Cranleigh Neighbourhood Plan

Habitats Regulations Assessment

Cranleigh Parish Council

October 2020

Quality information

Prepared by	Checked by	Verified by	Approved by
Hannah Corrigan Graduate Ecologist	James Riley Technical Director	Max Wade Technical Director	James Riley Technical Director

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Prepared for:

Cranleigh Parish Council

Prepared by:

AECOM Infrastructure & Environment UK Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

Table of Contents

Figures

Tables

1. Introduction

1.1 AECOM was appointed by Cranleigh Parish Council to assist in undertaking a Habitats Regulations Assessment (HRA) for the Cranleigh Neighbourhood Plan (NP). This is to inform Cranleigh Parish Council and Waverley Council of the potential effects of NP development to European Sites and how they are being addressed in the Neighbourhood Plan, for Waverley Council to take into account in any formal HRA.

1.2 The Waverley Local Plan Part 1 and Part 2 (LP) were subject to HRA in 2018 and updated in 2019. The Part 1 Local Plan was adopted in 2019. Work on the Part 2 Local Plan is ongoing. The primary conclusion of the Part 1 HRA was a need to address urbanisation and recreational pressures to the Special Protected Areas (SPA), Special Areas of Conservation (SAC) and Ramsar (protected wetland) sites located within the Waverley boundary as a result of development allocations. The HRA recommended policy mechanisms for this that are reflected in the adopted Part 1 Local Plan.

1.3 In May 2020 Base produced an HRA screening statement[1] for the Cranleigh NP on behalf of Waverley Council. That report used the evidence in the LPP1 HRA (produced by AECOM in 2016) to conclude Likely Significant Effects could not be dismissed. However, that report did not take specific account of the proposals in the current Cranleigh Neighbourhood Plan assessed by this HRA. Moreover, AECOM has considered evidence post-dating the Local Plan Part 1 (which dates from 2016 with much of the HRA work undertaken before that time) in producing this report. This HRA therefore aims to revisit the determination of likely significant effects with current data. This is entirely permissible, the law does not prescribe a number of iterations for the HRA Screening (Likely Significant Effects) stage for a plan, or when they are undertaken provided it is before the plan is made.

1.4 The Waverley LP HRA considered both allocations made in Local Plan Part 1 and the overall quantum of development expected across the district over the Local Plan period. This included an allowance for 1,700 dwellings at Cranleigh. The LPP1 HRA also included a windfall allowance for Waverley District. The total quantum of growth in Cranleigh has therefore already been assessed in combination with growth across Waverley and attributable to other plans and projects as part of the HRA of the Waverley LPP1. However, the specific locations of development for Cranleigh were not assessed as they are made by the Neighbourhood Plan rather than LPP1. The objective of this particular HRA is therefore to identify if any particular site allocations and/or policies in the Neighbourhood Plan that have the potential to cause an adverse effect on the integrity of Natura 2000 or European designated sites (Special Areas of Conservation, SACs, Special Protection Areas, SPAs, and Ramsar sites designated under the Ramsar convention), either in isolation or in combination with other plans and projects, and to determine whether site-specific mitigation measures are required.

Legislation

1.5 The need for HRA is set out within the Conservation of Habitats & Species Regulations 2017 (as amended) and concerns the protection of European sites. European sites (also called Natura 2000 sites) can be defined as actual or proposed/candidate Special Areas of Conservation (SAC) or Special Protection Areas (SPA). It is also Government policy for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to Natura 2000 sites.

1.6 The HRA process applies the precautionary principle to protected areas. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

[1] Base (2020). *Habitats Regulations Assessment (HRA) Screening Statement – Determination under Regulation 105 & 106 of the Conservation of Habitats and Species Regulations 2017*. Available online from: https://www.cranleigh-pc.gov.uk/_UserFiles/Files/Cranleigh%20NP%20Final%20HRA%20Screening.pdf [Accessed 06/10/2020]

Conservation of Habitats and Species Regulations 2017 (as amended)

With specific reference to Neighbourhood Plans, Regulation 106(1) states that:

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

Figure 1: The legislative basis for HRA

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

- To assist the Qualifying Body (the Neighbourhood Plan Group) in preparing their plan by recommending (where necessary) any adjustments required to protect European sites, thus making it more likely their plan will be deemed compliant with the Conservation of Habitats and Species Regulations 2017 (as amended); and
- On behalf of the Qualifying Body, to assist the Local Planning Authority (Waverley District Council) to discharge their duty under Regulation 105 (in their role as 'plan-making authority' within the meaning of that regulation) and Regulation 106 (in their role as 'competent authority').

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

1.9 Over the years, 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this Report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

2. Methodology

Introduction

2.1 The need for Appropriate Assessment is set out in English and Welsh law by the Conservation of Habitats and Species Regulations 2017 (as amended).

2.2 Interpretation of the Regulations applies the precautionary principle to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

2.3 Figure 2 below outlines the stages of HRA according to current Ministry of Housing, Communities and Local Government guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the Plan until no significant adverse effects remain.

Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source GOV.UK, 2019.

HRA Task 1 – Likely Significant Effects (LSE)

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

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

2.5 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no

mechanism for an adverse interaction with European sites. This stage is undertaken in Chapter 3 of this report.

Confirming Other Plans and Projects That May Act 'In Combination'

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

2.7 In considering the potential for regional housing development on European sites the primary consideration is the impact of visitor numbers – i.e. recreational pressure and urbanisation.

2.8 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans (which in themselves may have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.

2.9 Other plans that are likely to act in combination to Cranleigh NP are:

- **Waverley Local Plan Part 1** – allocates (at least) 11,210 dwellings,
- **Guildford Local Plan: strategy and sites 2015-2034** – allocates (at least) 10,678 dwellings,
- **Bramley Neighbourhood Plan 2017-2032** – allocates (at least) 90 dwellings,
- **Witley Neighbourhood Plan 2017-2032** – allocates 300 dwellings,
- **Chiddingfold Neighbourhood Plan (March 2019)** – allocates 130 dwellings, and
- **Haslemere Neighbourhood Plan 2013-2032** – allocates (some already constructed) 990 dwellings.

2.10 Waverley District Council are also producing a Local Plan Part 2 which will identify site allocations to deliver the quantum of development set by Local Plan Part 1 and will cover parts of the district not already covered by Neighbourhood Plans. However, LPP2 is still being drafted and cannot therefore be discussed in this HRA.

3. Likely Significant Effects

Background to Cranleigh Parish

3.1 Cranleigh is a large village situated at the rural eastern corner of the Borough of Waverley, in southern Surrey. Cranleigh is a civil parish and located 10km east of Godalming, 15km south-east of Guildford, and 18km north-west of Horsham. Within the wider landscape of Cranleigh is farmland and estate land including Baynards Park to the south-east. Located directly to the east of the village is a collection of ancient woodlands (Ashen Copse, Upper Canfold, Lower Canfold, Firtree Wood, Bowles Rough, Great Copse, Whitehall Copse, Owlbarn Copse and Rowgardens Copse).

Physical Scope of the HRA

3.2 Of the European Sites that are describes in Appendix A, none lie directly within the boundary of Cranleigh Parish. Each European Site is located at a distance greater than 5km from the Parish boundary and considerably further than that from the settlement of Cranleigh itself. The Mens SAC, is located 7.5km south of the parish boundary, Ebernoe Common SAC 8.8km south-west, Thursley, Hankley and Frensham Commons SPA and Thursley, Ash, Pirbright and Chobham SAC 8.7km west, (10.3km from the village) and Thursley and Ockley Bogs Ramsar is located 10.9km west.

3.3 Based upon previous HRA work undertaken for Waverley District, the screening statement produced by Base (2020) and the above distances there are several impact pathways of impact that require analysis regarding increased development within the Cranleigh Parish Neighbourhood Plan and said European Sites. These are:

- Air quality,
- Water quality and resources
- Recreational pressure, and
- Habitat fragmentation.

Air quality

3.4 Increased residential development could lead to a greater number of vehicles within a village/ using the road network. As such, increased air pollution could arise relative to a situation of no growth. Pollutants realised from vehicles may be carried directly by wind currents and deposited to European Sites or pollutants may become soluble and taken up during evaporation and deposited to said sites during precipitation.

3.5 The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2) and are summarised in Table 1. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges[2]. NOx can also be toxic at high concentrations (far above the annual average critical level). However, in particular, high levels of NOx and NH_3 are likely to increase the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere is widely known to enhance soil fertility and to lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats[3] [4].

[2] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm, accessed 06/10/2020.
[3] 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
[4] Dijk, N. **2011.** Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation Global Change Biology 17: 3589-3607

Table 1: Main sources and effects of air pollutants on habitats and species[5]

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO_2)	The main sources of SO_2 are electricity generation, and industrial and domestic fuel combustion. However, total SO_2 emissions in the UK have decreased substantially since the 1980's. Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO_2 have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO_2 emissions in the UK.	Wet and dry deposition of SO_2 acidifies soils and freshwater, and may alter the composition of plant and animal communities. The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species. However, SO_2 background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	Leads to acidification of soils and freshwater via atmospheric deposition of SO_2, NOx, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.	Gaseous precursors (e.g. SO_2) can cause direct damage to sensitive vegetation, such as lichen, upon deposition. Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants. Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.
Ammonia (NH_3)	Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+) - containing aerosol. Due to its significantly longer lifetime, NH_4+ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.	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.	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NOx for all vegetation types has been set to 30 ug/m3. Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.

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

Pollutant	Source	Effects on habitats and species
		In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.
Nitrogen deposition	The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_X) or reduced (e.g. NH_3) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices. The N pollutants together are a large contributor to acidification (see above).	All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally. Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions involving NOx, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above). Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to both humans and wildlife, and can affect buildings. High O_3 concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.

3.6 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[6]. Ammonia emissions originate from agricultural practices[7], with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO_2 or NH_3 emissions will be associated with the Milton NP.

3.7 NOx emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion to its overall NOx footprint (92%) through the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[8]. Emissions of NOx could therefore be reasonably expected to increase because of a higher number of vehicles due to implementation of the Local Plan Documents.

3.8 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}; the threshold for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[9] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH_3).

3.9 The Department of Transport's Transport Analysis Guidance stipulates that, beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant[10] (Figure 3). This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development outlined in the Local Plan.

[6] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[7] Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. 1998. A new inventory for ammonia emissions from U.K. agriculture. Atmospheric Environment 32: 309-313
[8] 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
[9] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.
[10] http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013 [Accessed on the 06/10/2020]

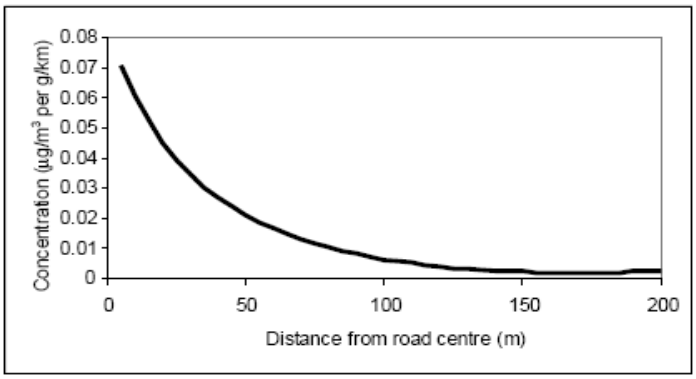


Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT[11])

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

3.11 Guidance from the Institute of Air Quality Management and Highways England both set an impact zone of 200m[12] [13] from the roadside for potential significant air quality effects to vegetation from road traffic. In addition, the Department for Transport reported in the National Travel Survey (2018) that the average trip undertaken by car is 10.6km[14].

3.12 Since daily journeys to work are the main factor influencing roadside air quality, European sites that lie beyond the average trip distance are much less likely to experience any appreciable change in annual average daily traffic (and thus air quality) due to growth. In drawing this conclusion, we are mindful of paragraph 48 of Advocate-General Sharpston's Opinion in European Court of Justice Case C-258/11 where she stated that: '*the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill*'.

3.13 European Sites located within 10.6km of this average trip from the Cranleigh Parish boundary is: The Mens SAC (7.5km south), Ebernoe Common SAC (8.8km south-west), Thursley, Hankley and Frensham Commons SPA and Thursley, Ash, Pirbright and Chobham SAC (8.7km west). However, there are no direct major road links between the European sites and Cranleigh village.

Water quality and resources (hydrological changes)

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

3.15 In addition, water quantity has a significant effect on the biodiversity of a river catchment in numerous ways. The amount of water falling on a catchment and getting into a river/waterbody, has an effect on water levels

[11] http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf [Accessed on the 06/10/2020]
[12] GOV.UK (2019). *Transport analysis guidance. Transport analysis guidance (TAG) provides information on the role of transport modelling and appraisal*. Available online: https://www.gov.uk/guidance/transport-analysis-guidance-webtag#013, accessed: 06/10/2020
[13] GOV.UK (2016). *Standards for Highways online resources. Information on the design, construction and maintenance of highways for construction professionals*. Available online: https://www.gov.uk/guidance/standards-for-highways-online-resources, accessed: 06/10/2020
[14] GOV.UK (2019). *Average number of trips made and distance travelled*. https://www.gov.uk/government/statistical-data-sets/nts01-average-number-of-trips-made-and-distance-travelled, accessed 06/10/2020

(depth) in a river/waterbody, water table levels in a floodplain, and a flow rate of a river. In turn, these properties influence other important river properties – for example levels of silt and dissolved oxygen in the water.

3.16 Water abstraction (i.e. removal of water for human use) can significantly impact aquatic ecosystems. This is because excessive abstraction can lead to drought conditions for a particular river/ waterbody. Thursley, Hankley and Frensham Common SPA, Thursley and Ockley Bogs Ramsar and Ebernoe Common SAC all support lowland bog that is susceptible to changes in fluctuations in water table depth.

3.17 However, Thames Water consider they are able to meet the future water resource requirements for the Waverley area (and indeed the entire South East of England) without increased abstractions from watercourses and groundwaters that are of importance to Thursley, Ash, Pirbright and Chobham SAC. This conclusion is based on modelling work that assumes new strategic water resource options, ongoing leakage control and increasing water efficiencies.

3.18 The impacts of excessive water abstraction to European Sites is best discussed at higher spatial scales (i.e. borough/ district level with the Environment Agency and Thames Water). The HRA of the Waverley LPP1 concluded it has already been noted that the security of water supply is beyond the scope of Waverley Borough to influence, and it is considered that the Council has taken all appropriate measures to minimise any contribution to the overall pressures on water resources in the Guildford Water Resource Zone. Furthermore, Thames Water in their most recent Water Resource Management Plan (WRMP)[15] undertook HRA and confirmed that they could meet water supply requirements for expected population growth within their catchment area (i.e. Cranleigh and Waverley in combination with surrounding authorities) up to 2100 without any adverse effect on the integrity of any European sites. The issue of water resources is therefore not discussed further, and a conclusion of no likely significant effect can be drawn for the Neighbourhood Plan.

3.19 With regards to water quality and impacts from pollution it is important to note that as groundwater migrates, natural filtration occurs; this has a positive correlation with increased distance travelled from the point source[16]. Thursley, Hankley and Frensham Common SPA, Thursley and Ockley Bogs Ramsar and Ebernoe Common SAC are considered too far from the Cranleigh NP to constitute likely significant effects to European Sites. Therefore, water quality is not discussed further, and a conclusion of no likely significant effect can be drawn for the Neighbourhood Plan.

Recreational pressure

3.20 Increased development could lead to higher numbers of visitors to European Sites. For example, the nature, scale, timing and duration of some human activities can result in the disturbance of birds at a level that may substantially affect their behaviour, and consequently affect the long-term viability of the population. This is possible for European Sites to be visited by new residents in combination with the surrounding villages[17] [18] [19]. 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 eutrophication as a result of dog fouling; and
- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl.

3.21 The HRA for Waverley Local Plan Part 1 was started in approximately 2012 and at that time there was relatively little information regarding recreational catchments for European sites, other than Thames Basin Heaths SPA. Therefore AECOM was very precautionary at the screening (LSE) stage and referred to the

[15] Thames Water (2019). *Thames Water Final Water Resources Management Plan 2019. Appendix C: Habitats Regulations Assessment.* Available online from: https://cycles.thameswater.co.uk/-/media/Site-Content/Your-water-future-2018/Appendices/dWRMP19-Appendix-C---HRA---Stage-1-screening-151217.pdf [Accessed: 06/10/2020]

[16] Cheremisinoff, N.P., 1998. *Groundwater remediation and treatment technologies*. Elsevier.

[17] Liddle, M.J., 1975. A selective review of the ecological effects of human trampling on natural ecosystems. *Biological Conservation*, *7*(1), pp.17-36.

[18] Vangansbeke, P., Blondeel, H., Landuyt, D., De Frenne, P., Gorissen, L. and Verheyen, K., 2017. Spatially combining wood production and recreation with biodiversity conservation. *Biodiversity and conservation*, *26*(13), pp.3213-3239.

[19] Morris, A., Burges, D., Fuller, R.J., Evans, A.D. and Smith, K.W., 1994. The status and distribution of Nightjars Caprimulgus europaeus in Britain in 1992. A report to the British Trust for Ornithology. *Bird study*, *41*(3), pp.181-191.

average distance over which visitors will typically travel for 'a day visit to a countryside site' (17.2km) as reported in the England Leisure Day Visits surveys as undertaken by the Countryside Agency (now part of Natural England). The source is referenced in a footnote in the LPP1 HRA. Over the years since the LPP1 HRA it has become clear from many visitor surveys undertaken all over the country (and a fixing of the survey methodology) that, except for the largest honeypot sites such as Cannock Chase SAC or The New Forest SAC, 17.2km is extremely precautionary and will considerably exaggerate the core catchment (typically defined as the zone within which 75% of regular visitors live). For this reason European sites such as Mole Gap to Reigate Escarpment SAC (located well over 15km from Cranleigh) are well outside the core recreational catchment likely for European sites, as now understood.

3.22 With regard to The Mens SAC and Ebernoe Common SAC, no visitor survey work has been undertaken for either of these European sites. However, the nature of the interest features and the fact that they are not found at ground level makes them less susceptible to the kind of casual recreational activities (e.g. dog walking) in which most people will engage than sites designated for their habitats. In addition, these sites are relatively small and are not directly connected to Cranleigh by major roads. Moreover, visitor surveys of many inland European sites have identified that, with the exception of some very large sites that have a regional draw (such as Cannock Chase SAC) inland European sites rarely draw most of their locally resident visitors from closer than 5-7km. The Site Improvement Plans for both SACs do identify 'disturbance' as a pressure, but this is clearly associated with the potential for increased lighting around the SAC due to development, rather than recreational footfall. It is therefore considered that Cranleigh lies beyond a realistic recreational pressure impact zone for these SACs and that likely significant effects through this pathway due to growth in Cranleigh will not occur.

3.23 For Thursley, Ash, Pirbright and Chobham SAC and Thursley, Hankley and Frensham Commons SPA a 5km influence zone is used to identify the zone where recreational pressure is likely to arise, as the HRA of Waverley Local Plan Part 1 records that Natural England recommended during preparation of that HRA that the Council undertake a project-level HRA on all larger developments located within 5km of Thursley, Hankley and Frensham Commons SPA. Given Thursley, Ash, Pirbright and Chobham SAC and Thursley, Hankley and Frensham Commons SPA is located over 8km from the Parish boundary impacts from recreational pressure are not expected from increased residential development at Cranleigh. As part of AECOM's work on the HRA of the Waverley Local Plan Part 2 Natural England have reaffirmed that a 5km core recreational catchment for the SAC and SPA are still appropriate.

Habitat fragmentation

3.24 Simply described, habitat fragmentation is the division of an expanse of habitat into smaller, individual patches that are isolated from each other by the removal of the original habitat[20].

3.25 Ebernoe Common SAC and The Mens SAC are both designated for their populations of Bechstein's bat and barbastelle bats. Bats are not expected to be confined to the boundaries of European Sites and are anticipated to forage within the wider vicinity of their Core Sustenance Zone (CSZ)[21].

3.26 Barbastelle bats are known to travel substantial distances from their roots to feeding sites[22]. As a precaution, Natural England and South Downs National Park Authority have since agreed a Sussex Bat Protocol[23], that identifies a maximum 12km zone around the Sussex bat SACs[24] (Ebernoe Common SAC, The Mens SAC and Singleton & Cocking Tunnels SAC) in which HRAs investigating habitat fragmentation are required.

3.27 For Bechstein's it is reasonable to assume that the core foraging areas around each SAC is likely to be within c.1km of each site boundary. Barbastelle bats are known to travel substantial distances from their roots to feeding sites.

[20] Wilcove, D.S., McLellan, C.H. and Dobson, A.P., 1986. Habitat fragmentation in the temperate zone. *Conservation biology*, *6*, pp.237-256.
[21] Bat Conservation Trust (2016). *Core Sustenance Zones*. Available from: https://www.bats.org.uk/our-work/landscapes-for-bats/core-sustenance-zones [Accessed: 19/08/2020].
[22] 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.
[23] South Downs National Park Authority/ Natural England (2017). Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Final Draft
[24] South Downs National Park Authority/ Natural England (2017). Sussex Bat Special Area of Conservation Planning and Landscape Scale Enhancement Protocol. Final Draft

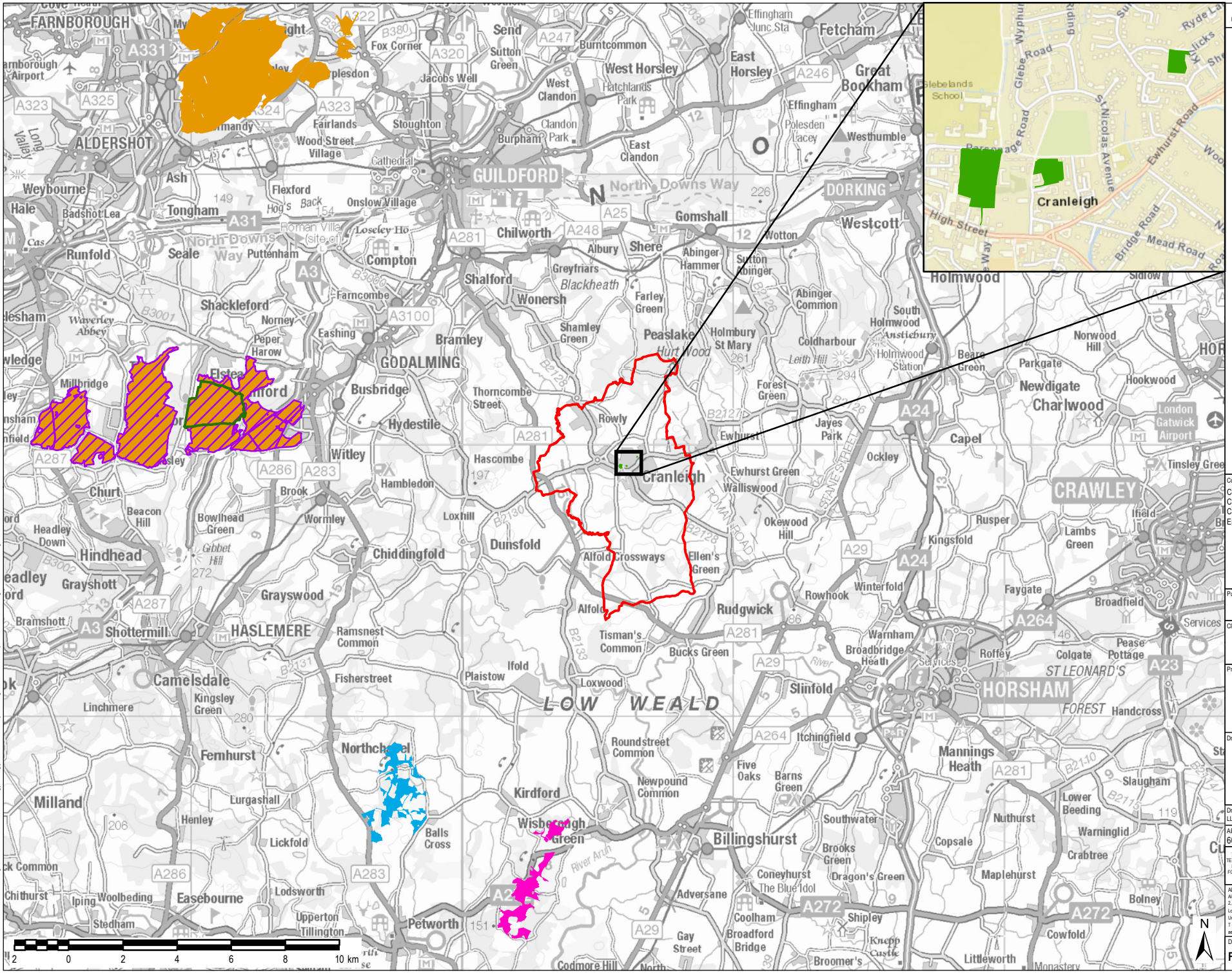
3.28 There is a risk that development within 12km of these SACs could fragment supporting habitats and prevent bats from using functional links to important roosting, breeding and hibernating sites supported by the SACs. The following impact pathways could arise from inappropriate development:

- **Habitat degradation** - loss, damage or change of management of potential foraging habitat; or removal / fragmentation / modification of habitats in a potential commuting corridor;
- **Lighting** – increased artificial lighting affecting potential foraging and commuting features;
- **Noise and vibration** – construction / demolition activities close to potential commuting and foraging features;

3.29 The Parish of Cranleigh supports several areas of ancient woodland (Ashen Copse, Upper Canfold, Lower Canfold, Firtree Wood, Bowles Rough, Great Copse, Whitehall Copse, Owlbarn Copse and Rowgardens Copse) that could be of foraging (and roosting) value to barbastelle bats of The Mens and Ebernoe Common SAC; otherwise known as functionally linked habitats.

3.30 Given Cranleigh Parish boundary is located 7.5km from the Mens SAC and 8.8km from Ebernoe Common SAC both are situated within the 12km zone ‘Wider conservation area’ identified by the Sussex bat protocol. Therefore, development in Cranleigh NP has the potential to fragment habitats utilised by these bat species.

Figure 3 – European Sites in relation to Cranleigh Parish.



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LEGEND

- Cranleigh Parish Boundary
- Housing Allocation

European Designated Sites

- Thursley and Ockley Bogs Ramsar
- Thursley, Hankley and Frensham Commons SPA
- Ebernoe Common SAC
- The Mens SAC
- Thursley, Ash, Pirbright & Chobham SAC

Purpose of Issue
For Issue

Client
CRANLEIGH PARISH COUNCIL

Project Title
CRANLEIGH NEIGHBOURHOOD PLAN HRA

Drawing Title
EUROPEAN SITES IN RELATION TO CRANLEIGH PARISH

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Aldgate Tower
2 Leman Street
London, E1 8FA
United Kingdom
T +44-0207-645-2000
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File Name:\\BA-WP-0024300 - Planning and Environment\5003 - Ecology\Ecology 3336 Jobs\Locality\Cranleigh NP HRA\GIS\Layout\200820_CranleighParishCouncil_Figure1_HRA.mxd

3.31 For the Screening assessment (Table 2); green shading in the final column indicates that the proposed development site or policy has been deemed not to lead to a likely significant effect on any European sites due to the absence of any mechanism for an adverse effect. Orange shading indicates that a pathway of impact exists, and further discussion is therefore required.

Table 2. Screening assessment (Likely Significant Effects) of the Cranleigh Neighbourhood Plan.

Policy	European Sites and Proximity to Policy Area	Brief summary	Screening outcome
Policy CRAN1: Location of development	N/A	Development in Cranleigh parish shall be focused within the settlement boundary of Cranleigh village.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to development within the settlement boundary. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN2: Extensions, alterations, replacement buildings and limited infilling in the Green Belt	N/A	Policy provides constraints to development within the green belt (including extensions, alteration and replacement of existing buildings) to ensure land is not over developed.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to constrained development within Green Belt land. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN3: Land at Longfield	• The Mens SAC – 13.6km, S • Ebernoe Common SAC – 13.7km, S • Thursley, Hankley and Frensham Common SPA – 12.4km, W • Thursley, Ash, Pirbright & Chobham SAC – 12.4km, W	Policy allocates a total of 20 dwellings on 0.38ha of brownfield land (former residential care home).	**No Likely Significant Effect. Screened out.** This policy allocates a total of 20 dwellings on a brownfield site that is located over 12km from each European Site. Considering the buffer distance of 5km for recreational pressures, 10.6km for air quality impacts and 12km for SAC habitat fragmentation, this housing allocation is situated too far from European Sites to constitute likely significant effects alone or in combination. Therefore, likely significant effects are screened out.
Policy CRAN4: St Nicolas Junior School site	• The Mens SAC – 13.2km, S • Ebernoe Common SAC – 13.3km, S • Thursley, Hankley and Frensham Common SPA – 12km, W • Thursley, Ash, Pirbright & Chobham SAC – 12km, W	Policy allocates a total of 75 dwellings on 1.9ha. The site is currently used as a primary school.	**No Likely Significant Effect. Screened out.** This policy allocates a total of 75 dwellings that is located over 12km from each European Site. Considering the buffer distance of 5km for recreational pressures, 10.6km for air quality impacts and 12km for SAC habitat fragmentation, this housing allocation is situated too far from European Sites to constitute likely significant effects alone or in combination. Therefore, likely significant effects are screened out.

Policy CRAN5: Cranleigh Infant School site	• The Mens SAC – 13.2km, S • Ebernoe Common SAC – 13.3km, S • Thursley, Hankley and Frensham Common SPA – 12km, W • Thursley, Ash, Pirbright & Chobham SAC – 12km, W	Policy allocates a total of 15 dwellings on 0.6ha. The site is currently used as a primary school.	**No Likely Significant Effect. Screened out.** This policy allocates a total of 15 dwellings that is located over 12km from each European Site. Considering the buffer distance of 5km for recreational pressures, 10.6km for air quality impacts and 12km for SAC habitat fragmentation, this housing allocation is situated too far from European Sites to constitute likely significant effects alone or in combination. Therefore, likely significant effects are screened out.
Policy CRAN6: Housing Mix	N/A	Policy requires housing development to deliver a mixture of housing types (i.e. affordable homes and bungalows).	**No Likely Significant Effect. Screened out.** This is a development management policy relating housing mix. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN7: Design of Development	N/A	Policy require development to be of high-quality design and is innkeeping with its surroundings.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to housing design. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN8: Character of Development	N/A	This policy ensures that development preserves and enhances the local character of the area.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to housing design and setting aesthetics. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN9: Safeguarding Amenity	N/A	This policy safeguards local amenities from inappropriate development.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to safeguarding of local amenities. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN10: Protecting Existing	N/A	Policy safeguards current employment space.	**No Likely Significant Effect. Screened out.**

and Encouraging New Employment Sites			This is a development management policy relating to safeguarding current employment space from inappropriate development. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN11: Rural Enterprise and use of Agricultural Buildings for Business	N/A	Policy provides constraints to the development of rural enterprise to prevent inappropriate development.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to safeguarding rural enterprise and use of agricultural buildings from inappropriate development. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN12: Natural Landscape and Rural Character	N/A	Policy provide safeguarding to biodiversity and the environment.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy that safeguards biodiversity and the environment and as such there are no impact pathways to European sites. **As an additional safeguarding measure, it is recommended that a policy requirement for the protection of ancient woodland from development and disturbance (namely: Ashen Copse, Upper Canfold, Lower Canfold, Firtree Wood, Bowles Rough, Great Copse, Whitehall Copse, Owlbarn Copse and Rowgardens Copse) is incorporated into Policy CRAN12. Additional policy wording should also ensure that the functional links of The Mens SAC and Ebernoe Common SAC supported by the parish are not degraded from inappropriate development, as per the Sussex Bat Protocol.**
Policy CRAN13: Air Quality	N/A	Policy requires development to have no unacceptable risks to air quality.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN14: Water Quality	N/A	Policy requires development to cause no deterioration to water quality.	**No Likely Significant Effect. Screened out.**

			This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN15: Soil Quality and Contamination	N/A	Policy requires development to cause a deterioration to soil quality or increase the risk of soil erosion.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN16: Energy Efficiency and Design	N/A	Policy encourages development to achieve the highest levels of sustainable design (i.e. through the use of renewable energy and reducing water consumption).	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN17: Local Green Spaces	N/A	Policy safeguards local green spaces from development.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN18: Residential Gardens and Amenity Space	N/A	Policy safeguards residential gardens and amenity space from development.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN19: Flood Risk and Drainage	N/A	Policy ensures development provides adequate drainage design to avoid impacts from flooding.	**No Likely Significant Effect. Screened out.** This is a positive environmental policy and as such there are no impact pathways to European sites.
Policy CRAN20: Transport and Movement	N/A	Policy ensures residential development is accompanied by appropriate infrastructure and promotes walking routes.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to the provision of infrastructure. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN21: Residential Parking	N/A	Policy ensures that residential development provides an adequate amount of off-street parking.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to the provision of off-street parking. It does not identify any location, type or

			quantum of development. There are no impact pathways to European sites.
Policy CRAN22: Telecommunications	N/A	Policy ensures that infrastructure for telecommunications it is of a scale and design appropriate to local setting.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to the provision of telecommunication infrastructure. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN23: Water Supply and Wastewater Infrastructure	N/A	Policy ensures the water supply and wastewater infrastructure is provide and designed appropriately.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to the provision of water and wastewater treatment. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.
Policy CRAN24: Heritage Assets	N/A	Policy ensures that local herniate assets are safeguarded from inappropriate development.	**No Likely Significant Effect. Screened out.** This is a development management policy relating to the safeguarding of heritage assets. It does not identify any location, type or quantum of development. There are no impact pathways to European sites.

4. Conclusion

4.1 Considering the buffer distance of 5km for recreational pressure, 10.6km for air quality impacts and 12km for SAC habitat fragmentation the housing allocations made by the Cranleigh NP (Policy CRAN3, CRAN4, CRAN5) are situated too far from European Sites to constitute likely significant effects alone or in combination. Therefore, likely significant effects from increased residential development within Cranleigh are screened out. Furthermore, while these housing allocations are not expected to lead to likely significant effect, additional safeguarding policy wording is recommended for Policy CRAN12 to ensure that all ancient woodland within Cranleigh is protected from development and disturbance. It is considered that this additional policy requirement will also protect the functional links of The Mens SAC and Ebernoe Common SAC, as per the Sussex Bat Protocol.

Appendix A Internationally Designated Sites

Thursley, Hankley and Frensham Commons SPA

Introduction

4.2 The Thursley, Hankley and Frensham Commons (Wealden Heath Phase I) SPA forms a large complex of lowland heaths (otherwise referred to as The Wealden Heaths) situated in Surrey close to the Hampshire border. The complex is set in a largely rural setting with an unspoilt character despite its close proximity to large population centres such as London and Guildford. The surrounding landscape includes oak woodlands, conifer woods and small pastures intersected by narrow, sunken lanes. The underlying geology of the commons is predominantly made up by sandstones and ironstone belonging to the group known as Wealden Greensand of Cretaceous age. These form low hills and broad valleys, dissected by small streams. The deposits give rise to mostly free-draining sandy soils, but layers of less permeable deposits give rise locally to wetlands including mires, flushes and wet woodlands.

4.3 The complex is situated in the Surrey Hills Area of Outstanding Natural Beauty (AONB) and is in the Wealden Greensand National Character Area (NCA). Several parts of the site are used for military training and these areas have controlled public access. Part of the site is managed as a golf course. Most of the remainder has open public access and some of the sites are very popular destinations for a range of recreational activities including walking, birdwatching, horse riding, cycling and orienteering. Part of the site, Thursley Common, is declared as a National Nature Reserve managed by Natural England[25].

Reasons for designation

4.4 Qualifying individual species listed in Annex I of the Wild Birds Directive (Article 4.1) that are supported by the site includes:

- Internationally important numbers of Dartford warbler *Sylvia undata*
  - When classified, the SPA supported 20 pairs (which represented 4% of the British breeding population in 1984).
    - The Thursley, Hankley and Frensham Commons SPA regularly supports internationally important numbers of Dartford warbler. The SPA is close to the northern limit of the range of this species in Europe and numbers fluctuate depending upon winter and spring weather conditions. The species does not migrate and winter survival and breeding success can be badly affected by very cold winters or prolonged periods of snow cover. Cold, damp spring weather can also have damaging effects. Dartford warblers are strongly associated with lowland heaths with extensive patches of mature gorse with an abundance of favoured invertebrate prey items such as spiders. However, they will also nest in areas of mature heather, clearings in forestry plantations and patches of bracken.
    - Dartford warblers are widely distributed across the SPA and the site provides extensive areas of suitable habitat. Particularly large numbers of birds are regularly recorded at Hankley Common and Frensham Common but they are widely distributed across the complex.
- Internationally important numbers of Nightjar *Caprimulgus europaeus*
  - When classified, the SPA supported 20 pairs (which represented 1% of the British breeding population in 1984).
  - The Thursley, Hankley and Frensham Commons SPA regularly supports internationally important numbers of nightjar. The European population of this species is thought to have undergone a significant decline in the past as a result of loss of suitable habitat. However, data suggests that

[25] Natural England (2017). *European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features*. Available online from: http://publications.naturalengland.org.uk/publication/5735025425252352 [Accessed: 07/01/2020].

there has been a trend of increasing numbers in recent years, which may be due to better protection of core breeding areas and improved management of lowland heathland.

- Nightjars are nocturnal birds and can often be seen hawking for food at dusk and dawn. With pointed wings and a long tails their shape is similar to a kestrel or cuckoo. Their cryptic, grey-brown, mottled, streaked and barred plumage provides ideal camouflage in the daytime.
- Nightjars are migratory, spending the winter months feeding in parts of Africa. The species is considered to be vulnerable to the effects of long-term climate change on drought-prone areas of Africa. Nightjar regularly utilise areas across the SPA for nesting and feeding. Favoured areas of habitat are areas of heath with high structural diversity including bare patches or short vegetation, but they will also utilise clearings in woods, broad rides in conifer plantations and sparsely vegetated areas. Particularly large numbers of nightjar are regularly recorded in the SPA at Thursley, Hankley, Frensham and Elstead Commons but they occur widely across the complex.

- Internationally important numbers of Woodlark Lullula arborea
  - When classified, the SPA supported 27 pairs (which represented 12% of the British breeding population in 1984).
    - Woodlark regularly utilise the Thursley, Hankley and Frensham Commons SPA in internationally important numbers. This species suffered a serious population decline and contraction in range in the UK up until the latter part of the 20th century. The population is now recovering and colonising new areas as a result of protection and expansion of lowland heaths. The woodlark has also benefited from rotational management of conifer plantations where it can utilise recently felled areas and areas of young re-growth for nesting. Woodlarks favour areas of short vegetation or sparsely-vegetated areas on heaths with scattered trees for use as song-posts. They feed on seeds and small invertebrates. Numbers of woodlarks tend to fluctuate over time in relation to successional development of heaths and plantations, with large numbers often present following heath fires or tree clearance.
    - Woodlarks are regularly recorded across most of the SPA with particularly large numbers often present at Thursley and Frensham Commons.

Current threats and pressures[26]

4.5 Thursley, Hankley and Frensham Commons SPA also forms part of an extensive complex of lowland heathland, acid grassland, mire and commercial conifer plantations in south east England. The complex is located close to urbanization and therefore a number of pressures and threats currently impact the site, these include:

- Public access and disturbance;
- Undergrazing;
- Forestry and woodland management;
- Hydrological changes;
- Inappropriate scrub control;
- Invasive species;
- Wildlife/ arason;
- Air pollution;
- SAC feature's location/ extent/ condition unknown;
- Military; and
- Habitat fragmentation.

[26] Natural England (2014). *Site improvement plan: Thames Basin.* Available online at: http://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed: 06/10/2020].

Conservation objectives[27]

4.6 '*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.'*

Thursley, Ash, Pirbright and Chobham SAC

Introduction

4.7 Thursley, Ash, Pirbright and Chobham SAC is an extensive complex of heaths in the south east of England with extensive areas of wet and dry heath, acid mire and bog pools. The complex is situated in the Surrey Hills Area of Outstanding Natural Beauty (AONB) and is part of the Weald National Character Area. The underlying geology of the site is composed of Lower Greensand age marine deposits laid down in the Cretaceous period. This formation is made up of alternating sandstones and mudstones containing chert and ironstone, and the formation includes the distinct layers of the Folkestone Beds, Sandgate Beds and Bargate Beds.

4.8 The Folkestone Beds make up the high ground in parts of the complex. These are mostly relatively free-draining sandstones but also include occasional 'lenses' of clay which impede drainage resulting in localised surface wetness and seepages. The Folkestone Beds are a base-poor formation and so water percolating through the beds generally remains nutrient and base-poor. The underlying Sandgate Beds are mostly made up by finer-grained materials and have a higher clay content and so are generally less free-draining. It is this impeded drainage which gives rise to the formation of the mire systems. A further aspect of the geology is the influence of the Bargate Beds which are lower in the geological sequence. The Bargate Beds are fossiliferous calcareous sandstones with a high content of calcium carbonate. Water percolating through these deposits can develop a high base-status and this is thought to be the reason for a relatively high alkalinity in the water feeding the west side of the mire system on Thursley Common. Surface peat is present in the lower-lying waterlogged areas, which varies in thickness from 1-10cm over much of Ockley Common to a maximum depth of about 1.5 metres on parts of Thursley Common. The site is set in a landscape of extensive farmland, broadleaved woodland, pine woodland and small villages.

4.9 The complex includes outstanding examples of valley mire vegetation which supports very rich assemblages of wetland invertebrates, bryophytes and scarce plants, and which provide a habitat for breeding birds including curlew and snipe. Parts of the complex are managed as nature reserves with open public access. Other parts have military training ranges and have limited or no public access[28].

Reasons for designation

4.10 There are a number of qualifying habitats that are supported by the SAC, these include:

- Northern Atlantic wet heaths with *Erica tetralix*
  - This site represents lowland northern Atlantic wet heaths in south-east England. The wet heath at Thursley is NVC type M16 *Erica tetralix – Sphagnum compactum* and contains several rare plants, including great sundew *Drosera anglica*, bog hair-grass *Deschampsia setacea*, bog orchid *Hammarbya paludosa* and brown beak-sedge *Rhynchospora fusca*. There are transitions to valley bog and dry heath. Thursley Common is an important site for invertebrates, including the nationally rare white-faced darter *Leuccorhinia dubia*.

[27] Natural England (2019). European Site Conservation Objectives for Thursley, Hankley and Frensham Commons (Wealden Heaths Phase 1) Special Protection Area. Available online at: http://publications.naturalengland.org.uk/publication/5735025425252352 [Accessed: 06/10/2020].
[28] Natural England (2016). European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features. Available online at: http://publications.naturalengland.org.uk/publication/5141075941392384 [Accessed: 06/10/2020].

- European dry heaths
  - This south-east England site contains a series of large fragments of once-continuous heathland. It is selected as a key representative of NVC type H2 *Calluna vulgaris – Ulex minor* dry heathland. This heath type has a marked south-eastern and southern distribution. There are transitions to wet heath and valley mire, scrub, woodland and acid grassland, including types rich in annual plants. The European dry heaths support an important assemblage of animal species, including numerous rare and local invertebrate species, European nightjar *Caprimulgus europaeus*, Dartford warbler *Sylvia undata*, sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*.
- Depressions on peat substrates of the *Rhynchosporion*
  - This site contains examples of Depressions on peat substrates of the *Rhynchosporion* in south-east England, where it occurs as part of a mosaic associated with valley bog and wet heath. The vegetation is found in natural bog pools of patterned valley mire and in disturbed peat of trackways and former peat-cuttings.

Current threats and pressures[29]

4.11 Thursley, Ash, Pirbright and Chobham SAC forms part of an extensive complex of lowland heathland, acid grassland, mire and commercial conifer plantations in south east England. The complex is located close to urbanization and therefore a number of pressures and threats currently impact the site, these include:

- Public access and disturbance;
- Undergrazing;
- Forestry and woodland management;
- Hydrological changes;
- Inappropriate scrub control;
- Invasive species;
- Wildlife/ arason;
- Air pollution;
- SAC feature's location/ extent/ condition unknown;
- Military; and
- Habitat fragmentation.

Conservation objectives[30]

4.12 '*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.'*

Thursley and Ockley Bogs Ramsar

Introduction

4.13 Thursley and Ockley Bogs is a valley mire complex and lies within Thursley, Hankley & Frensham Commons SSSI. The mire occurs within a matrix of heathland, where drainage is impeded, and a deep layer of peat

[29] Natural England (2014). *Site improvement plan: Thames Basin.* Available online at: http://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed: 06/10/2020].
[30] Natural England (2018). European Site Conservation Objectives for Thursley, Ash, Pirbright and Chobham Special Area of Conservation. Available online at: http://publications.naturalengland.org.uk/publication/5141075941392384 [Accessed: 06/10/2020].

has built up from the remains of bog-moss *Sphagnum* spp. which forms much of the vegetation. Several areas of open water also contribute significantly to the overall diversity of the site, ranging from acidic boggy pools and ditches to large ponds.

Reason for designation[31]

4.14 This site is designated under two Ramsar Criterion, these include:

- **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*.

Current threats and pressures

- Appropriate management
- Managed recreational pressure
- Minimal air pollution
- Absence or control of urbanisation effects, such as fires and introduction of invasive non-native species
- Maintenance of appropriate water levels
- Maintenance of water quality

Conservation objectives[32]

4.15 '*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.'*

The Mens SAC

Introduction

4.16 The Mens is one of the largest ancient woodlands in West Sussex and supports a significant population of barbastelle *Barbastella barbastellus*. This site is located 7.9km south-east of Chiddingfold Parish Boundary. Most of the SAC woodland lies on Weald Clay although in some places Paludina limestone outcrops at the surface. It is a varied site with a range of woodland communities and age structures which have developed due to differences in underlying soils and past management. The site also supports outstanding invertebrate, fungi, lichen and bryophyte assemblages.

4.17 The woodland is predominantly high forest of sessile oak *Quercus petraea* and pedunculate oak *Quercus robur,* beech *Fagus sylvatica*, holly *Ilex aquifolium* and locally, ash *Fraxinus excelsior*, birches *Betula* spp. and wild service tree *Sorbus torminalis*. Beech dominates the lighter soils over an understorey of holly and yew *Taxus baccata*. On the heavier clay soils oak-ash woodland occurs over a mixed shrub layer which includes hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, crab apple *Malus sylvestris* and blackthorn *Prunus spinosa*. It is developing a near-natural high forest structure, in response to only limited

[31] JNCC (2008) *Information Sheet on Ramsar Wetlands (RIS).* Available online at; http://archive.jncc.gov.uk/pdf/RIS/UK11074.pdf [Accessed; 06/10/2020].

[32] Natural England (2014). *Site Improvement Plan Thames Basin.* Available online at: http://publications.naturalengland.org.uk/publication/5735025425252352 [Accessed: 06/10/2020].

silvicultural intervention over the 20th century, combined with the effects of natural events such as the 1987 great storm. Barbastelles roost within the woodland but tend to forage outside of the site, commuting along woodland corridors into the wider countryside[33].

Reason for designation[34]

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

- Atlantic acidophilous beech forests with Ilex and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae* or *Ilici-Fagenion*); Beech forests on acid soils
    - This Annex I type comprises beech *Fagus sylvatica* forests with holly, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak *Quercus* spp. was common. This is known to prolong the life of these trees.

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

- Barbastelle *Barbastella barbastellus*
    - The Mens SAC has been selected for classification as an example of a maternity colony of barbastelles *Barbastella barbastellus* which utilise a range of tree roost's in The Mens; usually in dead tree stumps. However, the species appears to be present throughout the year; but it is not clear how many bats hibernate at the site.

Current threats and pressures[35]

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

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

Conservation objectives[36]

4.21 '*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*

[33] Natural England (2019). *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features.* Available online from: http://publications.naturalengland.org.uk/publication/5642356338458624 [Accessed; 06/10/2020].
[34] JNCC (2019) *The Mens SAC.* Available online at*:* https://sac.jncc.gov.uk/site/UK0012716 [Accessed: 06/10/2020].
[35] Natural England (2015). *Site improvement plan The Mens.* Available online at: http://publications.naturalengland.org.uk/publication/5548316158853120 [Accessed: 06/10/2020].
[36] Natural England (2018). *European Site Conservation Objectives for The Mens Special Area of Conservation*. Available online at: http://publications.naturalengland.org.uk/publication/5642356338458624 [Accessed: 06/10/2020].

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

Ebernoe Common SAC

Introduction

4.22 Ebernoe Common is an extensive complex of ancient woodland and former wood pasture in West Sussex, five miles south-east of Haslemere. The site lies on the Cretaceous Weald Clay and falls within the Low Weald National Character Area (NCA 121). The central core of the site, approximately a third of the total area, forms Ebernoe Common National Nature Reserve.

4.23 It is a varied site with a range of woodland communities and age structures which have developed due to differences in underlying soils and past management. This range of conditions together with a long continuity of woodland cover has in turn resulted in the site supporting an outstanding diversity of species: Barbastelle and Bechstein's bats, which favour ancient woodland, breed in the site because it provides suitable roosting and feeding habitats. While Bechstein's feed exclusively in the woodland, Barbastelles commute into the surrounding countryside using the woodland corridors which branch out from the site. In addition, the native trees, particularly those with old growth characteristics, support rich lichen and fungal communities, including a number of rare and scarce species, and the woodland complex as a whole supports a diverse breeding bird assemblage[37].

Reason for designation[38]

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

- Atlantic acidophilous beech forests with Ilex and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae or Ilici-Fagenion*); Beech forests on acid soils
    - This Annex I type comprises beech Fagus sylvatica forests with holly Ilex, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech and oak Quercus spp. was common. This is known to prolong the life of these trees.

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

- Barbastelle *Barbastella barbastellus*
    - The barbastelle is a medium-sized bat unlike any other in Europe. The fur is almost black, usually with very pale or golden-brown tips to the hairs. The ears are very broad with the inner edges joined together across the forehead.
    - Barbastelle ecology is relatively poorly-known. In Europe it is believed to be mainly an upland and forest species; in the UK it seems to prefer wooded river valleys. The species forages in mixed habitats, usually over water. Barbastelles appear to select cracks and crevices in wood for breeding, mostly in old or damaged trees, but cracks and crevices in the timbers of old buildings may also be used. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland or a complex of buildings. Caves and underground structures may be used for hibernation. The species is very sensitive to disturbance, together with the loss of roost-sites and food resources.
    - The barbastelle is one of the UK's rarest mammals. Few maternity roost sites are known in the UK. The great majority of other records come from caves or abandoned mines, which are important hibernation sites for a range of bat species. The barbastelle is widely distributed across southern England and across Wales but is likely to have been significantly under-

[37] Natural England (2019). European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. Available online from: http://publications.naturalengland.org.uk/publication/6255629165395968 [Accessed: 06/10/2020].
[38] JNCC (2019). *Ebernoe Common SAC.* Available online at: https://sac.jncc.gov.uk/site/UK0012715 [Accessed: 06/10/2020]

recorded within its range. Individual bats are sometimes discovered in buildings during summer.

- Bechstein's bat *Myotis bechsteinii*
    - Bechstein's bat is a medium-sized species, with very long ears and a long, pointed, bare, pink face. It has shaggy light-to reddish-brown fur on its back and contrasting greyish white-tipped fur on its underside. The species is closely associated with mature deciduous woodland and appears to select old woodpecker holes or rot holes in trees for breeding. It also occurs in coniferous woodland in some areas.
    - Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland. It is believed to hibernate in hollow trees and sometimes in underground localities. It is one of the UK's rarest mammals, recorded from only a small number of sites in southern England and Wales. Very few maternity roosts are currently known, one of which is in a bat-box. The great majority of other records come from caves or abandoned mines, which are important hibernation sites for a range of bat species.
    - It is also one of the rarest bats in western Europe and is regarded as endangered in several countries. A population decrease has been reported over most of its European range. The species occurs from the Iberian Peninsula east to the Ukraine and Moldova. Local populations in southern England, Wales, southern Sweden and Bornholm mark the northern border of the range. A maternity colony of Bechstein's bat is associated with the site. Roosts are mainly in old woodpecker holes in the stems of live mature oak *Quercus petraea* trees.

Current threats and pressures[39]

4.26 Ebernoe Common is an extensive block of mature woodland and former wood pasture which has been under continuous woodland cover for at least the last 500 years. The range of woodland types within the site and their longstanding history allows it to support an outstanding diversity of species. In particular, Barbastelle and Bechstein's bats - who favour ancient woodland - breed in the site because it provides suitable roosting and feeding habitats. While Bechstein's feed exclusively in the woodland, Barbastelles commute into the surrounding countryside using the woodland corridors which branch out from the site. Therefore, current threats and pressures occur from direct pressure the SAC and those outside the SAC. These include:

- Forestry and woodland management;
- Offsite habitat availability/ management;
- Habitat fragmentation;
- Change in land management;
- Hydrological changes;
- Air pollution; and
- Public access/ disturbance.

Conservation objectives[40]

4.27 '*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*

[39] Natural England (2015). *Site improvement plan Ebernoe Common.* Available online at; http://publications.naturalengland.org.uk/publication/6364242571689984 [Accessed: 06/10/2020].
[40] Natural England (2018). European Site Conservation Objectives for Ebernoe Common Special Area of Conservation. http://publications.naturalengland.org.uk/publication/6255629165395968 [Accessed: 06/10/2020].

- *The populations of qualifying species, and,*
- *The distribution of qualifying species within the site*.'