.974675 | 0.968633 | 0.96962 | 0.969794 | 23.45027 | 22.23964 | 22.24734 | 22.2487 | 1.675006 | 1.588533 | 1.589083 | 1.58918 |
| T9_170m | 7.747593 | 4.920933 | 4.924053 | 4.924558 | 0.973807 | 0.968179 | 0.969099 | 0.969261 | 23.4406 | 22.23609 | 22.24327 | 22.24453 | 1.674315 | 1.58828 | 1.588792 | 1.588883 |
| T9_180m | 7.728911 | 4.919663 | 4.922594 | 4.923068 | 0.973037 | 0.967775 | 0.968635 | 0.968787 | 23.43169 | 22.23295 | 22.23966 | 22.24084 | 1.673678 | 1.588055 | 1.588534 | 1.588619 |
| T9_190m | 7.712257 | 4.91853 | 4.921293 | 4.921739 | 0.972352 | 0.967417 | 0.968224 | 0.968366 | 23.42635 | 22.23016 | 22.23645 | 22.23755 | 1.673297 | 1.587856 | 1.588305 | 1.588384 |
| T9_200m | 7.697217 | 4.917508 | 4.920117 | 4.920539 | 0.971737 | 0.967096 | 0.967854 | 0.967988 | 23.41865 | 22.22764 | 22.23356 | 22.2346 | 1.672747 | 1.587676 | 1.588099 | 1.588173 |
| T10_0m | 13.90538 | 5.537384 | 5.597233 | 5.608005 | 1.24645 | 1.101486 | 1.123664 | 1.128119 | 26.35051 | 23.28489 | 23.46658 | 23.50133 | 1.882164 | 1.663193 | 1.676171 | 1.678653 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T10_10m | 9.709082 | 5.252384 | 5.271888 | 5.27545 | 1.035886 | 0.992857 | 0.999633 | 1.00101 | 24.11361 | 22.39698 | 22.45274 | 22.46348 | 1.722387 | 1.599772 | 1.603754 | 1.604521 |
| T10_20m | 8.893433 | 5.196988 | 5.208428 | 5.210527 | 0.99669 | 0.972636 | 0.976456 | 0.977234 | 23.69188 | 22.23056 | 22.26036 | 22.26933 | 1.692264 | 1.587884 | 1.590013 | 1.590654 |
| T10_30m | 8.540317 | 5.173005 | 5.180918 | 5.182373 | 0.980294 | 0.964177 | 0.966747 | 0.967272 | 23.51179 | 22.16168 | 22.18173 | 22.18582 | 1.6794 | 1.582965 | 1.584397 | 1.584689 |
| T10_40m | 8.344697 | 5.159719 | 5.165665 | 5.16676 | 0.971432 | 0.959605 | 0.961496 | 0.961882 | 23.41367 | 22.12312 | 22.13787 | 22.14088 | 1.672392 | 1.58021 | 1.581264 | 1.581479 |
| T10_50m | 8.220041 | 5.151253 | 5.15594 | 5.156804 | 0.965894 | 0.956748 | 0.958212 | 0.958512 | 23.35307 | 22.10083 | 22.11226 | 22.11459 | 1.668063 | 1.578618 | 1.579434 | 1.579601 |
| T10_60m | 8.133648 | 5.145386 | 5.149197 | 5.149901 | 0.962117 | 0.9548 | 0.955973 | 0.956213 | 23.31202 | 22.08274 | 22.09189 | 22.09376 | 1.665131 | 1.577326 | 1.577979 | 1.578113 |
| T10_70m | 8.070233 | 5.141079 | 5.144247 | 5.144831 | 0.959385 | 0.95339 | 0.954352 | 0.954548 | 23.282 | 22.07174 | 22.07924 | 22.08078 | 1.662987 | 1.57654 | 1.577076 | 1.577186 |
| T10_80m | 8.021772 | 5.137787 | 5.140463 | 5.140957 | 0.957322 | 0.952326 | 0.953128 | 0.953292 | 23.25721 | 22.06344 | 22.0697 | 22.07098 | 1.661216 | 1.575947 | 1.576394 | 1.576486 |
| T10_90m | 7.983719 | 5.135203 | 5.137492 | 5.137914 | 0.955721 | 0.9515 | 0.952178 | 0.952317 | 23.23892 | 22.057 | 22.06229 | 22.06337 | 1.65991 | 1.575487 | 1.575865 | 1.575942 |
| T10_100m | 7.953205 | 5.13313 | 5.135108 | 5.135473 | 0.954449 | 0.950844 | 0.951423 | 0.951542 | 23.22611 | 22.05188 | 22.0564 | 22.05733 | 1.658994 | 1.575122 | 1.575445 | 1.575511 |
| T10_110m | 7.928221 | 5.131434 | 5.133156 | 5.133474 | 0.953419 | 0.950312 | 0.950812 | 0.950914 | 23.21227 | 22.04774 | 22.05163 | 22.05243 | 1.658006 | 1.574826 | 1.575104 | 1.575161 |
| T10_120m | 7.907612 | 5.130034 | 5.131546 | 5.131825 | 0.952577 | 0.949878 | 0.950312 | 0.950401 | 23.2028 | 22.04435 | 22.04773 | 22.04842 | 1.65733 | 1.574584 | 1.574825 | 1.574875 |
| T10_130m | 7.890401 | 5.128865 | 5.130201 | 5.130448 | 0.95188 | 0.949518 | 0.949898 | 0.949976 | 23.19736 | 22.03864 | 22.0445 | 22.04511 | 1.656941 | 1.574176 | 1.574595 | 1.574638 |
| T10_140m | 7.875933 | 5.127882 | 5.129071 | 5.129289 | 0.951298 | 0.949218 | 0.949552 | 0.949621 | 23.18993 | 22.0363 | 22.03891 | 22.03944 | 1.65641 | 1.574009 | 1.574195 | 1.574233 |
| T10_150m | 7.863654 | 5.127048 | 5.128111 | 5.128306 | 0.950808 | 0.948965 | 0.949262 | 0.949322 | 23.1832 | 22.03433 | 22.03664 | 22.03711 | 1.65593 | 1.573868 | 1.574033 | 1.574067 |
| T10_160m | 7.853105 | 5.126332 | 5.127286 | 5.127462 | 0.950391 | 0.94875 | 0.949014 | 0.949068 | 23.17995 | 22.03265 | 22.03471 | 22.03513 | 1.655698 | 1.573748 | 1.573895 | 1.573925 |
| T10_170m | 7.844022 | 5.125715 | 5.126577 | 5.126735 | 0.950034 | 0.948566 | 0.948802 | 0.94885 | 23.17427 | 22.03122 | 22.03306 | 22.03343 | 1.655292 | 1.573646 | 1.573777 | 1.573804 |
| T10_180m | 7.836201 | 5.125184 | 5.125965 | 5.126109 | 0.949729 | 0.948409 | 0.948621 | 0.948664 | 23.17189 | 22.02999 | 22.03164 | 22.03198 | 1.655122 | 1.573558 | 1.573676 | 1.5737 |
| T10_190m | 7.829363 | 5.12472 | 5.125431 | 5.125561 | 0.949464 | 0.948272 | 0.948463 | 0.948503 | 23.16692 | 22.02892 | 22.03042 | 22.03072 | 1.654767 | 1.573482 | 1.573588 | 1.57361 |
| T10_200m | 7.823384 | 5.124314 | 5.124964 | 5.125083 | 0.949234 | 0.948153 | 0.948327 | 0.948362 | 23.16512 | 22.028 | 22.02935 | 22.02963 | 1.654639 | 1.573416 | 1.573512 | 1.573532 |
| T11_15.5m | 22.18132 | 7.936206 | 8.049942 | 8.086272 | 1.368466 | 1.155541 | 1.192424 | 1.208927 | 15.32502 | 12.46781 | 12.668 | 12.75662 | 1.094636 | 0.890551 | 0.90485 | 0.91118 |
| T11_20m | 20.42294 | 7.832218 | 7.926505 | 7.956719 | 1.293011 | 1.11971 | 1.149852 | 1.163356 | 14.81926 | 12.27449 | 12.43823 | 12.50985 | 1.05851 | 0.876742 | 0.888438 | 0.893554 |
| T11_30m | 18.06874 | 7.692992 | 7.761118 | 7.78307 | 1.193913 | 1.072652 | 1.093892 | 1.103427 | 14.14995 | 12.01999 | 12.13604 | 12.18702 | 1.010702 | 0.858564 | 0.866853 | 0.870494 |
| T11_40m | 16.72698 | 7.613645 | 7.666769 | 7.683962 | 1.138704 | 1.046436 | 1.062683 | 1.06999 | 13.77326 | 11.87946 | 11.96675 | 12.00615 | 0.983796 | 0.848526 | 0.854761 | 0.857575 |
| T11_50m | 15.86321 | 7.56256 | 7.605964 | 7.620061 | 1.103795 | 1.029859 | 1.04293 | 1.048817 | 13.53433 | 11.78907 | 11.85983 | 11.89185 | 0.96673 | 0.84207 | 0.847124 | 0.849411 |
| T11_60m | 15.25218 | 7.526424 | 7.56291 | 7.574788 | 1.079477 | 1.018311 | 1.029156 | 1.034045 | 13.36588 | 11.72622 | 11.78541 | 11.81223 | 0.954698 | 0.83758 | 0.841808 | 0.843724 |
| T11_70m | 14.80073 | 7.499726 | 7.531065 | 7.541287 | 1.061738 | 1.009887 | 1.0191 | 1.023256 | 13.24424 | 11.68101 | 11.73032 | 11.75333 | 0.946009 | 0.834351 | 0.837873 | 0.839517 |
| T11_80m | 14.45347 | 7.47919 | 7.506549 | 7.515485 | 1.048246 | 1.003481 | 1.011445 | 1.015041 | 13.15028 | 11.6463 | 11.68912 | 11.70921 | 0.939298 | 0.831872 | 0.83493 | 0.836365 |
| T11_90m | 14.17852 | 7.46293 | 7.487123 | 7.495031 | 1.037669 | 0.998458 | 1.005441 | 1.008593 | 13.07568 | 11.61878 | 11.65649 | 11.67428 | 0.93397 | 0.829906 | 0.8326 | 0.833871 |
| T11_100m | 13.95493 | 7.449707 | 7.471312 | 7.47838 | 1.029144 | 0.99441 | 1.000598 | 1.003393 | 13.01735 | 11.59633 | 11.63131 | 11.64584 | 0.929803 | 0.828303 | 0.830801 | 0.831839 |
| T11_110m | 13.76998 | 7.438769 | 7.458228 | 7.464595 | 1.022149 | 0.991088 | 0.996623 | 0.999122 | 12.96837 | 11.57906 | 11.60924 | 11.62224 | 0.926305 | 0.827069 | 0.829225 | 0.830153 |
| T11_120m | 13.61443 | 7.42957 | 7.447217 | 7.452991 | 1.016309 | 0.988315 | 0.993303 | 0.995555 | 12.92681 | 11.56324 | 11.59057 | 11.60369 | 0.923336 | 0.825939 | 0.827891 | 0.828828 |
| T11_130m | 13.48196 | 7.421736 | 7.437837 | 7.443105 | 1.011368 | 0.985969 | 0.990493 | 0.992536 | 12.89271 | 11.55104 | 11.57596 | 11.58659 | 0.920901 | 0.825068 | 0.826848 | 0.827607 |
| T12_0m | 15.89178 | 6.829829 | 6.895355 | 6.897474 | 1.078205 | 0.956735 | 0.97609 | 0.976823 | 16.10267 | 13.95202 | 14.05827 | 14.06208 | 1.150181 | 0.996565 | 1.004154 | 1.004426 |
| T12_10m | 11.75097 | 6.533784 | 6.55657 | 6.557312 | 0.9071 | 0.867392 | 0.873835 | 0.874079 | 14.93152 | 13.46784 | 13.50274 | 13.50401 | 1.066529 | 0.961981 | 0.964474 | 0.964565 |
| T12_20m | 10.88371 | 6.471779 | 6.485451 | 6.485897 | 0.871956 | 0.849041 | 0.852778 | 0.85292 | 14.68997 | 13.36821 | 13.38764 | 13.38838 | 1.049275 | 0.954865 | 0.956253 | 0.956305 |
| T12_30m | 10.49907 | 6.444279 | 6.453888 | 6.454202 | 0.85684 | 0.841148 | 0.843714 | 0.843812 | 14.58477 | 13.32437 | 13.33912 | 13.33962 | 1.041761 | 0.951733 | 0.952786 | 0.952823 |
| T12_40m | 10.28402 | 6.428905 | 6.436233 | 6.436474 | 0.848574 | 0.836832 | 0.838756 | 0.838829 | 14.52638 | 13.30053 | 13.31193 | 13.31231 | 1.037591 | 0.95003 | 0.950845 | 0.950872 |
| T12_50m | 10.1455 | 6.419001 | 6.424857 | 6.42505 | 0.84334 | 0.834099 | 0.835616 | 0.835673 | 14.48937 | 13.28632 | 13.2942 | 13.2945 | 1.034947 | 0.949015 | 0.949578 | 0.9496 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T12_60m | 10.04921 | 6.412117 | 6.416946 | 6.417106 | 0.839753 | 0.832226 | 0.833462 | 0.83351 | 14.46372 | 13.27658 | 13.283 | 13.28325 | 1.033114 | 0.948319 | 0.948778 | 0.948796 |
| T12_70m | 9.978797 | 6.407083 | 6.411161 | 6.411296 | 0.837161 | 0.830873 | 0.831906 | 0.831946 | 14.44604 | 13.26814 | 13.27491 | 13.27512 | 1.031851 | 0.947717 | 0.948201 | 0.948215 |
| T12_80m | 9.924654 | 6.403212 | 6.406711 | 6.406827 | 0.835188 | 0.829842 | 0.830722 | 0.830755 | 14.43158 | 13.26278 | 13.26735 | 13.26753 | 1.030819 | 0.947334 | 0.947661 | 0.947673 |
| T12_90m | 9.882286 | 6.400183 | 6.403228 | 6.40333 | 0.833658 | 0.829043 | 0.829803 | 0.829832 | 14.42082 | 13.25863 | 13.26258 | 13.26273 | 1.03005 | 0.947037 | 0.947319 | 0.94733 |
| T12_100m | 9.847964 | 6.397729 | 6.400406 | 6.400496 | 0.832428 | 0.828401 | 0.829064 | 0.82909 | 14.41162 | 13.25529 | 13.25873 | 13.25887 | 1.029393 | 0.946799 | 0.947045 | 0.947054 |
| T12_110m | 9.819901 | 6.395723 | 6.398099 | 6.398178 | 0.831429 | 0.82788 | 0.828464 | 0.828487 | 14.40503 | 13.25257 | 13.25561 | 13.25573 | 1.028922 | 0.946605 | 0.946822 | 0.94683 |
| T12_120m | 9.79635 | 6.394039 | 6.396162 | 6.396234 | 0.830595 | 0.827445 | 0.827964 | 0.827984 | 14.3993 | 13.25031 | 13.25301 | 13.25312 | 1.028513 | 0.946443 | 0.946636 | 0.946644 |
| T12_130m | 9.776665 | 6.392632 | 6.394543 | 6.394608 | 0.829903 | 0.827083 | 0.827548 | 0.827565 | 14.39429 | 13.24843 | 13.25085 | 13.25094 | 1.028156 | 0.946309 | 0.946482 | 0.946488 |
| T12_140m | 9.759784 | 6.391425 | 6.393154 | 6.393213 | 0.829311 | 0.826774 | 0.827192 | 0.827209 | 14.38982 | 13.24683 | 13.249 | 13.24908 | 1.027836 | 0.946194 | 0.94635 | 0.946356 |
| T12_150m | 9.745343 | 6.390393 | 6.391966 | 6.39202 | 0.828808 | 0.826511 | 0.82689 | 0.826905 | 14.3858 | 13.24546 | 13.24743 | 13.2475 | 1.027549 | 0.946097 | 0.946237 | 0.946243 |
| T12_160m | 9.732745 | 6.389492 | 6.39093 | 6.390979 | 0.828371 | 0.826283 | 0.826627 | 0.826641 | 14.38353 | 13.24287 | 13.24606 | 13.24613 | 1.027387 | 0.945912 | 0.94614 | 0.946145 |
| T12_170m | 9.721732 | 6.388705 | 6.390024 | 6.390069 | 0.827989 | 0.826084 | 0.826398 | 0.82641 | 14.38015 | 13.24184 | 13.24347 | 13.24493 | 1.027145 | 0.945838 | 0.945955 | 0.946059 |
| T12_180m | 9.712096 | 6.388016 | 6.389231 | 6.389273 | 0.827657 | 0.82591 | 0.826199 | 0.82621 | 14.37842 | 13.24093 | 13.24243 | 13.24249 | 1.027022 | 0.945773 | 0.945881 | 0.945885 |
| T12_190m | 9.703559 | 6.387405 | 6.388529 | 6.388568 | 0.827364 | 0.825757 | 0.826022 | 0.826033 | 14.37549 | 13.24014 | 13.24152 | 13.24157 | 1.026813 | 0.945717 | 0.945815 | 0.945819 |
| T12_200m | 9.696079 | 6.386871 | 6.387914 | 6.38795 | 0.827107 | 0.825623 | 0.825868 | 0.825878 | 14.37416 | 13.23944 | 13.24072 | 13.24076 | 1.026717 | 0.945667 | 0.945758 | 0.945761 |
| T13_0m | 24.20478 | 7.330233 | 7.54458 | 7.549422 | 1.442864 | 1.16206 | 1.225509 | 1.227194 | 18.04169 | 14.55011 | 14.89544 | 14.90421 | 1.288682 | 1.039285 | 1.063952 | 1.064578 |
| T13_10m | 14.94724 | 6.616271 | 6.699234 | 6.70113 | 1.047986 | 0.945776 | 0.969407 | 0.97004 | 15.38493 | 13.37644 | 13.50492 | 13.50821 | 1.098914 | 0.955452 | 0.964629 | 0.964864 |
| T13_20m | 12.74539 | 6.446458 | 6.497623 | 6.498801 | 0.955281 | 0.894999 | 0.909073 | 0.909451 | 14.75306 | 13.09979 | 13.17718 | 13.17915 | 1.053781 | 0.935692 | 0.94122 | 0.94136 |
| T13_30m | 11.7613 | 6.370562 | 6.407405 | 6.408258 | 0.915091 | 0.872986 | 0.882879 | 0.883146 | 14.47687 | 12.97973 | 13.03397 | 13.03536 | 1.034054 | 0.927116 | 0.930991 | 0.93109 |
| T13_40m | 11.19807 | 6.327125 | 6.355729 | 6.356394 | 0.892595 | 0.860665 | 0.868205 | 0.868409 | 14.32069 | 12.91286 | 12.95487 | 12.95593 | 1.022898 | 0.92234 | 0.92534 | 0.925416 |
| T13_50m | 10.83636 | 6.299229 | 6.322507 | 6.32305 | 0.878401 | 0.852891 | 0.858937 | 0.859101 | 14.22309 | 12.87103 | 12.90387 | 12.90472 | 1.015927 | 0.919352 | 0.921698 | 0.921759 |
| T13_60m | 10.58271 | 6.279667 | 6.299187 | 6.299644 | 0.868595 | 0.847519 | 0.852527 | 0.852663 | 14.15389 | 12.8417 | 12.86914 | 12.86985 | 1.010984 | 0.917257 | 0.919217 | 0.919268 |
| T13_70m | 10.39368 | 6.265089 | 6.281789 | 6.282181 | 0.86138 | 0.843568 | 0.847808 | 0.847923 | 14.10378 | 12.81975 | 12.8432 | 12.8438 | 1.007405 | 0.915689 | 0.917364 | 0.917407 |
| T13_80m | 10.24866 | 6.253904 | 6.268431 | 6.268772 | 0.855908 | 0.840571 | 0.844225 | 0.844324 | 14.06552 | 12.80417 | 12.82317 | 12.82369 | 1.004672 | 0.914576 | 0.915933 | 0.91597 |
| T13_90m | 10.13321 | 6.245 | 6.257788 | 6.258089 | 0.851596 | 0.838209 | 0.8414 | 0.841487 | 14.0347 | 12.79049 | 12.80848 | 12.80893 | 1.00247 | 0.913599 | 0.914884 | 0.914916 |
| T13_100m | 10.03854 | 6.237699 | 6.249054 | 6.249322 | 0.848092 | 0.836289 | 0.839103 | 0.83918 | 14.00948 | 12.7805 | 12.79514 | 12.79553 | 1.000669 | 0.912886 | 0.913931 | 0.913959 |
| T13_110m | 9.960124 | 6.231651 | 6.241818 | 6.242059 | 0.845213 | 0.834712 | 0.837216 | 0.837284 | 13.98891 | 12.7723 | 12.78532 | 12.78568 | 0.9992 | 0.9123 | 0.91323 | 0.913255 |
| T13_120m | 9.893698 | 6.226528 | 6.235689 | 6.235906 | 0.842792 | 0.833387 | 0.835629 | 0.83569 | 13.97212 | 12.76401 | 12.77707 | 12.77739 | 0.998001 | 0.911708 | 0.912641 | 0.912663 |
| T13_130m | 9.836579 | 6.222123 | 6.230416 | 6.230613 | 0.840726 | 0.832255 | 0.834274 | 0.834329 | 13.95717 | 12.75813 | 12.77003 | 12.77031 | 0.996933 | 0.911287 | 0.912137 | 0.912158 |
| T13_140m | 9.787586 | 6.218345 | 6.225893 | 6.226073 | 0.838964 | 0.83129 | 0.833119 | 0.833169 | 13.94521 | 12.75311 | 12.76262 | 12.76288 | 0.996079 | 0.910929 | 0.911608 | 0.911627 |
| T13_150m | 9.745061 | 6.215065 | 6.221965 | 6.222129 | 0.837444 | 0.830458 | 0.832122 | 0.832167 | 13.93451 | 12.74878 | 12.75743 | 12.75767 | 0.995314 | 0.91062 | 0.911238 | 0.911255 |
| T13_160m | 9.707479 | 6.212167 | 6.218493 | 6.218644 | 0.836108 | 0.829725 | 0.831245 | 0.831286 | 13.92476 | 12.74497 | 12.75287 | 12.75309 | 0.994618 | 0.910348 | 0.910912 | 0.910928 |
| T13_170m | 9.674371 | 6.209614 | 6.215436 | 6.215575 | 0.834936 | 0.829084 | 0.830476 | 0.830515 | 13.91587 | 12.74024 | 12.74888 | 12.74908 | 0.993983 | 0.91001 | 0.910627 | 0.910641 |
| T13_180m | 9.644948 | 6.207344 | 6.212718 | 6.212847 | 0.8339 | 0.828516 | 0.829797 | 0.829832 | 13.90908 | 12.73729 | 12.74534 | 12.74553 | 0.993498 | 0.909799 | 0.910374 | 0.910387 |
| T13_190m | 9.618473 | 6.205303 | 6.210273 | 6.210393 | 0.832972 | 0.828008 | 0.829188 | 0.82922 | 13.90145 | 12.73464 | 12.74218 | 12.74235 | 0.992953 | 0.90961 | 0.910148 | 0.91016 |
| T13_200m | 9.595169 | 6.203505 | 6.20812 | 6.20823 | 0.832157 | 0.827562 | 0.828653 | 0.828683 | 13.89582 | 12.73232 | 12.738 | 12.73815 | 0.99255 | 0.909444 | 0.90985 | 0.909861 |
| T14_0m | 31.10141 | 7.551058 | 7.832639 | 7.84354 | 1.703568 | 1.281178 | 1.365107 | 1.368912 | 19.28775 | 14.66092 | 15.11696 | 15.13674 | 1.377686 | 1.047201 | 1.079774 | 1.081187 |
| T14_10m | 16.99006 | 6.548942 | 6.651966 | 6.656022 | 1.115557 | 0.974265 | 1.003421 | 1.004759 | 15.3383 | 12.99498 | 13.15359 | 13.16195 | 1.095584 | 0.928205 | 0.939535 | 0.940131 |
| T14_20m | 13.88786 | 6.328639 | 6.391312 | 6.393803 | 0.990163 | 0.908817 | 0.925874 | 0.926661 | 14.47765 | 12.63925 | 12.73214 | 12.73764 | 1.03411 | 0.902796 | 0.909432 | 0.909824 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T14_30m | 12.48324 | 6.228892 | 6.273117 | 6.274886 | 0.935366 | 0.880215 | 0.891925 | 0.892467 | 14.0975 | 12.48352 | 12.54861 | 12.55143 | 1.006956 | 0.891673 | 0.896322 | 0.896523 |
| T14_40m | 11.67841 | 6.171738 | 6.205305 | 6.206657 | 0.904785 | 0.864253 | 0.872952 | 0.873356 | 13.88388 | 12.39772 | 12.44435 | 12.44645 | 0.991698 | 0.885544 | 0.888875 | 0.889025 |
| T14_50m | 11.1582 | 6.134795 | 6.161399 | 6.162476 | 0.885432 | 0.854152 | 0.860925 | 0.861241 | 13.74684 | 12.34239 | 12.37901 | 12.38065 | 0.98191 | 0.881592 | 0.884208 | 0.884325 |
| T14_60m | 10.79472 | 6.108982 | 6.130667 | 6.131549 | 0.872149 | 0.847219 | 0.852658 | 0.852912 | 13.65258 | 12.30354 | 12.33462 | 12.33594 | 0.975176 | 0.878817 | 0.881037 | 0.881132 |
| T14_70m | 10.52785 | 6.090031 | 6.108066 | 6.108803 | 0.862546 | 0.842207 | 0.846671 | 0.84688 | 13.58444 | 12.27608 | 12.30069 | 12.30178 | 0.970309 | 0.876856 | 0.878614 | 0.878691 |
| T14_80m | 10.32464 | 6.075599 | 6.090826 | 6.09145 | 0.85533 | 0.838441 | 0.842166 | 0.84234 | 13.53292 | 12.25649 | 12.27726 | 12.27817 | 0.966629 | 0.875457 | 0.87694 | 0.877005 |
| T14_90m | 10.16609 | 6.06434 | 6.077353 | 6.077887 | 0.849766 | 0.835537 | 0.838687 | 0.838835 | 13.49279 | 12.23999 | 12.25777 | 12.25854 | 0.963763 | 0.874278 | 0.875548 | 0.875603 |
| T14_100m | 10.03947 | 6.055349 | 6.066576 | 6.067039 | 0.84537 | 0.833242 | 0.835934 | 0.836061 | 13.46153 | 12.22806 | 12.24206 | 12.24272 | 0.96153 | 0.873426 | 0.874426 | 0.874473 |
| T14_110m | 9.936942 | 6.048068 | 6.057838 | 6.058241 | 0.841844 | 0.831402 | 0.833723 | 0.833833 | 13.43619 | 12.21709 | 12.23056 | 12.23113 | 0.95972 | 0.872642 | 0.873604 | 0.873645 |
| T14_120m | 9.852584 | 6.042077 | 6.050639 | 6.050993 | 0.838968 | 0.829901 | 0.831918 | 0.832014 | 13.41423 | 12.20928 | 12.22118 | 12.22167 | 0.958152 | 0.872085 | 0.872934 | 0.872969 |
| T14_130m | 9.782568 | 6.037105 | 6.044658 | 6.044971 | 0.8366 | 0.828664 | 0.830431 | 0.830514 | 13.39772 | 12.20286 | 12.21204 | 12.21247 | 0.956972 | 0.871626 | 0.872282 | 0.872313 |
| T14_140m | 9.723668 | 6.032922 | 6.039623 | 6.039901 | 0.834623 | 0.827632 | 0.829188 | 0.829261 | 13.38324 | 12.19749 | 12.20558 | 12.20596 | 0.955938 | 0.871242 | 0.87182 | 0.871847 |
| T14_150m | 9.67384 | 6.029384 | 6.035361 | 6.035609 | 0.832961 | 0.826765 | 0.828143 | 0.828208 | 13.3718 | 12.19158 | 12.20014 | 12.20048 | 0.955121 | 0.87082 | 0.871432 | 0.871456 |
| T14_160m | 9.63138 | 6.026368 | 6.031727 | 6.03195 | 0.831555 | 0.826031 | 0.827258 | 0.827316 | 13.36028 | 12.18776 | 12.19554 | 12.19584 | 0.954298 | 0.870547 | 0.871103 | 0.871125 |
| T14_170m | 9.594883 | 6.023777 | 6.028602 | 6.028803 | 0.830353 | 0.825404 | 0.826502 | 0.826554 | 13.35263 | 12.1845 | 12.19021 | 12.19048 | 0.953752 | 0.870314 | 0.870722 | 0.870742 |
| T14_180m | 9.563323 | 6.021535 | 6.0259 | 6.026081 | 0.829319 | 0.824864 | 0.825851 | 0.825898 | 13.34446 | 12.18169 | 12.18683 | 12.18707 | 0.953168 | 0.870114 | 0.870481 | 0.870498 |
| T14_190m | 9.53593 | 6.01959 | 6.023554 | 6.023719 | 0.828427 | 0.824399 | 0.82529 | 0.825332 | 13.33842 | 12.17927 | 12.18391 | 12.18413 | 0.952737 | 0.869941 | 0.870272 | 0.870288 |
| T14_200m | 9.511969 | 6.017889 | 6.021502 | 6.021652 | 0.827651 | 0.823993 | 0.824801 | 0.824839 | 13.33298 | 12.17717 | 12.18137 | 12.18156 | 0.952348 | 0.869791 | 0.870091 | 0.870105 |
| T15_Grassland_32.25m | 9.291645 | 4.946389 | 4.959798 | 4.963877 | 1.054227 | 1.015732 | 1.019847 | 1.021595 | 15.33898 | 13.89421 | 13.91701 | 13.92609 | 1.095633 | 0.992435 | 0.994064 | 0.994713 |
| T15_Grassland_40m | 8.964083 | 4.926475 | 4.937608 | 4.940993 | 1.040658 | 1.009203 | 1.01257 | 1.013999 | 15.24602 | 13.85885 | 13.87636 | 13.8852 | 1.088993 | 0.98991 | 0.991161 | 0.991792 |
| T15_Grassland_50m | 8.669954 | 4.908593 | 4.917679 | 4.920439 | 1.028644 | 1.003422 | 1.006126 | 1.007273 | 15.16395 | 13.82739 | 13.84145 | 13.84882 | 1.083131 | 0.987663 | 0.988667 | 0.989193 |
| T15_Grassland_60m | 8.461774 | 4.895936 | 4.903571 | 4.905887 | 1.020256 | 0.999385 | 1.001625 | 1.002575 | 15.10493 | 13.805 | 13.81805 | 13.82299 | 1.078915 | 0.986064 | 0.986996 | 0.987348 |
| T15_Grassland_70m | 8.306845 | 4.886517 | 4.893069 | 4.895054 | 1.014087 | 0.996416 | 0.998314 | 0.999118 | 15.06165 | 13.78957 | 13.79943 | 13.80362 | 1.075824 | 0.984961 | 0.985666 | 0.985965 |
| T15_Grassland_80m | 8.187617 | 4.879269 | 4.884983 | 4.886712 | 1.009386 | 0.994154 | 0.995791 | 0.996484 | 15.02881 | 13.7764 | 13.78631 | 13.78991 | 1.073478 | 0.984021 | 0.984729 | 0.984986 |
| T15_Grassland_90m | 8.091653 | 4.873434 | 4.878478 | 4.880001 | 1.00564 | 0.992352 | 0.99378 | 0.994384 | 15.00373 | 13.76703 | 13.77446 | 13.779 | 1.071686 | 0.983351 | 0.983882 | 0.984206 |
| T15_Grassland_100m | 8.013504 | 4.868683 | 4.87318 | 4.874535 | 1.002614 | 0.990896 | 0.992157 | 0.992689 | 14.98239 | 13.75946 | 13.76601 | 13.76878 | 1.070162 | 0.982811 | 0.983279 | 0.983477 |
| T15_Grassland_110m | 7.948437 | 4.864727 | 4.868768 | 4.869984 | 1.000115 | 0.989693 | 0.990815 | 0.991289 | 14.9652 | 13.7532 | 13.75904 | 13.7615 | 1.068934 | 0.982364 | 0.982781 | 0.982956 |
| T15_Grassland_120m | 7.893465 | 4.861385 | 4.865042 | 4.866139 | 0.998021 | 0.988685 | 0.989691 | 0.990115 | 14.95011 | 13.74796 | 13.75319 | 13.7554 | 1.067856 | 0.981989 | 0.982363 | 0.982521 |
| T15_Grassland_130m | 7.846539 | 4.858532 | 4.86186 | 4.862857 | 0.996245 | 0.987831 | 0.988739 | 0.98912 | 14.93668 | 13.74212 | 13.74824 | 13.75023 | 1.066897 | 0.981572 | 0.982009 | 0.982151 |
| T15_Grassland_140m | 7.806035 | 4.856069 | 4.859114 | 4.860024 | 0.994723 | 0.987098 | 0.987921 | 0.988267 | 14.92596 | 13.73831 | 13.74259 | 13.74579 | 1.066131 | 0.9813 | 0.981606 | 0.981834 |
| T15_Grassland_150m | 7.770989 | 4.853939 | 4.856738 | 4.857573 | 0.993415 | 0.986469 | 0.98722 | 0.987535 | 14.91776 | 13.73504 | 13.73894 | 13.74058 | 1.065546 | 0.981066 | 0.981345 | 0.981462 |
| T15_Grassland_160m | 7.740757 | 4.852101 | 4.854687 | 4.855456 | 0.992288 | 0.985927 | 0.986614 | 0.986903 | 14.9091 | 13.73222 | 13.73579 | 13.73729 | 1.064927 | 0.980865 | 0.98112 | 0.981227 |
| T15_Grassland_170m | 7.713997 | 4.850474 | 4.852871 | 4.853582 | 0.991297 | 0.985449 | 0.986082 | 0.986346 | 14.90254 | 13.72974 | 13.73303 | 13.7344 | 1.064459 | 0.980688 | 0.980923 | 0.981021 |
| T15_Grassland_180m | 7.689698 | 4.848997 | 4.851224 | 4.851883 | 0.990405 | 0.98502 | 0.985603 | 0.985847 | 14.8965 | 13.72751 | 13.73054 | 13.7318 | 1.064028 | 0.980528 | 0.980745 | 0.980835 |
| T15_Grassland_190m | 7.6677 | 4.847659 | 4.849732 | 4.850344 | 0.989602 | 0.984634 | 0.985172 | 0.985397 | 14.88953 | 13.7255 | 13.7283 | 13.72946 | 1.063529 | 0.980385 | 0.980585 | 0.980668 |
| T15_Grassland_200m | 7.648085 | 4.846467 | 4.848403 | 4.848972 | 0.98889 | 0.984291 | 0.98479 | 0.984998 | 14.88443 | 13.72371 | 13.72631 | 13.72739 | 1.063165 | 0.980257 | 0.980443 | 0.98052 |
| T15_Forest_32.25m | 9.291645 | 4.946389 | 4.959798 | 4.963877 | 1.054227 | 1.015732 | 1.019847 | 1.021595 | 26.72447 | 25.04611 | 25.08111 | 25.09474 | 1.908875 | 1.788994 | 1.791493 | 1.792467 |
| T15_Forest_40m | 8.964083 | 4.926475 | 4.937608 | 4.940993 | 1.040658 | 1.009203 | 1.01257 | 1.013999 | 26.57223 | 24.99228 | 25.01854 | 25.03259 | 1.898001 | 1.785149 | 1.787025 | 1.788028 |
| T15_Forest_50m | 8.669954 | 4.908593 | 4.917679 | 4.920439 | 1.028644 | 1.003422 | 1.006126 | 1.007273 | 26.43793 | 24.94429 | 24.96538 | 24.97723 | 1.888408 | 1.781721 | 1.783227 | 1.784073 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T15_Forest_60m | 8.461774 | 4.895936 | 4.903571 | 4.905887 | 1.020256 | 0.999385 | 1.001625 | 1.002575 | 26.3406 | 24.9099 | 24.93028 | 24.93768 | 1.881456 | 1.779265 | 1.78072 | 1.781249 |
| T15_Forest_70m | 8.306845 | 4.886517 | 4.893069 | 4.895054 | 1.014087 | 0.996416 | 0.998314 | 0.999118 | 26.26928 | 24.88675 | 24.90155 | 24.90782 | 1.876362 | 1.777611 | 1.778668 | 1.779116 |
| T15_Forest_80m | 8.187617 | 4.879269 | 4.884983 | 4.886712 | 1.009386 | 0.994154 | 0.995791 | 0.996484 | 26.21521 | 24.8662 | 24.88187 | 24.88727 | 1.8725 | 1.776143 | 1.777262 | 1.777648 |
| T15_Forest_90m | 8.091653 | 4.873434 | 4.878478 | 4.880001 | 1.00564 | 0.992352 | 0.99378 | 0.994384 | 26.17439 | 24.85214 | 24.86329 | 24.8709 | 1.869584 | 1.775139 | 1.775935 | 1.776479 |
| T15_Forest_100m | 8.013504 | 4.868683 | 4.87318 | 4.874535 | 1.002614 | 0.990896 | 0.992157 | 0.992689 | 26.13919 | 24.84079 | 24.85062 | 24.85477 | 1.86707 | 1.774328 | 1.77503 | 1.775327 |
| T15_Forest_110m | 7.948437 | 4.864727 | 4.868768 | 4.869984 | 1.000115 | 0.989693 | 0.990815 | 0.991289 | 26.11099 | 24.8314 | 24.84016 | 24.84385 | 1.865056 | 1.773658 | 1.774283 | 1.774547 |
| T15_Forest_120m | 7.893465 | 4.861385 | 4.865042 | 4.866139 | 0.998021 | 0.988685 | 0.989691 | 0.990115 | 26.08596 | 24.82354 | 24.83139 | 24.8347 | 1.863268 | 1.773096 | 1.773657 | 1.773893 |
| T15_Forest_130m | 7.846539 | 4.858532 | 4.86186 | 4.862857 | 0.996245 | 0.987831 | 0.988739 | 0.98912 | 26.06341 | 24.81398 | 24.82396 | 24.82694 | 1.861658 | 1.772413 | 1.773126 | 1.773339 |
| T15_Forest_140m | 7.806035 | 4.856069 | 4.859114 | 4.860024 | 0.994723 | 0.987098 | 0.987921 | 0.988267 | 26.04574 | 24.80827 | 24.81469 | 24.82028 | 1.860395 | 1.772005 | 1.772463 | 1.772863 |
| T15_Forest_150m | 7.770989 | 4.853939 | 4.856738 | 4.857573 | 0.993415 | 0.986469 | 0.98722 | 0.987535 | 26.03264 | 24.80336 | 24.80921 | 24.81167 | 1.859459 | 1.771654 | 1.772073 | 1.772248 |
| T15_Forest_160m | 7.740757 | 4.852101 | 4.854687 | 4.855456 | 0.992288 | 0.985927 | 0.986614 | 0.986903 | 26.01805 | 24.79913 | 24.80449 | 24.80674 | 1.858417 | 1.771352 | 1.771735 | 1.771896 |
| T15_Forest_170m | 7.713997 | 4.850474 | 4.852871 | 4.853582 | 0.991297 | 0.985449 | 0.986082 | 0.986346 | 26.00741 | 24.79541 | 24.80034 | 24.8024 | 1.857657 | 1.771086 | 1.771439 | 1.771586 |
| T15_Forest_180m | 7.689698 | 4.848997 | 4.851224 | 4.851883 | 0.990405 | 0.98502 | 0.985603 | 0.985847 | 25.99756 | 24.79206 | 24.79661 | 24.7985 | 1.856954 | 1.770847 | 1.771172 | 1.771308 |
| T15_Forest_190m | 7.6677 | 4.847659 | 4.849732 | 4.850344 | 0.989602 | 0.984634 | 0.985172 | 0.985397 | 25.9855 | 24.78904 | 24.79325 | 24.795 | 1.856092 | 1.770632 | 1.770932 | 1.771057 |
| T15_Forest_200m | 7.648085 | 4.846467 | 4.848403 | 4.848972 | 0.98889 | 0.984291 | 0.98479 | 0.984998 | 25.97704 | 24.78637 | 24.79026 | 24.79188 | 1.855488 | 1.770441 | 1.770719 | 1.770835 |
| T16_42m | 16.20381 | 7.582704 | 7.629826 | 7.645079 | 1.116435 | 1.034285 | 1.04876 | 1.055273 | 13.64206 | 11.83308 | 11.91115 | 11.94642 | 0.974425 | 0.845214 | 0.85079 | 0.853309 |
| T16_50m | 15.53409 | 7.543097 | 7.582685 | 7.595537 | 1.08951 | 1.0215 | 1.033525 | 1.038941 | 13.45725 | 11.7638 | 11.82913 | 11.85869 | 0.961225 | 0.840265 | 0.844931 | 0.847043 |
| T16_60m | 14.92679 | 7.507181 | 7.539907 | 7.550568 | 1.065413 | 1.010057 | 1.01988 | 1.02431 | 13.29135 | 11.7015 | 11.75537 | 11.77841 | 0.949374 | 0.835814 | 0.839663 | 0.841308 |
| T16_70m | 14.47597 | 7.480521 | 7.508124 | 7.517139 | 1.04775 | 1.00167 | 1.009871 | 1.013573 | 13.1687 | 11.65648 | 11.70053 | 11.72118 | 0.940614 | 0.832599 | 0.835745 | 0.83722 |
| T16_80m | 14.13045 | 7.460087 | 7.483747 | 7.49149 | 1.034362 | 0.995313 | 1.002279 | 1.005427 | 13.07528 | 11.62203 | 11.65965 | 11.67602 | 0.933941 | 0.830138 | 0.832826 | 0.833995 |
| T16_90m | 13.85938 | 7.444056 | 7.464609 | 7.471347 | 1.023963 | 0.990374 | 0.996379 | 0.999094 | 13.00301 | 11.59495 | 11.62757 | 11.64309 | 0.928779 | 0.828204 | 0.830534 | 0.831642 |
| T16_100m | 13.63921 | 7.431036 | 7.449052 | 7.454967 | 1.01559 | 0.986398 | 0.991625 | 0.993989 | 12.94407 | 11.57427 | 11.60145 | 11.61514 | 0.924569 | 0.826727 | 0.828668 | 0.829646 |
| T16_110m | 13.45903 | 7.42038 | 7.436314 | 7.441551 | 1.008791 | 0.98317 | 0.987764 | 0.989842 | 12.89611 | 11.55608 | 11.58137 | 11.59218 | 0.921144 | 0.825428 | 0.827234 | 0.828006 |
| T16_120m | 13.3075 | 7.411419 | 7.425596 | 7.43026 | 1.003115 | 0.980475 | 0.984539 | 0.986378 | 12.8568 | 11.54207 | 11.5632 | 11.57277 | 0.918336 | 0.824427 | 0.825936 | 0.82662 |
| T16_130m | 13.17987 | 7.403871 | 7.416563 | 7.42074 | 0.998365 | 0.978219 | 0.981838 | 0.983476 | 12.8237 | 11.52894 | 11.54916 | 11.55768 | 0.915971 | 0.823489 | 0.824933 | 0.825542 |
| T16_140m | 13.07178 | 7.397479 | 7.408909 | 7.412673 | 0.994367 | 0.97632 | 0.979564 | 0.981033 | 12.79591 | 11.51906 | 11.53593 | 11.54497 | 0.913986 | 0.822784 | 0.823989 | 0.824634 |
| T16_150m | 12.97811 | 7.391939 | 7.402274 | 7.405678 | 0.990921 | 0.974684 | 0.977604 | 0.978926 | 12.77099 | 11.51056 | 11.52574 | 11.53262 | 0.912206 | 0.822176 | 0.823261 | 0.823752 |
| T16_160m | 12.89762 | 7.387179 | 7.39657 | 7.399664 | 0.987976 | 0.973285 | 0.975928 | 0.977124 | 12.75007 | 11.50188 | 11.51702 | 11.52325 | 0.910712 | 0.821557 | 0.822638 | 0.823082 |
| T16_170m | 12.82704 | 7.383005 | 7.391567 | 7.394387 | 0.985405 | 0.972064 | 0.974464 | 0.975551 | 12.7325 | 11.49553 | 11.50941 | 11.51506 | 0.909457 | 0.821103 | 0.822094 | 0.822498 |
| T16_180m | 12.76504 | 7.379339 | 7.387171 | 7.38975 | 0.983157 | 0.970997 | 0.973185 | 0.974175 | 12.71662 | 11.48998 | 11.50136 | 11.50651 | 0.908322 | 0.820707 | 0.821519 | 0.821887 |
| T16_190m | 12.71072 | 7.376126 | 7.383318 | 7.385687 | 0.981195 | 0.970065 | 0.972068 | 0.972974 | 12.70222 | 11.48514 | 11.49555 | 11.50027 | 0.907294 | 0.820361 | 0.821104 | 0.821441 |
| T16_200m | 12.66244 | 7.373271 | 7.379893 | 7.382074 | 0.979458 | 0.969241 | 0.971079 | 0.97191 | 12.69038 | 11.48085 | 11.49041 | 11.49473 | 0.906449 | 0.820054 | 0.820737 | 0.821046 |