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Habitats Regulations Assessment for the Mid Sussex District Plan

Appropriate Assessment Report for the Main Modifications District Plan

September 2017

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Contents

List of Tables and Figures

Abbreviations

AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
HDV	Heavy Duty Vehicle
HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons of Overriding Public Interest
keq/ha/yr	Kilograms equivalent per hectare per year
Kg/ha/yr	Kilograms per hectare per year
LDD	Local Development Document
LNR	Local Nature Reserve
MSTS	Mid Sussex Transport Study
NGR	National Grid Reference
NO_X	Oxides of nitrogen
SAC	Special Area of Conservation
SAMM	Strategic Access Management and Monitoring
SANG	Suitable Alternative Natural Greenspace
SHLAA	Strategic Housing Land Availability Assessment
SNCI	Site of Nature Conservation Importance
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

0 Executive Summary

0.1 Introduction

0.1.1 This document sets out the Habitats Regulations Assessment for the Main Modifications District Plan for Mid Sussex. It draws on information previously published in other documents which form part of the overall HRA procedure for the District Plan, including research reports and earlier versions of the HRA.

0.1.2 The outputs of the report include information in relation to:

- Chapter 2 discusses the methodology for assessment, and updates the findings of the screening stage;
- Chapter 3 defines relevant European sites, their qualifying features and conservation objectives;
- Chapter 4 discusses the characteristics of European sites including available information about the population and ecology of qualifying species, and descriptions of qualifying habitats;
- Chapter 5 presents available evidence regarding the mechanisms of atmospheric pollution impacts, and undertakes an assessment of these impacts in view of the sites' conservation objectives;
- Chapter 6 presents available evidence regarding the mechanisms of disturbance impacts, and undertakes an assessment of these impacts in view of the sites' conservation objectives;
- Chapter 7 determines whether there will be adverse effects on site integrity; and
- Chapter 8 presents a summary and concludes the document.

0.2 Findings of the Screening Stage

0.2.1 The District Plan's forerunner, the draft Core Strategy, underwent an HRA screening and scoping exercise in late 2007 and early 2008. This found that five designated areas were potentially at risk of effects from the Plan:

- Ashdown Forest Special Area of Conservation (SAC);
- Ashdown Forest Special Protection Area (SPA);
- Castle Hill SAC;
- Lewes Downs SAC; and
- Mole Gap to Reigate Escarpment SAC.

0.2.2 Castle Hill, Lewes Downs and Mole Gap to Reigate Escarpment were screened out of the assessment, largely due to their distance from the district and the low likelihood of residents travelling along roads close to the sites. Natural England (2008) concurred with these findings in its screening opinion on the Core Strategy. Acknowledging that the plan is not necessary to the management of any European site, the screening exercise found likely significant effects on Ashdown Forest SAC/SPA as a result of disturbance and atmospheric pollution.

0.2.3 The updated screening assessment for the Main Modifications District Plan found that the following proposed policies were likely to significantly affect Ashdown Forest SAC/SPA. They were taken forward for more detailed Appropriate Assessment.

- DP2 Sustainable Economic Development;
- DP3 Town Centre Development;
- DP5 Housing;
- DP5A Planning to Meet Future Housing Need;
- DP8 Strategic Allocation to the east of Burgess Hill at Kings Way;
- DP9 Strategic Allocation to the north and north-west of Burgess Hill;
- DP9A Strategic Allocation to the east of Pease Pottage;
- DP9B Strategic Allocation to the north of Clayton Mills, Hassocks;
- DP13 New Homes in the Countryside;
- DP30 Rural Exception Sites; and
- DP31 Gypsies, Travellers and Travelling Showpeople.

0.3 Conclusions of the Appropriate Assessment

0.3.1 Ashdown Forest is designated as an SAC for its European dry heaths and North Atlantic wet heaths with *E. tetralix*. Great crested newts are present in qualifying numbers but are not a primary reason for site selection. Predicted traffic flow changes as a result of development proposed by the District Plan, in combination with growth assumptions for surrounding local authority areas, range from an increase of 267 AADT on the A275 to decreases of -27, -197 and -263 on the A22, A26 and B2110 respectively. Changes in nutrient nitrogen loads are predicted to range between 0.05kg N/ha/yr (0.5% of the minimum critical load) within dry heath habitat c.5m from the A275, and -0.01kg N/ha/yr (-0.1% of the minimum critical load) within wet heath habitat c.100m from the A26. These changes are unlikely to significantly alter the extent and distribution of qualifying natural habitats, and are unlikely to affect the integrity of the Ashdown Forest SAC.

0.3.2 Ashdown Forest is classified as an SPA for its breeding populations of Dartford warbler and nightjar, which are listed on Annex 1 of the Birds Directive. Breeding woodlark (also an Annex 1 species) are present in qualifying numbers. The District Council is committed to the ongoing delivery of a strategic Suitable Alternative Natural Greenspace (SANG) at East Court and

Ashplats Wood, East Grinstead, to avoid increases in recreational pressure resulting from planned residential developments within the District Plan. Additionally, the District Council has adopted an interim Strategic Access Management and Monitoring (SAMM) Strategy to mitigate the residual effects of visitors originating from within the district, and is committed to replacing this with a joint SAMM Strategy prepared in collaboration with the Conservators of Ashdown Forest, Natural England and other affected authorities.

0.3.3 It can be concluded that the Main Modifications to the District Plan will not result in adverse effects on the ecological integrity of the Ashdown Forest SPA. The District Plan can be considered compliant with the Habitats Regulations in respect of both sites.

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1 Introduction

1.1 Purpose of this Report

1.1.1 This report has been prepared for Mid Sussex District Council as part of the Habitats Regulations Assessment (HRA) for the District Plan. The report accompanies the Main Modifications District Plan and forms part of the evidence base upon which the Plan is based.

1.1.2 HRA is a requirement of the Conservation of Habitats and Species Regulations 2010 (as amended; 'the Habitats Regulations'). The assessment focuses on the likely significant effects of the plan on the nature conservation interests of European-protected areas in and around the district, and seeks to establish whether or not there will be any adverse effects on the ecological integrity of these European sites as a result of proposals in the plan.

1.2 The Mid Sussex District Plan

1.2.1 The Mid Sussex District Plan will provide the overall planning policy framework for the district for a period of 17 years between 2014 and 2031. The District Plan sets a minimum housing provision figure of 16,390 homes. For the purposes of calculating the 5 year housing land supply a 'stepped trajectory' will be applied through the calculation of a 5-year rolling average. The annual provision in this stepped trajectory is 876 dwellings per annum for years 2014/15 until 2023/24 and thereafter, from 1 April 2024, 1,090 dwellings per annum until 2030/31, subject to future HRA on further allocated sites, to meet unmet needs of neighbouring authorities.

1.2.2 The Sustainability Appraisal for the District Plan has shown that the district can accommodate the level of growth required, taking into account environmental and other constraints. The most sustainable strategy for the district is to allocate a significant proportion of proposed development to Burgess Hill. Around 4,000 dwellings are planned for Burgess Hill, together with 20-30ha of employment land and supporting facilities and infrastructure. The District Plan's Key Diagram is reproduced at Figure 1.1. The District Plan:

- Puts in place the overall planning framework for Mid Sussex with a coherent set of policies to protect and enhance the distinctive character of the District and its towns and villages for the next 17 years;
- Encourages local communities to develop 'bottom up' neighbourhood plans; and
- Sets out the Council's infrastructure needs and requirements in the Plan and ensure the necessary work on the Community Infrastructure Levy is completed in line with the District Council's timetable.

1.2.3 The District Council's preference is that the location and nature of development elsewhere in the district should be identified through the Neighbourhood Planning process. All towns and parishes in the District are committed to preparing their own Neighbourhood Plan and most are

well advanced in the statutory processes to get their plans in place. The District Council will prepare a Site Allocations document to enable the District Plan's housing requirement to be delivered in full, without requiring Neighbourhood Plans to supply the whole residual amount of housing. However, Town and Parish Councils may choose to undertake a review of their plans during the Plan period, which may also deliver further housing sites.

1.3 Habitats Regulations Assessment

1.3.1 Habitats Regulations Assessment is a requirement of the Conservation of Habitats and Species Regulations 2010 (as amended; 'the Habitats Regulations'), the UK's transposition of *European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora* ('the Habitats Directive'). HRA must be applied to any plan or project in England and Wales with the potential to adversely affect the ecological integrity of any sites designated for their nature conservation importance as part of a system known collectively as the Natura 2000 network of European sites.

1.3.2 European sites provide ecological infrastructure for the protection of rare, endangered or vulnerable natural habitats and species of exceptional importance within the European Union. These sites consist of Special Areas of Conservation (SACs, designated under the Habitats Directive) and Special Protection Areas (SPAs, designated under *European Council Directive 2009/147/EC on the conservation of wild birds* ('the Birds Directive')). Meanwhile, the National Planning Policy Framework (DCLG, 2012) and Circular 06/05 (ODPM, 2005) require that Ramsar sites (UNESCO, 1971) are treated as if they are fully designated European sites for the purposes of considering development proposals that may affect them.

1.4 Structure of this Document

1.4.1 The outputs of the report include information in relation to:

- Chapter 2 discusses the methodology for assessment, and updates the findings of the screening stage;
- Chapter 3 defines relevant European sites, their qualifying features and conservation objectives;
- Chapter 4 discusses the characteristics of European sites including available information about the population and ecology of qualifying species, and descriptions of qualifying habitats;
- Chapter 5 presents available evidence regarding the mechanisms of atmospheric pollution impacts, and undertakes an assessment of these impacts in view of the sites' conservation objectives;
- Chapter 6 presents available evidence regarding the mechanisms of disturbance impacts, and undertakes an assessment of these impacts in view of the sites' conservation objectives;
- Chapter 7 determines whether there will be adverse effects on site integrity; and

- Chapter 8 presents a summary and concludes the document.

1.5 Relationship to Other Documents

1.5.1 This HRA Report draws on information previously published in other documents which form part of the overall HRA procedure for the Mid Sussex District Plan, including:

- Habitats Regulations Assessment for the Mid Sussex District Plan: Appropriate Assessment Report for the Focused Amendments to the Pre-Submission Draft District Plan – October 2015 (Urban Edge Environmental Consulting, 2015);
- Habitats Regulations Assessment for the Mid Sussex District Plan: Appropriate Assessment Report for the Pre-Submission Draft District Plan – March 2015 (Urban Edge Environmental Consulting, 2015);
- Habitats Regulations Assessment for the Mid Sussex District Plan: Appropriate Assessment Report for the Consultation Draft District Plan – October 2014 (Urban Edge Environmental Consulting, 2014);
- Habitats Regulations Assessment for the Mid Sussex District Plan: May 2013 (Urban Edge Environmental Consulting, 2013);
- *Ashdown Forest Visitor Survey Data Analysis* (Natural England Commissioned Reports, Number 048: Clarke RT, Sharp J & Liley D 2010); and
- *Visitor Access Patterns on the Ashdown Forest: Recreational use and nature conservation* (UE Associates and University of Brighton, 2009).

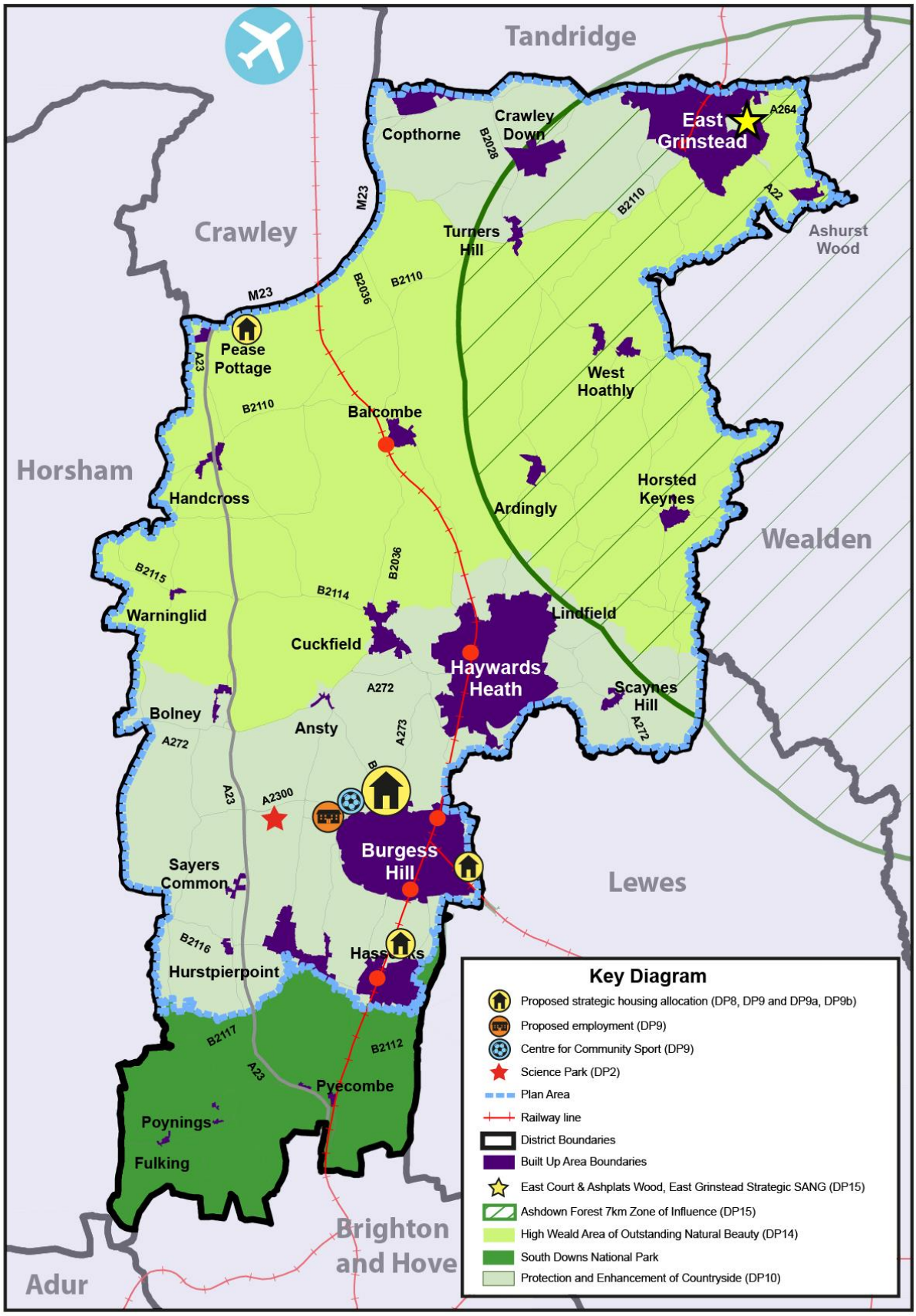

Figure 1.1: Key Diagram

2 Methodology

2.1 Guidance and Best Practice

2.1.1 Draft guidance on HRA has been defined by DCLG (2006) with more detailed draft guidance from Natural England (Tyldesley, 2009) and a range of other bodies[1]. The guidance recognises that there is no statutory method for undertaking Habitats Regulations Assessment and that the adopted method must be appropriate to its purpose under the Habitats Directive and Regulations. DCLG guidance identifies three main stages to the HRA process:

- Screening: Analysing draft options for likely significant effects on internationally designated sites;
- Appropriate Assessment: Ascertaining the effects on site integrity; and
- Alternative Solutions: Devising alternatives to the plan options, avoidance or mitigation measures.

2.1.2 An HRA must determine whether or not a plan or project will adversely affect the integrity of the European site(s) concerned, in view of the site's conservation objectives. Where adverse effects are anticipated changes must be made to the plan or project. The process is characterised by the precautionary principle. The European Commission (2000a) describes the principle as follows:

> *"If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with the protection normally afforded to these within the European Community, the Precautionary Principle is triggered.*
>
> *"Decision-makers then have to determine what action to take. They should take account of the potential consequences of taking no action, the uncertainties inherent in the scientific evaluation, and they should consult interested parties on the possible ways of managing the risk. Measures should be proportionate to the level of risk, and to the desired level of protection. They should be provisional in nature pending the availability of more reliable scientific data.*
>
> *"Action is then undertaken to obtain further information enabling a more objective assessment of the risk. The measures taken to manage the risk should be maintained so long as the scientific information remains inconclusive and the risk unacceptable."*

2.1.3 The hierarchy of intervention is important: where significant effects are likely or uncertain, decision-makers must firstly seek to avoid the effect through for example, a change of policy. If this is not possible, mitigation measures should be explored to remove or reduce significant

[1] For example European Commission (2001) and RSPB (Dodd *et al*, 2007)

effects. If neither avoidance, nor subsequent mitigation is possible, alternatives to the plan or project should be considered. Such alternatives should explore ways of achieving the objectives that avoid significant effects entirely. If there are no alternatives suitable for removing an adverse effect, decision-makers must demonstrate that there are Imperative Reasons of Overriding Public Interest to continue with the proposal. This is widely perceived as an undesirable position and should be avoided if at all possible.

2.2 Methodology

2.2.1 The guidance from Natural England (Tyldesley, 2009) was written for use in assessing strategic plans and forms the methodology adopted for this HRA; see Table 2.1. The overall objective of an Appropriate Assessment will be to ascertain whether any part of the plan will lead to an adverse effect on the ecological integrity of nearby European sites and, if so, make recommendations on how such effects can be avoided or mitigated.

2.3 Screening

2.3.1 An HRA screening assessment was prepared for the previous version of the District Plan, and this has been updated as the first step in preparing the current HRA. The screening assessment focuses on the likely significant effects of each policy proposal on the European sites. Such effects can be sorted into one of 17 categories which are derived from the draft HRA guidance document produced for Natural England (Tyldesley, 2009). They help to determine which, if any, elements of the plan would be likely to have a significant effect on any interest feature of any European site, alone or in combination with other projects and plans, directly or indirectly. The 17 categories fall into four broader sections which are described as:

Category A	Elements of the plan / options that would have no negative effect on a European site at all
Category B	Elements of the plan / options that could have an effect, but the likelihood is there would be no significant negative effect on a European site either alone or in combination with other elements of the same plan, or other plans or projects
Category C	Elements of the plan / options that could or would be likely to have a significant effect alone and will require the plan to be subject to an appropriate assessment before it may be adopted
Category D	Elements of the plan / options that would be likely to have a significant effect in combination with other elements of the same plan, or other plans or projects and will require the plan to be subject to an appropriate assessment before the plan may be adopted

2.3.2 The categories, and traffic light colour-coded sub-categories, provide the means of recording the results of the assessment in such a way that important issues are identified whilst policies and proposed allocations that have no effect are screened out. Categories A, C and D are subdivided so that the specific reason why the assessor has allocated the policy or proposal to that category is more transparent, and more directly related to the ways in which the plan may affect a European site.

Table 2.1: Stages in HRA drawing on guidance from DCLG and Natural England

<table>
<tr><th>DCLG Stage</th><th colspan="3">Natural England (Tyldesley) Steps</th></tr>
<tr><td rowspan="5">AA1: Likely significant effects</td><td colspan="3">1. Gather the evidence base about international sites.</td></tr>
<tr><td colspan="3">2. Consult Natural England and other stakeholders on the method for HRA and sites to be included.</td></tr>
<tr><td colspan="3">3. Screen elements of the plans for likelihood of significant effects.</td></tr>
<tr><td colspan="3">4. Eliminate likely significant effects by amending the plan / option.</td></tr>
<tr><td colspan="3">5. Consult Natural England and other stakeholders on the findings of the screening stage, and scope of the Appropriate Assessment if required.</td></tr>
<tr><td>AA2: Appropriate Assessment and ascertaining the effect on integrity</td><td>6. Appropriate Assessment of elements of the plan likely to have significant effects on a European site.</td><td>8. Assess additions and changes to the plan and prepare draft HRA record.</td><td rowspan="2">ITERATIVE</td></tr>
<tr><td>AA3: Mitigation measures and alternative solutions</td><td>7. Amend the plan / option or take other action to avoid any adverse effect on integrity of European site(s).</td><td>9. Complete the draft Appropriate Assessment and draft HRA record.</td></tr>
<tr><td rowspan="5">Reporting and recording</td><td colspan="3">10. Submit draft HRA and supporting documents to Natural England.</td></tr>
<tr><td colspan="3">11. Consult Natural England, other stakeholders and the public (if suitable).</td></tr>
<tr><td colspan="3">12. Publish final HRA record and submit with Natural England letter to Inspector for Examination.</td></tr>
<tr><td colspan="3">13. Respond to any representations relating to the HRA and to Inspector's questions.</td></tr>
<tr><td colspan="3">14. Check changes to the plan, complete HRA record and establish any monitoring required.</td></tr>
</table>

Findings of the screening stage

2.3.3 The screening assessment, which is presented at Appendix I, found that the following policy proposals were likely to significantly affect at least one European site:

- DP2 Sustainable Economic Development;
- DP3 Town Centre Development;
- DP5 Housing;
- DP5A Planning to Meet Future Housing Need;
- DP8 Strategic Allocation to the east of Burgess Hill at Kings Way;
- DP9 Strategic Allocation to the north and north-west of Burgess Hill;
- DP9A Strategic Allocation to the east of Pease Pottage;

- DP9B Strategic Allocation to the north of Clayton Mills, Hassocks;
- DP13 New Homes in the Countryside;
- DP30 Rural Exception Sites; and
- DP31 Gypsies, Travellers and Travelling Showpeople.

2.4 Appropriate Assessment

2.4.1 The purpose of the Appropriate Assessment (HRA Stage AA2) is to further analyse likely significant effects identified during the screening stage, as well as those effects which were uncertain or not well understood and taken forward for assessment in accordance with the precautionary principle. The assessment should seek to establish whether or not the plan's effects, either alone or in combination with other plans or projects, will lead to adverse effects on site integrity, in view of the site's conservation objectives (see Chapter 3). Site integrity can be described as follows (ODPM, 2005):

> *"The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified."*

2.5 In Combination Effects

2.5.1 Other plans and projects being prepared or implemented in the area may have the potential to cause negative effects on the integrity of European sites. These effects may be exacerbated when experienced in combination with the effects of the District Plan, possibly leading an insignificant effect to become significant. It is therefore important to consider which other plans and projects could generate similar effects as development within Mid Sussex, at the same European sites, and which may act in-combination. In combination effects are considered in Chapters 5 and 6.

3 European Sites

3.1 Scope of the Assessment

3.1.1 European sites considered within the scope of this assessment include all those falling partially within or close to Mid Sussex. Additionally, there may be activities occurring as a result of development within the district, which could take place outside of the confines of the district, possibly affecting European sites further afield.

3.1.2 The District Plan's forerunner, the draft Core Strategy, underwent an HRA screening and scoping exercise in late 2007 and early 2008 using a previous version of the Natural England guidance. This found that five designated areas were potentially at risk of effects from the Plan:

- Ashdown Forest SAC;
- Ashdown Forest SPA;
- Castle Hill SAC;
- Lewes Downs SAC; and
- Mole Gap to Reigate Escarpment SAC.

3.1.3 Castle Hill, Lewes Downs and Mole Gap to Reigate Escarpment were screened out of the assessment, largely due to their distance from the district and the low likelihood of residents travelling along roads close to the sites. Natural England (2008) concurred with these findings in its screening opinion on the Core Strategy. Acknowledging that the plan is not necessary to the management of any European site, the screening exercise found likely significant effects on Ashdown Forest SAC/SPA as a result of disturbance and atmospheric pollution.

3.1.4 In accordance with Natural England's screening opinion, the assessment focuses on Ashdown Forest SAC/SPA; see Figure 3.1. These designations are described in the following sections.

3.2 Qualifying Features

3.2.1 The qualifying features of each site are listed in Table 3.1.

3.3 Conservation Objectives

3.3.1 The Habitats Directive requires that Member States maintain or where appropriate restore habitats and species populations of European importance to favourable conservation status. European site conservation objectives are referred to in the Habitats Regulations and Article 6(3) of the Habitats Directive. They are for use when there is a need to undertake an Appropriate Assessment under the relevant parts of the respective legislation.

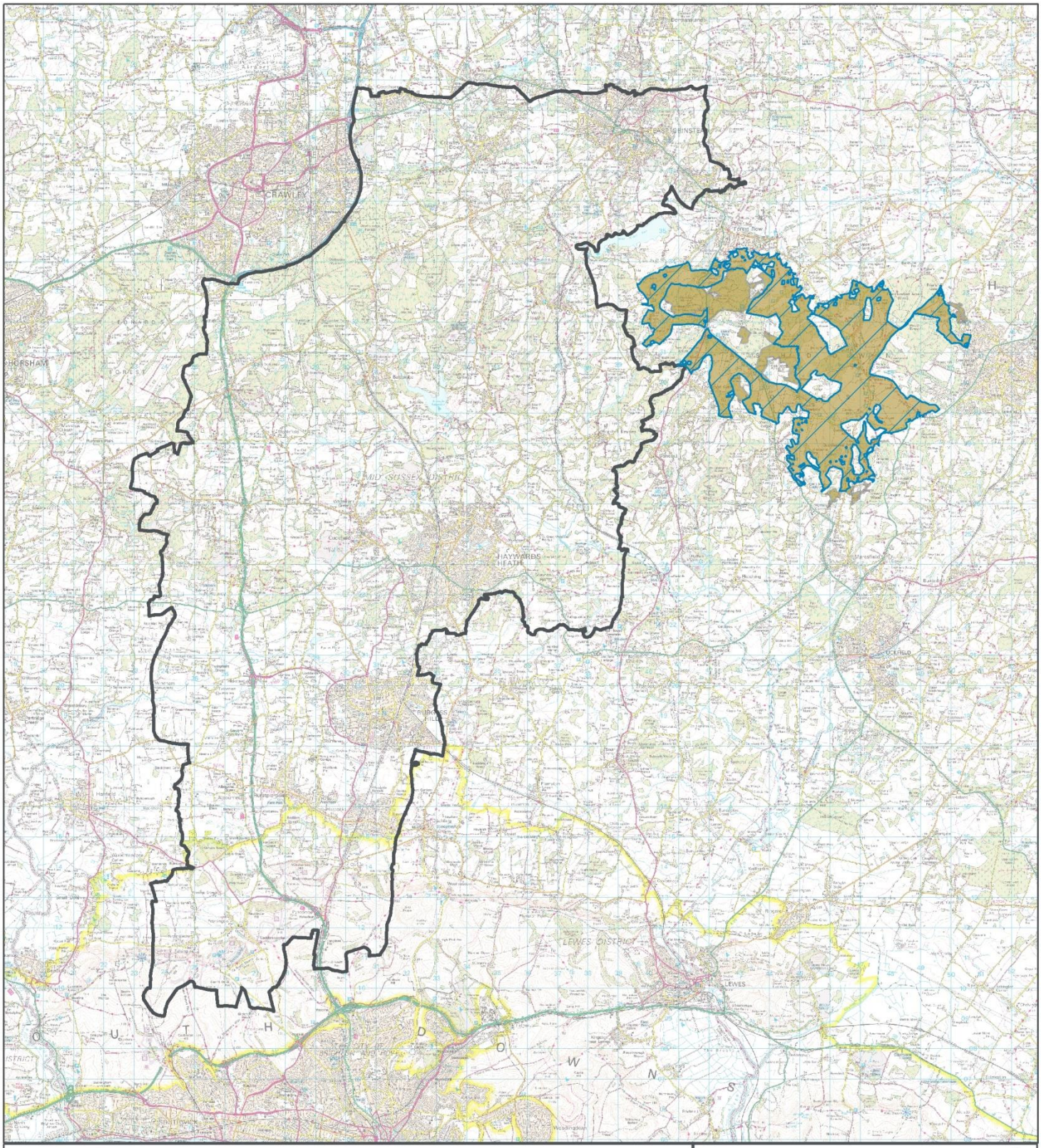

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Figure 3.1: Ashdown Forest SAC/SPA in relation to Mid Sussex district

ENVIRONMENTAL CONSULTING
Unit 5 Westergate Business Centre
Brighton
BN2 4QN

Scale	Date
1:165,000	Sep2014
Created by	**Reviewed by**
SP	NP

Drawing number
UE-0158_MSDC_HRA_1_140909

Table 3.1: Qualifying features of the Ashdown Forest SAC and SPA

Site	Qualifying Feature	Listing
Ashdown Forest SAC (2,716 ha)	***Primary reasons for site selection***	
	European dry heaths, for which this is considered to be one of the best areas in the United Kingdom.	EC Habitats Directive 1992: Annex I Habitat
	Northern Atlantic wet heaths with *Erica tetralix*, for which this is considered to be one of the best areas in the UK.	EC Habitats Directive 1992: Annex I Habitat
	Present but not a primary reason for site selection	
	Great crested newt *Triturus cristatus*, for which the area is considered to support a significant presence.	EC Habitats Directive 1992: Annex II Species
Ashdown Forest SPA (3,207 ha)	***Article 4.1 Qualification***	
	Dartford warbler, 20 pairs representing 2.1% of the breeding population in Great Britain (Count, as at 1994).	EC Birds Directive 2009: Annex I
	Nightjar, 35 pairs representing 1.1% of the breeding population in Great Britain (Count, as at 1991 and 1992).	EC Birds Directive 2009: Annex I

3.3.2 The conservation objectives are set for each feature (habitat or species) of an SAC/SPA. Where the objectives are met, the site can be said to demonstrate a high degree of integrity and the site itself makes a full contribution to achieving the aims of the Habitats and Birds Directives. Following the Habitats and Wild Birds Directives Implementation Review (HDIR; Defra 2012) Natural England committed to issuing a revised set of conservation objectives for the Natura 2000 network of SAC and SPA sites. The revised conservation objectives for Ashdown Forest SAC and SPA are listed in Table 3.2. Some of the typical species of each Annex 1 habitat are listed in Table 3.3. These are derived from a combination of sources, including the Joint Nature Conservation Committee (JNCC) Annex 1 habitat accounts and the *Interpretation Manual of European Union Habitats* (EC, 2007).

Table 3.2: Conservation objectives for Ashdown Forest SAC and SPA

Conservation Objectives for SAC
With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'), and subject to natural change, the over-riding conservation objective for each of the qualifying features is defined by Natural England as: *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:* ▸ Objective 1: The extent and distribution of qualifying natural habitats and habitats of qualifying species; ▸ Objective 2: The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species;

Conservation Objectives for SAC
▸ **Objective 3:** The supporting processes on which qualifying natural habitats and habitats of qualifying species rely; ▸ **Objective 4:** The populations of qualifying species; ▸ **Objective 5:** The distribution of qualifying species within the site.
Conservation Objectives for SPA
With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change, the over-riding conservation objective for each of the qualifying features is defined by Natural England as: *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:* ▸ **Objective 1:** The extent and distribution of the habitats of the qualifying features; ▸ **Objective 2:** The structure and function of the habitats of the qualifying features; ▸ **Objective 3:** The supporting processes on which the habitats of the qualifying features rely; ▸ **Objective 4:** The population of each of the qualifying features; ▸ **Objective 5:** The distribution of qualifying features within the site.

Table 3.3: Typical species of Annex 1 habitat types present within SAC

Annex 1 Habitat Type	Typical Species
European dry heaths	Bell heather *Erica cinerea*, Dwarf gorse *Ulex* minor, Reptiles (adder, common lizard, sand lizard, smooth snake), Ants, bees and wasps (Hymenoptera), Beetles (Coleoptera), Dragonflies (Odonata)
North Atlantic wet heaths with *Erica tetralix*	Cross-leaved heath *Erica tetralix*, *Sphagnum compactum*, Deer grass *Trichophorum cespitosum*, Silver studded blue butterfly *Plebejus argus*

3.4 Condition Status

3.4.1 The conservation status of European sites is not routinely reported by Natural England, but it carries out condition monitoring of Sites of Special Scientific Interest (SSSI) at regular intervals. Although not exactly matching the boundaries of European sites, and being notified for different purposes, the condition status of a SSSI helps to give an impression of the overall ecological status of the SAC/SPA/Ramsar with which it coincides. The latest condition assessments of SSSIs forming part of the European sites within the scope of this assessment are summarised in Table 3.4. The one unit in unfavourable-declining condition suffers from storm damage, deer browsing and invasive species (rhododendron).

Table 3.4: SSSI condition summary by area (7 September 2017)

% Favourable	% Unfavourable recovering	% Unfavourable no change	% Unfavourable declining	% Destroyed / part destroyed
20.31%	79.29%	0.00%	0.40%	0.00%

4 European Site Characterisation

4.1 Qualifying Species of the Special Area of Conservation

4.1.1 Although not a primary reason for site selection, great crested newt is present as a qualifying feature within the Ashdown Forest SAC.

Great crested newt

4.1.2 The great crested newt *Triturus cristatus* is the largest native British newt, reaching up to around 17cm in length. Adult males have jagged crests running along the body and tail. Newts require aquatic habitats for breeding. Eggs are laid singly on pond vegetation in spring, and larvae develop over summer to emerge in August – October, normally taking 2–4 years to reach maturity. Great crested newt and their habitats are protected because the species has undergone significant declines over recent decades, primarily due to the loss of suitable breeding ponds as a result of agricultural intensification. Juveniles spend most time on land, and all terrestrial phases may range a considerable distance from breeding sites. The loss of terrestrial and connective habitats due to development has also been detrimental to the species' population.

4.1.3 The great crested newt is widespread throughout much of England and Wales, but occurs only sparsely in south-west England, mid Wales and Scotland. It is absent from Northern Ireland. The total UK population is relatively large and is distributed over sites that vary greatly in their ecological character. Furthermore, the UK has an internationally important population of great crested newts which have suffered serious decline throughout Europe. One estimate has put the national population at around 400,000 animals in 18,000 breeding sites. Many of the largest populations are centred on disused mineral-extraction sites, but lowland farmland forms the majority of great crested newt habitat in the UK.

4.2 Qualifying Habitats of the Special Area of Conservation

4.2.1 The following sections are adapted from the JNCC site accounts of the Ashdown Forest SAC.

European dry heaths

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

4.2.3 The dry heath in Ashdown Forest is an extensive example of the south-eastern *Calluna vulgaris – Ulex minor* community. This vegetation type is dominated by heather *Calluna vulgaris*, bell heather *Erica cinerea* and dwarf gorse *Ulex minor*, with transitions to other habitats. It supports

important lichen assemblages, including species such as *Pycnothelia papillaria*. This site supports the most inland remaining population of hairy greenweed *Genista pilosa* in Britain.

***Northern Atlantic wet heaths with* Erica tetralix**

4.2.4 The *Erica tetralix – Sphagnum compactum* wet heath element provides suitable conditions for several species of bog-mosses *Sphagnum* spp., bog asphodel *Narthecium ossifragum*, deergrass *Trichophorum cespitosum*, common cotton-grass *Eriophorum angustifolium*, marsh gentian *Gentiana pneumonanthe* and marsh clubmoss *Lycopodiella inundata*. The site supports important assemblages of beetles, dragonflies, damselflies and butterflies, including the nationally rare silver-studded blue *Plebejus argus*, and birds of European importance, such as European nightjar *Caprimulgus europaeus*, Dartford warbler *Sylvia undata* and Eurasian hobby *Falco subbuteo*.

4.3 SPA Bird Populations

4.3.1 Ashdown Forest is located in the High Weald of East Sussex in south-east England, where valley mires, heath and damp woodland have developed on soils derived from Hastings Sands (Lower Cretaceous). Once a royal hunting forest, reduced grazing has resulted in the accelerated development of woodland and encroachment of bracken *Pterdium aquilinium* over former heath. Nevertheless, some fine examples of heathland habitats remain, with humid or wet heath predominating (around 45% cover), dominated by heather, bell heather and cross-leaved heath *E. tetralix* in the dampest conditions. Where drier heaths occur (around 15% cover) they are dominated by heather in association with gorse *Ulex europaeus* and dwarf gorse. Streamsides and mires add further variety (around 5% cover), with *Sphagnum* mosses, cottongrass *Eriophorum* sp., bog asphodel and round-leaved sundew *Drosera rotundifolia* all characteristic plants. The woodlands (around 35% cover) are also varied, with birch *Betula* sp. typically establishing first over heath, followed by oak *Quercus robur*, willow *Salix* sp. and pine *Pinus* sp. in places, eventually forming dense and shaded areas with sparse ground flora.

4.3.2 Together with the nearby Wealden Heaths SPA and Thames Basin Heath SPA, Ashdown Forest forms part of a complex of heathlands in southern England that support breeding bird populations of European importance – in particular nightjar *Caprimulgus europaeus* and Dartford warbler *Sylvia undata*. Breeding birds of scrub and woodland (such as woodlark *Lullula arborea* [also an Annex 1 species occurring in qualifying numbers] and Eurasian hobby *Falco subbuteo*) are also associated with the varied mosaic of their respective habitats, distributed over the higher slopes and valleys of the High Weald.

Dartford warbler

4.3.3 Although native to the UK, the Dartford warbler is really a species of the Mediterranean. The European population is declining at a moderately rapid rate, qualifying the species as Near Threatened (IUCN, 2012). Declines in the core population in Spain are largely responsible for overall declines. The drivers of this decline are not entirely clear but include habitat degradation and modification.

4.3.4 In the UK, a national survey in 1994 recorded 1,889 breeding territories (Gibbons & Wotton, 1996), a recovery from the population crash of the 1960s following cold winters. A repeat survey in 2006 showed that the national population had increased with 3,214 territories recorded (Wotton *et al.*, 2009). Dartford warbler is Amber listed on Birds of Conservation Concern 3 (BoCC3; Eaton *et al*, 2009). There were 38 territories recorded within the Ashdown Forest SPA during the 2006 survey (Wotton *et al.*, 2009).

Nightjar

4.3.5 As reported by Baillie *et* al, 2012, after a substantial range contraction of more than 50% of 10km squares up to 1981, the 1992 national survey revealed a 50% increase in population size since 1981, probably due to the increased availability of young forest habitat as plantations were felled and replanted (Morris *et al*. 1994).

4.3.6 A National Nightjar Survey in 2004 revealed that a further 36% increase had taken place in the UK population in 12 years, with a 2.6% increase in the number of 10km squares occupied (Conway *et al*. 2007). However, a steep linear decrease in the number of fledglings per breeding attempt has been observed through the BTO's nest recording scheme (Baillie *et al.*, 2012). A recent study suggests that nest failure is most likely in areas heavily frequented by walkers and dogs (Langston *et al*. 2007). Nightjar is Red listed on BoCC3. A total of 83 churring males were recorded within the SPA during the 2004 national survey (Conway *et al*. 2007).

Woodlark

4.3.7 As reported by Baillie *et al*, 2012, woodlark suffered a 62% range contraction between 1968-72 and 1988-91; the species had ceased to breed in Wales and in several southern English counties over this period (Gibbons *et al*. 1993). Sitters *et al*. (1996) found that the UK population increased from c.250 pairs in 1986 to c.600 pairs in 1993, probably helped by mild winters and increased habitat availability due to storm damage in plantations, forest restocking, and heathland management. A repeat national survey in 1997 showed that the population had increased further, accompanied by expansion of the range into new areas (Wotton & Gillings 2000). A further repeat in 2006 recorded an increase since 1997 of 88% accompanied by major range expansion, with a pair breeding in Wales for the first time since 1981 (Conway *et al*. 2009).

4.3.8 Farmland set-aside, especially close to forest, was valuable additional habitat for the expanding population, although clutch sizes may be lower there than in more traditional habitats (Wright *et al*. 2007). Climate change may benefit woodlark, because it is able to make more nesting attempts in warmer years (Wright *et al*. 2009). The small nest record scheme sample suggests that nest failure rates have become less frequent at the egg stage, but there has been no trend in the number of fledglings per breeding attempt. Human disturbance at heathland sites apparently reduces population density, but the effects are partly offset by higher breeding productivity at lower densities (Mallord *et al*. 2007). The species' partial recovery in numbers and range resulted in a move from the Red to the Amber list at the 2009 BoCC review (Eaton *et al*. 2009). A total of 42 territories were recorded within the SPA during the 2006 national survey (Conway *et al*. 2009).

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5 Atmospheric Pollution Impact Pathways

5.1 Introduction

5.1.1 The screening exercise found that the following District Plan policies were likely to significantly affect Ashdown Forest SAC as a result of atmospheric pollution impacts:

- DP2 Sustainable Economic Development;
- DP3 Town Centre Development;
- DP5 Housing;
- DP5A Planning to Meet Future Housing Need;
- DP8 Strategic Allocation to the east of Burgess Hill at Kings Way;
- DP9 Strategic Allocation to the north and north-west of Burgess Hill;
- DP9A Strategic Allocation to the east of Pease Pottage; and
- DP9B Strategic Allocation to the north of Clayton Mills, Hassocks.

5.2 Understanding the Vulnerability of SAC Habitats to Atmospheric Pollution

5.2.1 Atmospheric pollution is a widespread issue, with background air quality heavily influenced by large point-source emitters including transboundary sources. Local pollutant sources can affect designated sites, particularly in relation to protected habitats within SACs, and especially from road traffic emissions. The District Plan cannot feasibly influence causes of background pollution such as large point sources but, through the scale and distribution of development proposed and sustainable transport measures, will affect the way in which locally emitted pollutants reach the site.

5.2.2 Qualifying habitats most sensitive to air pollution within Ashdown Forest are European dry heaths and North Atlantic wet heaths. The main pollutant effects of interest are acid deposition and eutrophication by nitrogen deposition. The following brief descriptions draw on information presented through the Air Pollution Information System[2] (APIS).

5.2.3 Acid deposition: caused by oxides of nitrogen (NO_X) (or sulphur dioxide) reacting with rain/cloudwater to form nitric (or sulphuric) acid, and is caused primarily by energy generation, as well as road traffic and industrial combustion. Both wet and dry acid deposition have been implicated in the damage and destruction of vegetation (heather, mosses, liverworts and lichens are particularly susceptible to cell membrane damage due to excessive pollutant levels) and in the degradation of soils and watercourses (including acidification and reduced microbial activity).

[2] Online at: http://www.apis.ac.uk [Accessed 28/9/17]

5.2.4 Eutrophication by nitrogen deposition: consists of the input of nitrogen from NO_X (and sometimes ammonia) emissions by deposition, and is caused primarily by road traffic, as well as energy generation, industrial combustion and agricultural practices. Nitrogen deposition can cause direct damage to heather, mosses, liverworts and lichens, as well as other plant species, because of their sensitivity to additional atmospheric nitrogen inputs, whilst deposition can also lead to long term compositional changes in vegetation and reduced diversity. For example a marked decline in heather and an increased dominance of grasses have been observed throughout the Netherlands and also in the East Anglian Brecklands (see for example Bobbink et al (1993) and Pitcairn et al (1991)).

5.2.5 Furthermore, while plants are able to detoxify and assimilate low exposure to atmospheric concentrations of NO_X, high levels of uptake can lead to detrimental impacts including:

- Inhibition of pigment biosynthesis, leading to reduced rates of photosynthesis;
- Water soaking as NO_2 molecules attach to lipids in membranes, causing plasmolysis (removal of water) and eventually necrosis;
- Inhibition of lipid biosynthesis, leading to reduced rates of regeneration and growth;
- Injury to mitochondria and plastids, essential to internal processing of energy & proteins;
- Decrease in stomatal conductance of air and water vapour; and
- Inhibition of carbon fixation (at least under low light levels).

5.2.6 Table 5.1 provides a summary of the Ashdown Forest SAC qualifying habitats and their sensitivity to nutrient nitrogen and acidity, as reported by APIS.

Table 5.1: Ashdown Forest SAC qualifying habitats and sensitivity to pollution impacts

Class	Critical load	Exceedance impacts
Acidity		
Northern Atlantic wet heaths with Erica tetralix (H4010) AND European dry heaths (H4030)		
Dwarf shrub heath	MinCLminN: 0.499 MaxCLminN: 0.714 MinCLMaxS: 0.310 MaxCLMaxS: 1.730 MinCLMaxN: 0.952 MaxCLMaxN: 2.444	Leaching will cause a decrease in soil base saturation, increasing the availability of Al3+ ions; mobilisation of Al3+ may cause toxicity to plants and mycorrhiza; may have direct effect on lower plants (bryophytes / lichens).
Nutrient nitrogen		
Northern Atlantic wet heaths with Erica tetralix (H4010)		
Northern wet heath: *Erica tetralix* dominated wet heath	10 - 20 kg N/ha/yr	Transition heather to grass. Ericaceous species susceptible to frost and drought.
European dry heaths (H4030)		
Dry heaths	10 - 20 kg N/ha/yr	Transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, increased sensitivity to abiotic stress.

5.2.7 Over half of all emissions of nitrogen and nitrogen oxides in the UK are the result of vehicle exhausts, with an estimated 92% of those associated with residential development being contributed by road traffic (Dore *et al*, 2005). Nitrogen emissions from traffic generated by residential and commercial developments will therefore be the focus of this part of the assessment. The scope can be further refined by concentrating on traffic growth on roads within 200m of the SAC, as beyond 200m effects of emissions from this source diminish to the equivalent of background levels (Laxen & Wilson (2002)).

5.3 Evidence for Pollution Impacts within Ashdown Forest

5.3.1 Critical loads concern the quantity of pollutants deposited from the air to the ground. Nilsson and Grennfelt (1988) define critical loads as "*a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*". Although critical loads are expressed as a range, APIS gives further guidance on critical loads to be used when assessing nitrogen deposition in impact assessments. This confirms that the lower end of the range should be used at both the screening stage and detailed assessment stage when assessing impacts on northern wet heath and dry heath habitats.

5.3.2 The critical load for nitrogen deposition and acid (nitrogen (N) or sulphur (S)) deposition is already exceeded in parts of Ashdown Forest; Table 5.2 presents information on background critical load exceedances for these key pollutants on qualifying habitat types at a selection of grid references across the Forest close to the road network. These locations are shown on Figure 5.1 together with the extent of dry and wet heath habitats mapped during a vegetation survey carried out in 2007 (data supplied by the Conservators of Ashdown Forest[3]).

5.3.3 The data in Table 5.2 are historical (2015) and provide an indicative assessment as to which areas are approaching the limits of environmental capacity. In all cases, the critical load for nutrient nitrogen and acid nitrogen deposition is exceeded, indicating that significant additional sources of these pollutants generated as a result of proposals in the District Plan should be avoided or mitigated to prevent additional adverse effects on ecological integrity. However, it should also be noted that, using data from 2012, APIS presents a source attribution model which indicates that 8.92% of total nutrient N deposition is from road transport sources, while 7.24% of the total acidity load within Ashdown Forest is from the same source. The following sections establishe whether the District Plan is likely to contribute significant additional traffic-source pollution deposition.

[3] A more recent habitat survey was undertaken on behalf of Wealden District Council (ECUS, 2015). Although the habitat polygons were not available for large scale analysis, the PDF seems to indicate that some habitats have transitioned since 2007. The PDF map indicates that locations 1 and 3 in Table 5.2 are wet heath instead of dry heath, location 4 is bracken and location 5 is grassland. Location 2 is still mapped as wet heath. However, this survey was based on interpretation of aerial/satellite imagery with ground-truthing limited to at least 20% of the area of each heathland type. The map can be viewed at: http://www.wealden.gov.uk/Wealden/Residents/Planning_and_Building_Control/Planning_Policy/CoreStrategy/CoreStrategyLibrary/Planning_Evidence_Base_Habitat_Regulations_Assessment.aspx

Table 5.2: Critical load for Ashdown Forest SAC compared to actual maximum load

Receptor	N Deposition (kg/ha/yr)		Acid dep (keq N/ha/yr)		Acid dep (keq S/ha/yr)	
	Crit. load	Actual load	Crit. load	Actual load	Crit. load	Actual load
1. Dry heath	10-20	14.7	0.499-0.714	1.05	0.310-1.730	0.23
2. Wet heath	10-20	14.98	0.499-0.714	1.07	0.310-1.730	0.23
3. Dry heath	10-20	14.7	0.499-0.714	1.05	0.310-1.730	0.23
4. Wet heath	10-20	13.72	0.499-0.714	0.98	0.310-1.730	0.21
5. Dry heath	10-20	14.7	0.499-0.714	1.05	0.310-1.730	0.23

1. Dry heath habitat location close to A22 at Ashdown Llama Farm. GR 542234,131385. APIS Habitat: Dry heaths (N. Dep.) / Dwarf shrub heath (Acid Dep.). Data are for the period 2013-2015.

2. Wet heath habitat location close to A22 at Millbrook. GR 543877,129428. APIS Habitat: Northern (*E. tetralix* dominated) wet heath (N Dep.) / Dwarf shrub heath (Acid Dep.). Data are for the period 2013-2015.

3. Dry heath habitat location close to A275 north of Chelwood Gate. GR 541688,131134. APIS Habitat: Dry heaths (N. Dep.) / Dwarf shrub heath (Acid Dep.). Data are for the period 2013-2015.

4. Wet heath habitat location close to A26 at Poundgate. GR 548646,128860. APIS Habitat: Northern (*E. tetralix* dominated) wet heath (N Dep.) / Dwarf shrub heath (Acid Dep.). Data are for the period 2013-2015.

5. Dry heath habitat location close to B2110 at Little Parrock. GR 544166,134088 (N.B. this location is c.250m from the road, that being the nearest mapped extent of heathland habitat). APIS Habitat: Dry heaths (N. Dep.) / Dwarf shrub heath (Acid Dep.). Data are for the period 2013-2015.

5.4 Contribution of the District Plan to Future Pollution Deposition within Ashdown Forest

5.4.1 The Design Manual for Roads and Bridges (DMRB; Highways Agency, 2007) provides guidance on assessment of the impact that road projects may have on local air quality. Specific provision is made in relation to sites designated under the Habitats Directive. In this instance the assessment is in relation to existing, as opposed to new roads, however the guidance clarifies that '*where appropriate, the advice may be applied to existing roads*'.

5.4.2 DMRB provides a scoping assessment method for local air quality and initially requires the identification of roads which are likely to be affected by the proposals. The criteria for defining an affected road are:

- Road alignment will change by 5 metres or more; or
- Daily traffic flows will change by 1,000 annual average daily traffic (AADT) or more; or
- Heavy Duty Vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10km/hr or more; or
- Peak hour speed will change by 20km/hr or more.

5.4.3 The scoping assessment then requires that nature conservation sites (e.g. SACs) within 200m of the road and their characteristics be identified.

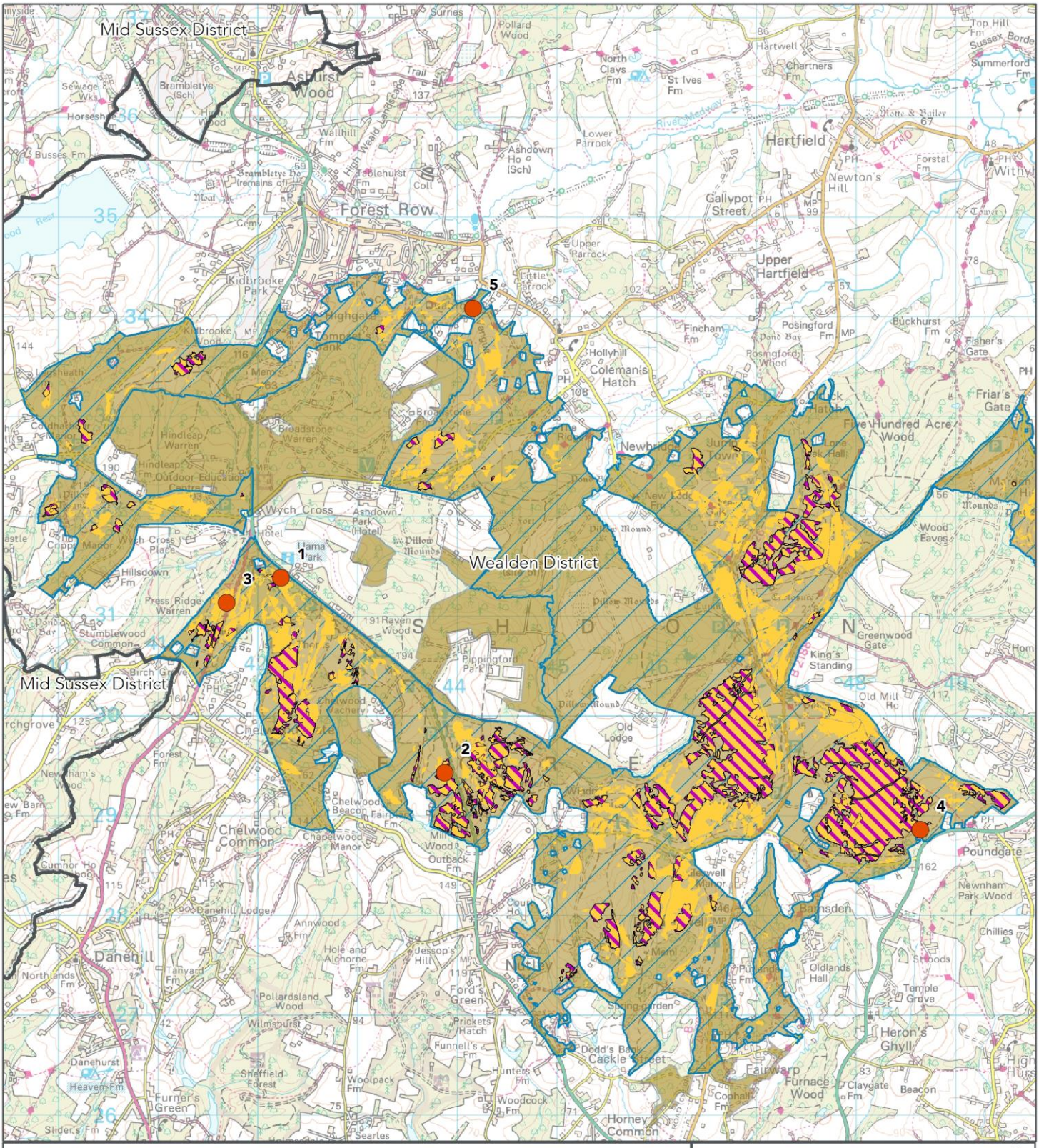

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Figure 5.1: APIS grid reference locations

5.4.5 If none of the roads in the network experience an increase in traffic as a result of the Plan in combination with other Plans and Projects or there are no relevant designated sites near the affected roads, then the air pollution impact of the scheme is considered not to be significant and no further work is needed. Major roads passing through the Forest along which residents from Mid Sussex could be likely to travel are: A22, A26 and A275, while the B2188, B2026, B2110 and Coleman's Hatch Road may also be of concern; see Figure 5.2.

5.4.6 In March 2017, the High Court handed down a judgment in relation to nitrogen deposition on the Ashdown Forest SAC. Wealden District Council brought a legal challenge against the Joint Core Strategy prepared by Lewes District Council and the South Downs National Park Authority. The legal challenge centred on the assessment of air quality impact on the Ashdown Forest SAC which was based on advice provided by Natural England. The *Wealden*[4] judgment found that the advice provided by Natural England on the in combination assessment was flawed and the outcome was that the judge quashed part of the Joint Core Strategy.

5.4.7 The potential air quality impacts on the Ashdown Forest SAC arise from additional nitrogen deposition resulting from increased traffic emissions as a consequence of new development. Natural England had advised that the Design Manual for Roads and Bridges could be used to assess air quality impacts, applying the 1,000 Annual Average Daily Traffic methodology. It was advised that if the development proposals in a Plan by itself were calculated to be below 1,000 AADT, then the air pollution impacts could be considered not significant and no further work would be needed.

5.4.8 The judge had to consider if development could be screened out for Habitats Regulations purposes if the development did not cause an increase of more than 1,000 AADT on roads within and surrounding Ashdown Forest where the assessment looked at the effects of the development by itself (alone). However, the judge found that the advice provided by Natural England was erroneous and that an assessment of air quality impact should include other development proposals thus considering the in combination effect of nitrogen deposition from increased traffic.

5.4.9 However, the judge gave no ruling as to the practical effects of the judgment. The parameters for any assessment of traffic impact are now unclear beyond a general presumption that any development that is likely to lead to air quality impacts on the Ashdown Forest SAC in the form of additional traffic will need to be considered through a Habitats Regulations Assessment.

[4] Wealden District Council v Secretary of State for Communities and Local Government & Ors [2017] EWHC 351 (Admin) (20 March 2017): http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html.

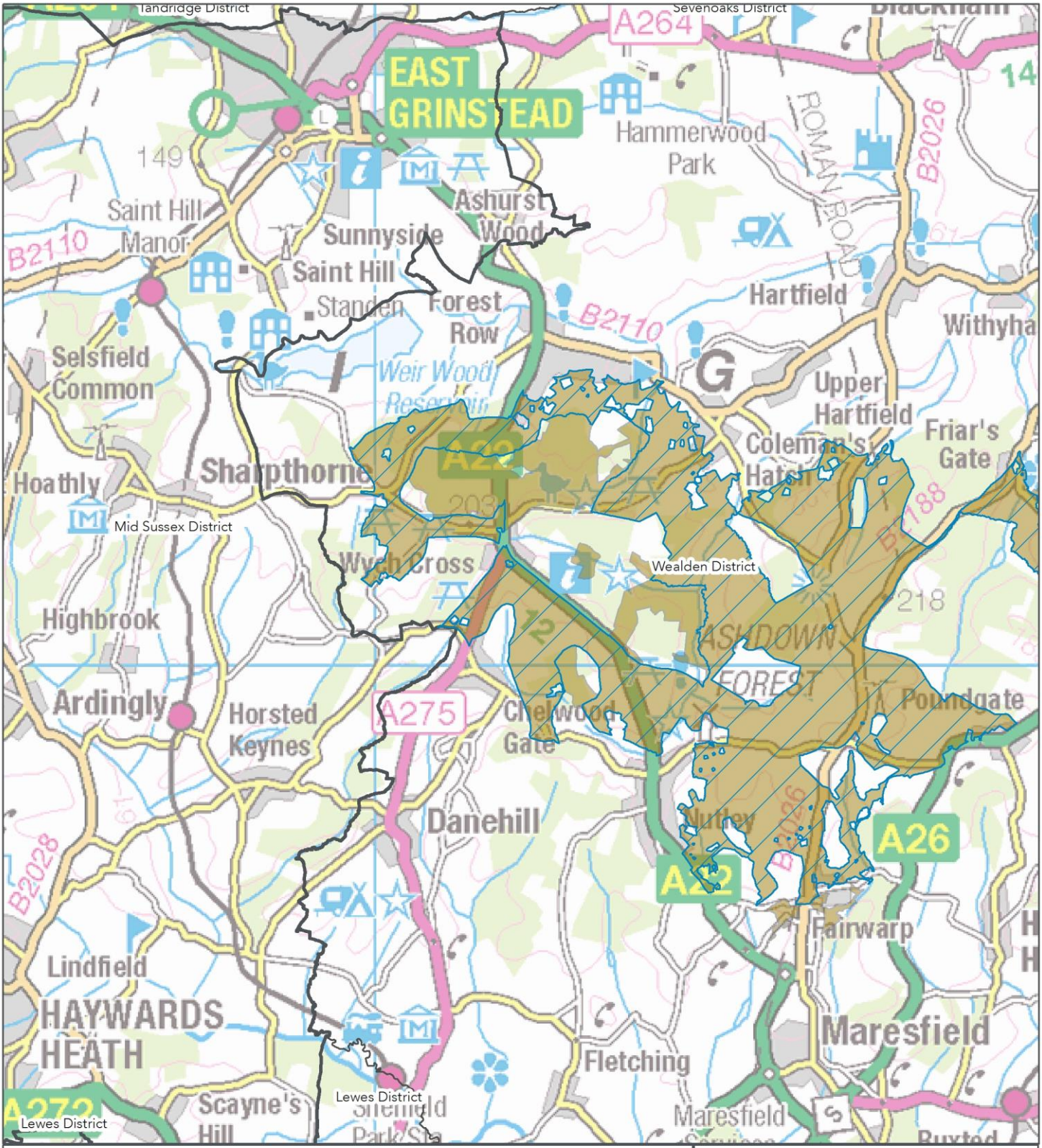

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Figure 5.2: Major roads crossing Ashdown Forest

Mid Sussex Transport Study

5.4.10 Mid Sussex District Council commissioned Amey Transport Consultants to carry out the Mid Sussex Transport Study (MSTS). The study utilises a derivative of the West Sussex County Council strategic multi modal transport model (WSCCM) to assess the transport impacts of the District Plan. Using the Design Manual for Roads and Bridges guidance, representative local flow factors were applied to convert forecast AM peak model outputs at 2021 and 2031 to AADT equivalent. The modelling approach is an in combination assessment which incorporates growth assumptions for surrounding local authority areas.

Study area

5.4.11 The transport model was specifically refined to include new network detail covering roads that access or cross Ashdown Forest, namely:

- A275 (Lewes-East Grinstead);
- A22 (Uckfield-East Grinstead);
- A26 (Uckfield-Crowborough);
- B2110 (East Grinstead-Royal Tunbridge Wells);
- B2188 (Maresfield – Groombridge);
- B2026 (B2188-B2110); and
- Coleman's Hatch Road (East –West through Ashdown Forest).

5.4.12 Owing to the strategic nature of the Mid Sussex Transport Study and the location of Ashdown Forest on the north east periphery of the modelled network, meaningful flow assignments for B2188, B2026, Coleman's Hatch Road and Kidds Hill could not be derived. An assessment has been made of future traffic impacts on A275, A22, A26 and B2110 which are the main routes that are used in the area and experience most traffic flows. It is also not unreasonable to conclude that if traffic is not increasing across these four roads, then it is unlikely that the Plan would increase traffic flows on the B2188, B2026, Coleman's Hatch Road and Kidds Hill.

Treatment of development scenarios

5.4.13 The Mid Sussex Transport Study (Amey, 2017) uses a Reference Case (which represents forecast baseline traffic flows at 2031) to predict the additional traffic flow impacts of a future Development Case scenario which could occur under the District Plan. The transport modelling exercise, which Mid Sussex District Council has undertaken, allows for provision in total of 17,797 homes. This comprises: completions (since 2008 as the base date of the model) of 5,234 dwellings (of which 2,426 dwellings have been completed since the Plan's start date of 2014); commitments (with planning permission) of 5,086 dwellings; existing allocations in the Mid Sussex District Plan and Neighbourhood Plans of 5,824 dwellings; the delivery of growth in line with the settlement hierarchy set out in District Plan Policy DP5 (based on expected housing sites beyond the 5 year supply) of 1,158 dwellings; and a proportionate windfall allowance of 495 dwellings.

Results

5.4.14 The Development Case is not predicted to have an overall effect of increasing traffic flows on roads through Ashdown Forest, compared with the Reference Case, as shown in Table 5.3. In fact, it results in an overall modest reduction in traffic on the assessed routes.

Table 5.3: MSTS Stage 3 Report predicted traffic flows on roads within Ashdown Forest

Two-Way Annual Average Daily Traffic Flow (Vehicles)		
Road Link	**Reference Case**	**Development Case Scenario**
Two-Way Annual Average Daily Traffic Flow (Vehicles)		
A275	7107	7374
A22	6272	6245
A26	4483	4286
B2110	2247	1984
Two-Way AADT Change from Reference Case (Vehicles)		
A275	-	267
A22	-	-27
A26	-	-197
B2110	-	-263

5.4.15 Although the overall effect of the Mid Sussex District Plan is to reduce traffic on the Forest roads, the reduction on the A22 and A26 is matched by an increase in traffic flows on the A275. Accordingly, the significance of this effect has been assessed by converting predicted traffic flow increases to pollution (concentration and deposition) impact contours up to 200m either side of the road, and comparing this to available data on habitat type and extent.

Air pollution modelling and habitat analysis

5.4.16 Atmospheric pollution dispersion modelling was undertaken by external consultants Arup on behalf of the Council, using Environmental Pollution UK (EPUK) / Institute of Air Quality Management (IAQM) guidelines. The modelling focused on roads within the SAC where traffic flow changes were predicted by the transport study: A275, A22, A26 and B2110. One transect was plotted per road and the process contribution of nutrient nitrogen deposition (kg/ha/yr) was predicted for distances of 5m, 10m, 20m, 50m, 100m, 150m and 200m either side of the road. The process contribution is the amount of additional traffic-source pollution contributed by developments proposed in the District Plan, in combination with growth assumptions for surrounding local authority areas.

5.4.17 The results are presented in Appendix II and, for the A22, show that the process contribution ranges from -0.01kg N/ha/yr at 5m from the road to 0.00kg N/ha/yr at all other distances. For the A26 and B2110 the process contribution ranges from -0.06kg N/ha/yr at 5m from the road to 0.00kg N/ha/yr at 200m. But for the A275 the process contribution ranges from 0.06kg N/ha/yr at 5m from the road to 0.01kg N/ha/yr at 200m.

5.4.18 Thus the maximum predicted increase in nutrient nitrogen deposition is 0.06kg N/ha/yr (0.6% of the minimum critical load) at a point 5m north-west from the A275. The maximum decrease is -0.06kg N/ha/yr (-0.6% of the minimum critical load), at a point 5m north-west from the A26.

5.4.19 Predicted deposition rates were compared to aerial imagery and the 2007 habitat data (type and extent) provided by the Conservators, as shown on Figure 5.3 and Figure 5.4. Data on habitat structure and composition were not available[5]. At the A26, habitats closest to the road are woodland and grassland. The nearest extent of heathland habitat (wet heath) is c.100m north-west of the road where the predicted decrease in nutrient deposition is -0.01kg N/ha/yr (-0.1% of the minimum critical load). At the A275, habitats closest to the road are grassland, heathland and woodland. The nearest extent of heathland habitat (dry heath) is c.5m south-east of the road where the predicted increase in nutrient deposition is 0.05kg N/ha/yr (0.5% of the minimum critical load).

5.4.20 The differential of 0.04kg N/ha/yr (0.4% of the minimum critical load) between these two locations is not considered to be ecologically significant. The overall effect of the District Plan's process contribution to pollution deposition within qualifying SAC habitats can be considered neutral.

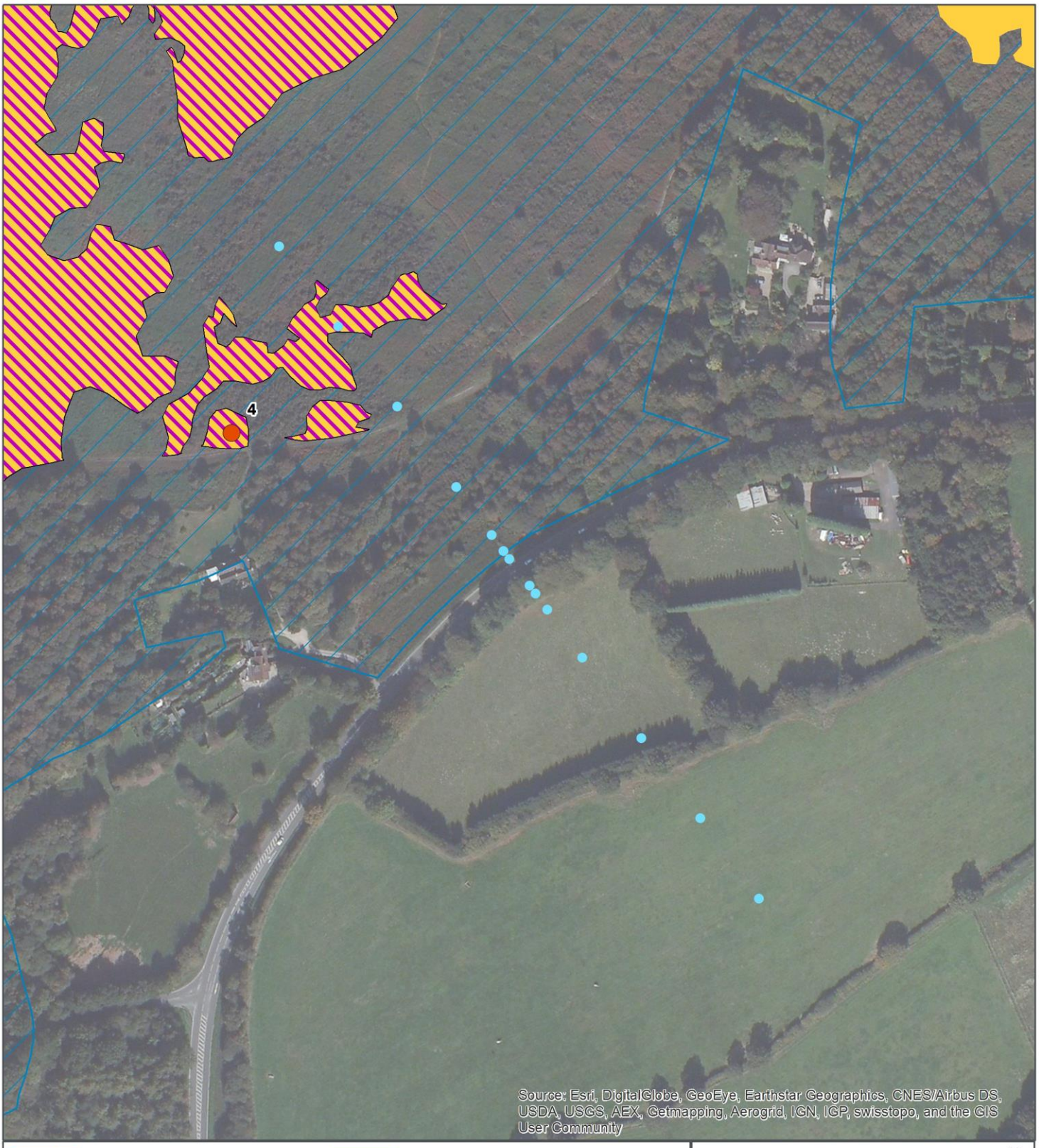
5.5 Other Plans and Projects acting In Combination

5.5.1 The modelling approach used for the Mid Sussex Transport Study is an in combination assessment which incorporates growth assumptions for surrounding local authority areas. Further in combination assessment is not required.

5.6 Avoidance and Mitigation Measures proposed by the District Plan

5.6.1 The District Plan contains measures to promote sustainable transport over the plan period, including measures relating to existing development, and additional actions to assess and manage air pollution. These are intended to improve the overall sustainability of the District as well as reduce the traffic emissions from proposed development, including along roads passing through or close to Ashdown Forest; see Box 1.

[5] General information on the composition and structure of heathland habitats within the SAC is presented in ECUS (2015), together with specific data for certain transects. However, transect locations are not disclosed.



Ashdown Forest SAC
Mid Sussex District Boundary
Local Authority Boundaries
APIS Grid Reference Locations
Dry Heath
Wet Heath
AP transect points

0 0.05 0.1 Kilometers

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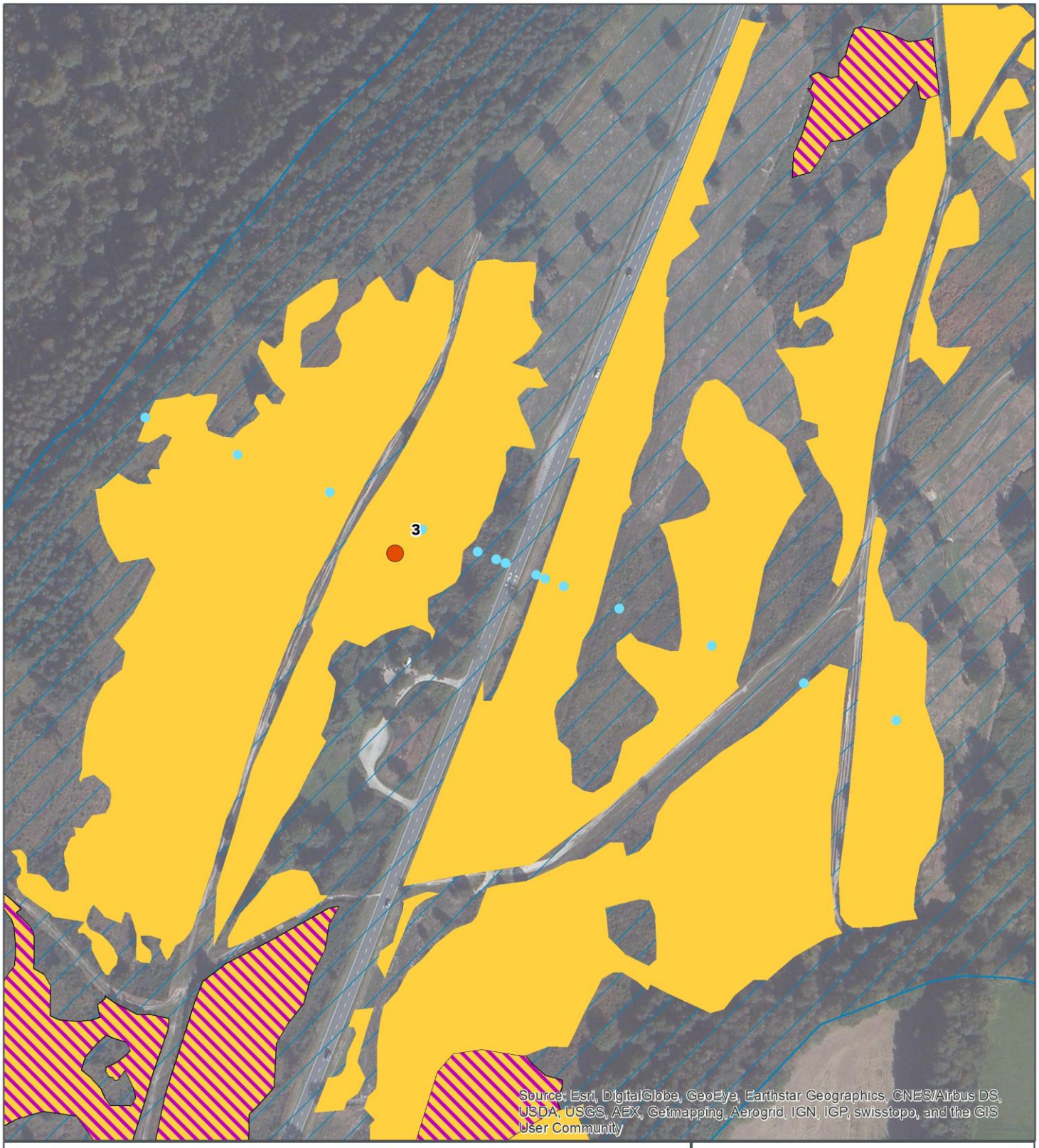
Figure 5.3: Heathland habitat & pollution transect points, A26



Ashdown Forest SAC
Mid Sussex District Boundary
Local Authority Boundaries
APIS Grid Reference Locations
Dry Heath
Wet Heath
AP transect points

0 0.05 0.1 Kilometers

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Figure 5.4: Heathland habitat & pollution transect points, A275

Box 1: Policy DP19 – Transport

Development will be required to support the objectives of the West Sussex Transport Plan 2011-2026, which are:

- A high quality transport network that promotes a competitive and prosperous economy;
- A resilient transport network that complements the built and natural environment whilst reducing carbon emissions over time;
- Access to services, employment and housing; and
- A transport network that feels, and is, safer and healthier to use.

To meet these objectives, decisions on development proposals will take account of whether:

- The scheme is sustainably located to minimise the need for travel noting there might be circumstances where development needs to be located in the countryside, such as rural economic uses;
- Appropriate opportunities to facilitate and promote the increased use of alternative means of transport to the private car, such as the provision of, and access to, safe and convenient routes for walking, cycling and public transport, including suitable facilities for secure and safe cycle parking, have been fully explored and taken up;
- The scheme is designed to adoptable standards, or other standards as agreed by the Local Planning Authority, including road widths and size of garages;
- The scheme provides adequate car parking for the proposed development taking into account the accessibility of the development, the type, mix and use of the development and the availability and opportunities for public transport; and with the relevant Neighbourhood Plan where applicable;
- Development which generates significant amounts of movement is supported by a Transport Assessment/Statement and a Travel Plan that is effective and demonstrably deliverable including setting out how schemes will be funded;
- The scheme provides appropriate mitigation to support new development on the local and Strategic Road Network, including the transport network outside of the district, secured where necessary through appropriate legal agreements;
- The scheme avoids severe additional traffic congestion, individually or cumulatively, taking account of any proposed mitigation;
- The scheme protects the safety of road users and pedestrians; and
- The scheme does not harm the special qualities of the South Downs National Park or the High Weald Area of Outstanding Natural Beauty through its transport impacts.

Where practical and viable, developments should be located and designed to incorporate facilities for charging plug-in and other ultra-low emission vehicles.

Neighbourhood Plans can set local standards for car parking provision provided that it is based upon evidence that provides clear and compelling justification for doing so.

5.7 Impact Assessment

5.7.1 This section assesses whether the District Plan can be expected to adversely affect the ecological integrity of the Ashdown Forest SAC as a result of atmospheric pollution impacts. It does this by considering the sites' conservation objectives (Table 3.2), with reference to the characteristics of the site (Chapter 4) and its qualifying features (Table 3.1), and in the context of

available data on pollution impacts and the District Plan's policy response as outlined above (sections 5.1 to 5.6).

Objective 1: Extent and distribution of qualifying natural habitats and habitats of qualifying species

5.7.2 Ashdown Forest is designated as an SAC for its European dry heaths and North Atlantic wet heaths with *E. tetralix*. Great crested newts are present in qualifying numbers but are not a primary reason for site selection. Predicted traffic flow changes as a result of development proposed by the District Plan range from an increase of 267 AADT on the A275 to decreases of -27, -197 and -263 on the A22, A26 and B2110 respectively. Changes in nutrient nitrogen loads are predicted to range between 0.05kg N/ha/yr (0.5% of the minimum critical load) within dry heath habitat c.5m from the A275, and -0.01kg N/ha/yr (-0.1% of the minimum critical load) within wet heath habitat c.100m from the A26. These changes are unlikely to significantly alter the extent and distribution of qualifying natural habitats, and are unlikely to affect the integrity of the SAC (defined at section 2.4.1 as the coherence of its ecological structure and function across its whole area that enables it to support the complex of habitats for which it was classified).

Objective 2: Structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species

5.7.3 Predicted changes in nutrient nitrogen loads are so small as to be considered unlikely to significantly alter the structure and function of qualifying natural habitats and are unlikely to affect the integrity of the SAC.

Objective 3: Supporting processes on which qualifying natural habitats and habitats of qualifying species rely

5.7.4 Predicted changes in nutrient nitrogen loads are so small as to be considered unlikely to significantly inhibit the supporting processes on which qualifying natural habitats rely and are unlikely to affect the integrity of the SAC.

Objective 4: Populations of qualifying species

5.7.5 The populations of qualifying species are unlikely to be affected.

Objective 5: Distribution of qualifying species within the site

5.7.6 The distribution of qualifying species within the site is unlikely to be affected.

5.8 Conclusions

5.8.1 It can be concluded that the District Plan will not result in adverse effects on the conservation objectives of the Ashdown Forest SAC.

6 Disturbance Impact Pathways

6.1 Introduction

6.1.1 The screening exercise found that the following District Plan policies were likely to significantly affect Ashdown Forest SPA as a result of disturbance impacts:

- DP5 Housing;
- DP5A Planning to Meet Future Housing Need;
- DP13 New Homes in the Countryside;
- DP30 Rural Exception Sites; and
- DP31 Gypsies, Travellers and Travelling Showpeople.

6.2 Understanding the Vulnerability of SPA Species to Disturbance

6.2.1 Murison *et al.* (2007) noted that animals often react to human disturbance as a form of predation risk. Such a response can include elevated heart rate, heightened defensive behaviour, including evasive measures with associated energy expenditure, and the avoidance of high risk areas (Murison *et al.* (2007), Liley & Sutherland (2007)). High levels of human activity in important nature conservation areas might then change the behaviour of animals to such a degree that conservation priorities become compromised. This may result from reduced breeding success, increased predation or exposure of nests, eggs or young to trampling and the elements (Liley & Sutherland, 2007).

Dartford warbler

6.2.2 In a study into the relationship between habitat type and disturbance effects on the breeding Dartford warbler, Murison *et al.* (2007) noted the following as important measures of disturbance. First, they noted that indirect disturbance was associated with factors such as the distance from the centre of the heathland patch (or nest) to the nearest road, path, building or car park. Second, the proximity of a nest territory to the nearest access point showed a strong, negative relationship with the timing of a first brood. Third, disturbance appeared to be associated with increased stress levels, with birds exhibiting an extended period of agitation while searching for cover, leading to increased energy expenditure.

6.2.3 They suggest that the mechanisms by which disturbance affects the Dartford warbler's breeding success are associated with its particular susceptibility to disturbance during nest-building, with birds often abandoning their work and materials. The effects of this are threefold. The timing of the first brood was delayed for long enough (up to six weeks) to prevent multiple broods in one season. Second, the fledgling success of a first brood delayed until June was limited by the decreased availability of invertebrate prey. Finally, that continued disturbance events reduced the foraging effectiveness of the birds, and their ability to feed their young, by keeping the adults away from the nest for longer than normal.

6.2.4 Analysing the results of their study, Murison *et al.* (2007) found that breeding pairs with territories in areas experiencing as many as 13 to 16 disturbance events each hour of every day, delayed breeding for sufficiently long enough to prevent multiple broods in one season. Importantly, they also found a significant correlation between the reproductive success of Dartford warbler and the proportion of different species of gorse present in the heathland patch. They discovered a strong positive relationship with European gorse *Ulex europaeus*, where heathland patches containing more of this type produced more successful broods. While the significance of disturbance events in delaying breeding among pairs nesting in heather-dominated territories was high, often leading to reduced breeding success, the correlation was weaker in territories dominated by Western gorse *U. gallii*. During their surveys, dogs were observed ranging as far as 45m into heather dominated areas, but never strayed from the path in areas with vegetation dominated by gorse.

Nightjar

6.2.5 Liley and Clarke (2003), following field studies into the population density of nightjar on 36 patches of heathland in Dorset, demonstrated that patches surrounded by higher levels of development supported smaller populations of nightjar. Effects associated with urbanisation identified as relevant in this respect included human disturbance, light pollution, predation from natural predators and domestic pets (as well as corvids, Fox *Vulpes vulpes*, and Hedgehog *Erinaceus europaeus*), and habitat change.

6.2.6 In a study investigating the relationship between walkers with dogs and the success of breeding nightjar, Langston *et al.* (2007) observed that the flushing of birds from the nest by a disturbance event during daylight hours led to predation by diurnal predators, particularly of eggs. Moreover, birds tend to flush more readily in response to dogs than to humans, and take longer to return to the nest. Langston *et al.* (2007) noted that disturbance effects on nightjar were accentuated when breeding conditions were less favourable due to incidental factors such as weather conditions. Birds flushing the nest as a result of disturbance events during harsh or wet weather tended to bear smaller, less successful broods. Overall, they found a significant relationship between nest failure and disturbance, with failure being more likely in nests with higher total footpath length within 50m, 100m and 500m of the nest clearing.

Woodlark

6.2.7 It has been observed that the removal of human disturbance effects could result in an increase of between 13% and 48% in the breeding population of woodlark over 16 heathland sites (Mallord *et al.* 2007a, Mallord *et al.* 2007b). At sites with recreational access woodlark was found to be less likely to colonise suitable habitat in areas with greater disturbance. The probability of colonisation was reduced to below 50% with disturbance levels at eight events per hour.

6.2.8 In summary, disturbance impacts to heathland breeding birds can be described as:

- Increased nest predation by natural predators or dogs when adults are flushed from the nest or deterred from returning to it by the presence of people or dogs;
- Chicks or eggs dying of exposure because adult birds are kept away from the nest;

- Accidental trampling of eggs by people, where nests are on the ground and may be close to paths;
- Reduced productivity resulting from delayed breeding, fewer young, decreased food availability and/or nest failure;
- Displacement from / avoidance of otherwise suitable areas of habitat; and
- Increasing stress levels in adult birds in response to perceived predation risk.

6.3 Evidence for Disturbance Impacts within Ashdown Forest

6.3.1 The study by Clarke *et al.* (2010), analysed data on visiting patterns collected through face-to-face questionnaire surveys conducted at Ashdown Forest in 2008 (UE Associates & University of Brighton, 2009). After assessing visitor rates at each access point, they distributed visitor numbers across the path network within the Forest using a 25m by 25m cell grid to generate a series of maps showing visitor intensity levels. These were overlaid with recorded bird territories from the latest national surveys for Dartford warbler (Wotton *et al.*, 2009), nightjar (Conway *et al.* 2007) and woodlark (Conway *et al.* 2009) to investigate whether bird density correlates with visitor or path intensity.

6.3.2 They found that average bird density was lowest in areas with the lowest two class levels of either visitor or path intensity. For woodlark, the highest average density occurs in areas with the highest class levels of visitor intensity at all three assessed influence distances (50m, 100m and 150m). Average nightjar density was lowest for the quarter of cells with the lowest nearby visitor or path intensity for all three influence distances. Dartford warbler average density was highest amongst the quarter of cells with the highest level of visitor intensity. For each species, several of the differences in bird density with nearby visitor or path intensity were statistically significant (Clarke *et al.* 2010). The positive relationship between nesting birds and presence or potential presence of visitors would seem to suggest that visitor activity is not affecting territory selection among the birds on Ashdown Forest.

6.3.3 However, after accounting for habitat type, Clarke *et al.* (2010) found that path intensity is lowest in (or very near to) areas of wet heath, and second lowest in woodland. Furthermore, visitor intensity levels were found to be much lower in areas of wet heath and woodland than other habitats, and much less than half the general level of visitor pressure in area of dry heath. Looking at the habitat preferences of the birds within Ashdown Forest, wet heath and woodland habitats are less preferred by the bird species, whereas dry heath was found to be the preferred nesting habitat for Dartford warbler and nightjar, and second choice (of six habitat types) among woodlark. Other important nesting habitats were gorse (especially for woodlark and Dartford warbler) and unimproved grassland where levels of visitor and path intensity were also higher than in woodland and wet heath habitats.

6.3.4 Analysis which also takes account of habitat type thus demonstrates that more open and drier habitats are generally preferred by both birds and people within Ashdown Forest, perhaps explaining why the density of nesting territories is greatest in areas with the highest presence or potential presence of visitors. But Clarke *et al.* (2010) found no clear evidence that the current spatial distributions of woodlark, nightjar or Dartford warbler are affected by the patterns of

current levels of nearby visitor pressure or by path intensity within the SPA. Nevertheless, the density of all three species is low within Ashdown Forest, and lower than might be expected when compared to other heathland sites in southern England with a similar range of habitats (see Clarke *et al.*, 2010, Table 7 and Figure 14). By comparison, visitor pressure at the site (2.1767 visitors per ha over a 16 hour period) appears to be lower than on the Thames Basin Heaths (3.7 visitors per ha) and slightly higher than the Dorset Heaths (1.8 visitors per ha) where similar studies have been carried out.

6.3.5 The study concludes that the current (2008) level of visitor pressure is not affecting the distribution of nightjar, woodlark or Dartford warbler within Ashdown Forest SPA; based on the analysis undertaken, the birds do not appear to be avoiding areas of greater recreational pressure. However, recreational disturbance could still be having an impact on the Annex I bird species at the site:

> *"It may be that the density of birds is so low (due to other, currently unknown factors) that there is little competition for space and therefore no impacts of disturbance. While the results of the analysis presented in the report are potentially encouraging, in the absence of data on breeding success, and without understanding why bird densities are low, it currently cannot be concluded on the basis of scientific evidence that the ecological integrity of nightjar and Dartford warbler populations is not being adversely affected by a combination of existing pressure and/or habitat management."* Clarke et al., 2010, p29

6.3.6 Clarke *et al.* (2010) advocate a precautionary approach when considering the implications of a plan or project proposing a significant level of increased housing, informed by wider research into the effects of disturbance on heathland birds, because it cannot be conclusively determined that current levels of recreational pressure are not affecting the breeding success of birds exposed to recreational pressure.

6.4 Determining a Zone of Influence for Visiting Patterns to Ashdown Forest

6.4.1 Using the 2008 visitor data, Clarke *et al.* (2010) estimated that a total of 5,198 people would currently visit Ashdown Forest over a 16 hour period in September, or 325 visits per hour. Given the visitable area of the SPA (2,388ha), this equates to a visitor density of 2.17 visitors per ha over 16hrs. In order for such information to be useful for spatial planning purposes, it is necessary to define how far people will travel from home to visit Ashdown Forest, and thus where new housing development is most likely to increase visitor pressure in the SPA such that impacts to nesting heathland birds could occur.

6.4.2 For example, development where residents are likely to visit Ashdown Forest on a daily basis to walk the dog (i.e. those closest to the Forest) should be considered differently from development further away where residents might visit Ashdown Forest more occasionally. Research (for example UE Associates and University of Brighton (2009), Underhill-Day & Liley (2007), Underhill-Day (2005)) and practical experience in protecting the Thames Basin Heaths SPA and Dorset Heathlands SPA has shown that avoiding or mitigating the disturbance impacts of residential development within 400m of the SPA is unlikely to be successful, and hence that residential development within this distance should not be permitted.

6.4.3 At both the Dorset and Thames Basin Heaths a 5km zone has been established around the SPA. Within this zone it is recognised that new residential development has the potential to result in significantly increased use of the heaths, and that mitigation measures are required to reduce this increase, funded through developer contributions. Figure 6.1 shows the cumulative percentage of visitors to Ashdown Forest arriving by car in relation to distance from the Forest, and compares this to similar patterns at the Thames Basin and Dorset Heaths. It shows that visitors to Ashdown Forest appear to travel further than visitors to the Dorset or Thames Basin Heaths. For instance, around 40% of interviewed visitors travelling by car to Ashdown Forest had come from within a 5km distance. On the Thames Basin Heaths, this figure was approximately 60% and at the Dorset Heaths it was around 70%. At Ashdown Forest, approximately 65% of visitors arriving by car travel from within 7km of the site.

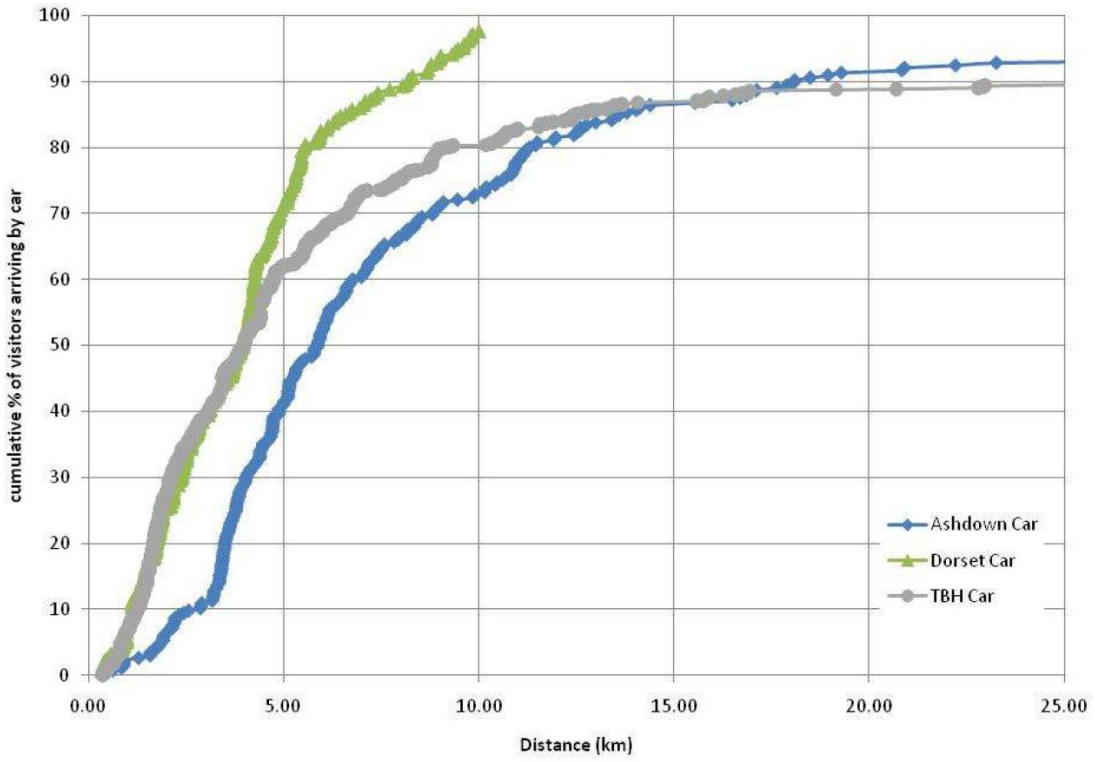


Figure 6.1: Cumulative frequency of car visitors by distance, for the Dorset Heaths, Thames Basin Heaths and Ashdown Forest (Source: Clarke et al. 2010)

6.4.4 Based on visiting rates to each access point and surrounding residential densities, Clarke *et al.* (2010) constructed a model that could predict the number of additional visitors to the SPA that would result from new residential developments close to the Forest. The predictive model allows for distance to the SPA access points and the characteristics of the access point. Table 6.1 illustrates the model outputs in relation to developments of 100 additional dwellings at a range of settlements around the SPA.

6.4.5 The model provides a means to directly compare the consequences of development (in terms of increased SPA visitor numbers) at a potential development location. Accordingly, 100 new dwellings at Crowborough, in close proximity to parts of the SPA, is predicted to lead to 12.2 extra visitors per 16 hours, in contrast to 4.1 extra visitors for an equivalent number of dwellings at East Grinstead, or 1.2 extra visitors for the same number at Haywards Heath, further away

from the Forest (Clarke *et al*, 2010). The analysis shows that, although the existing numbers of visitors to Ashdown Forest may not be negatively affecting populations of Dartford warbler and nightjar, the visitors associated with new strategic housing allocations may do, especially in combination with the effects of other plans and projects. Generally speaking, the closer an individual dwelling or residential development is to the Forest, the more likely its inhabitants are to visit on a regular basis.

Table 6.1: Predicted additional visitor rates to the SPA per 16 daylight hours in Sept. resulting from new development at different locations (Source: Clarke* et al. *2010)

Settlement	Distance from SPA *	Number of added visits per 100 dwellings **
East Grinstead	5.10	4.1
Crawley	12.98	0.3
Haywards Heath	9.48	1.2
Uckfield	4.99	3.9
Crowborough	1.50	12.2
Royal Tunbridge Wells	10.25	0.8

* Shortest distance from settlement boundary to SPA boundary – except Crowborough

** Visits per 16 daylight hours in September

6.4.6 Clarke *et al* (2010) found that the majority of visitors travelling by car (>85%) originated from within a 15km distance from the Forest (Figure 6.1). In order to establish a zone of influence around Ashdown Forest, the distances between post code origin and SAC/SPA from the 2008 field survey data were recalculated for all modes of transport; see Figure 6.2. The recalculations excluded invalid post codes, stem post codes, records that gave no response and those within the Forest (*n*=286 out of 639 interviews conducted). The resulting cumulative distribution curve shows that around 80% of visitors travelling by all modes originated from within 7km of the SPA.

6.4.7 Following consultations with Natural England, a 7km zone of influence around Ashdown Forest was established; see Figure 6.3. This is the area within which the majority (83%) of regular visitors to the Forest originate, and therefore where measures targeted at reducing pressure on the Forest would be most effective.

6.4.8 Natural England has stated that 8ha of Suitable Alternative Natural Greenspace (SANG) should be provided for every 1,000 increase in population (or part thereof) within this zone, in line with the Thames Basin Heaths approach to avoidance and mitigation. The purpose of SANG is to cater for the daily recreational needs of the residents of new (and existing) developments. By providing attractive, accessible greenspace close to home, SANGs reduce the likelihood of residents travelling to Ashdown Forest to satisfy this need. It is acknowledged, however, that it will neither be possible nor desirable to prevent all new residents from visiting the SPA on an occasional basis. The Council has published a guidance note on the required standards for SANGs which is available on its website[6].

[6] Mid Sussex District Council (2012): *Suitable Alternative Natural Greenspace Guidance* [accessed September 2014]: http://www.midsussex.gov.uk/planning/8716.htm

6.4.9 SANGs should be complimented by development-funded changes to access management and monitoring within Ashdown Forest to reduce the onsite impacts of the remaining people who will inevitably continue to visit the site. These measures are collectively referred to as Strategic Access Management and Monitoring (SAMM) measures.

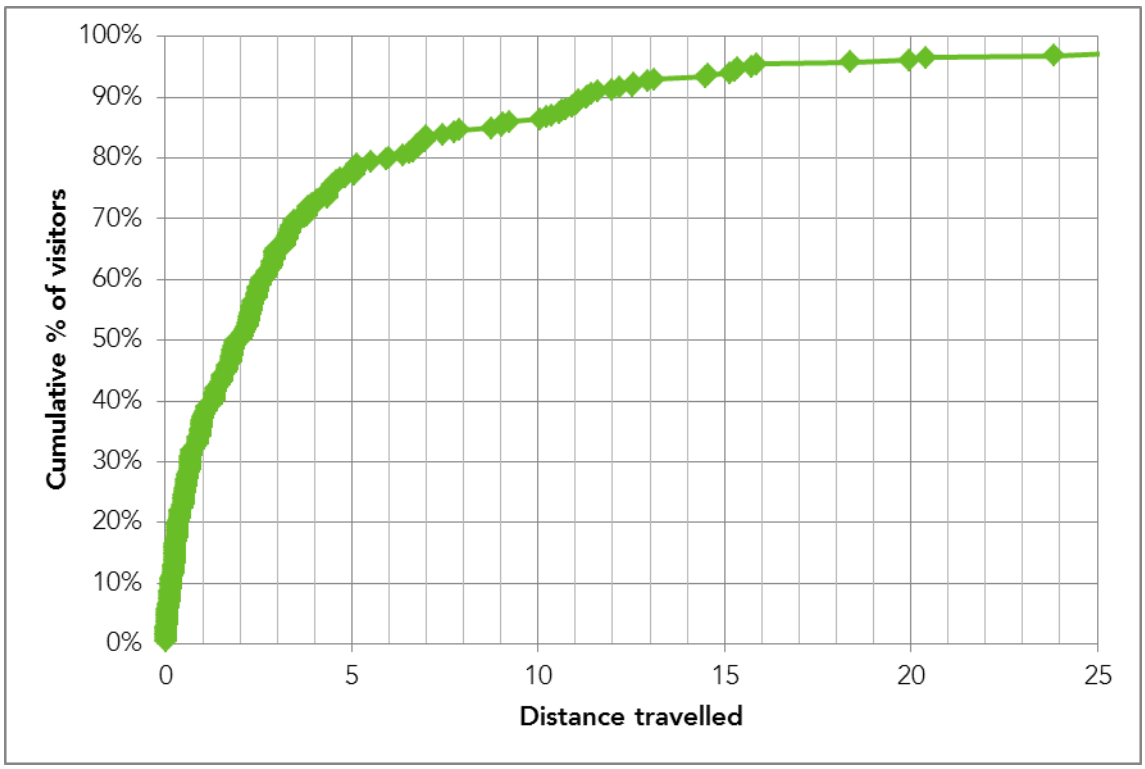


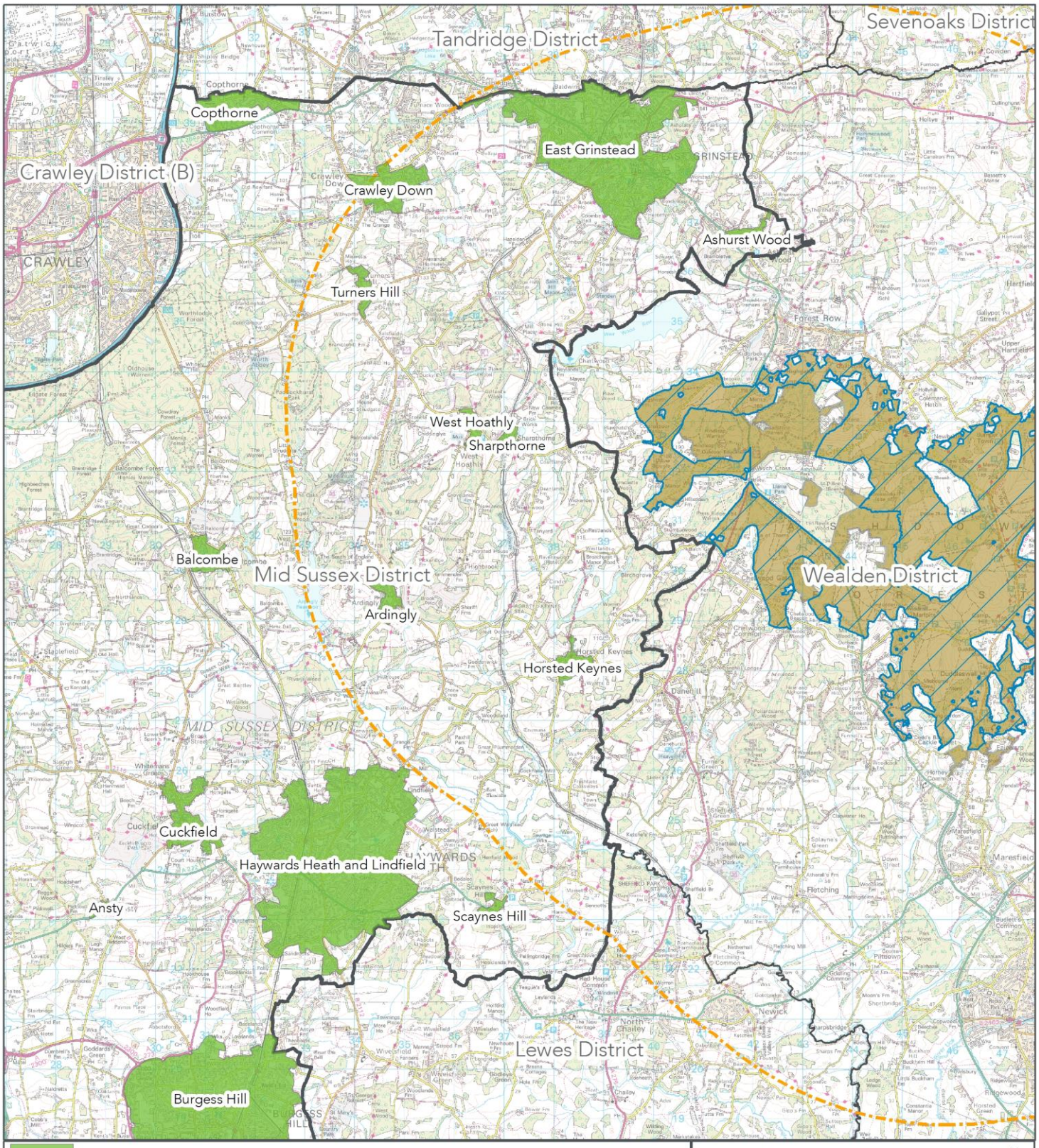
Figure 6.2: Distances travelled to Ashdown Forest in 2008 by all respondents who gave a full post code (n=286)

6.5 Contribution of the District Plan to Future Visiting Rates within Ashdown Forest

6.5.1 The Main Modifications District Plan makes provision for 876 dwellings per annum up to 2023/24. This requirement will be delivered through strategic development allocations at Burgess Hill, Pease Pottage and Hassocks (outside of the 7km zone of influence) and Neighbourhood Plans. All towns and parishes in the District are committed to preparing their own Neighbourhood Plan, but it is not currently known precisely how many homes could be delivered within the 7km zone around the Ashdown Forest over the plan period.

6.5.2 Policy DP5 sets out the housing requirement of 16,390 dwellings between 2014 and 2031, drawn from the following sources:

- Completions: 2,410 (630: 1/4/2014 to 31/3/2015; 868: 1/4/2015 to 31/3/2016; 912: 1/4/2016 to 31/3/2017);
- Total housing commitments: 7,091;
- Strategic development north and north-west of Burgess Hill: 3,500;
- Strategic development at Land north of Clayton Mills, Hassocks: 500;
- Windfall allowance: 450; and
- Elsewhere in the district, as allocated through future Neighbourhood Plans and the Site Allocations document: 2,439.



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SP	NP

Drawing number
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Figure 6.3: Ashdown Forest's 7km Zone of Influence within Mid Sussex

6.6 Other Plans and Projects acting In Combination

6.6.1 Other plans and projects which may act in combination with the District Plan to exacerbate disturbance impacts to the SPA include any proposing a net gain in dwellings within the 7km zone of influence in the following authority areas:

- Lewes District Council;
- Sevenoaks District Council;
- Tandridge District Council;
- Tunbridge Wells Borough Council; and
- Wealden District Council.

6.6.2 It is understood that local planning authorities in Lewes, Tunbridge Wells and Wealden have similar arrangements in place regarding the provision of SANG and SAMM measures, and that no strategic housing sites are currently being considered in Sevenoaks and Tandridge districts. In any event, Mid Sussex District Council's responsibility is limited to avoiding and mitigating the impacts of developments proposed within its own area.

6.7 Avoidance and Mitigation Measures proposed by the District Plan

6.7.1 Responding to the findings and recommendations of earlier versions of the HRA for the District Plan, and its forerunner the Core Strategy, the current District Plan seeks to avoid and mitigate disturbance impacts to Ashdown Forest SPA through policy DP15; see Box 2.

Box 2: Policy DP15 – Ashdown Forest Special Protection Area and Special Area of Conservation

In order to prevent adverse effects on the Ashdown Forest SPA and SAC, new residential development likely to have a significant effect, either alone or in combination with other development, will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects.

Within a 400 metres buffer zone around Ashdown Forest, mitigation measures are unlikely to be capable of protecting the integrity of the SPA and, therefore, residential development will not be permitted.

Within a 7km zone of influence around the Ashdown Forest SPA, residential development leading to a net increase in dwellings will be required to contribute to mitigation through:

1) The provision of Suitable Alternative Natural Greenspace (SANG) to the minimum level of 8Ha per 1,000 net increase in population; or a financial contribution to SANGs elsewhere; or the provision of bespoke mitigation; and
2) A financial contribution to the Ashdown Forest Strategic Access Management and Monitoring (SAMM) Strategy.

Large schemes proposed adjacent or close to the boundary of the 7km zone of influence may require mitigation. Such proposals for development will be dealt with on a case-by-case basis.

Where bespoke mitigation is provided, these measures will need to be in place before occupation of development and must be managed and maintained in perpetuity. The effectiveness of such mitigation will need to be demonstrated prior to approval of the development. Bespoke mitigation will need to be discussed and agreed by the District Council as the competent authority following advice

from Natural England.

6.7.2 The Council is already implementing this policy in relation to residential development proposals within 7km of the SPA. One strategic SANG site has been identified, East Court and Ashplats Wood, and a strategy and 10-year Management Plan have prepared to define and implement improvements to enhance its attractiveness to visitors. A revised lease for East Court Estate has secured it in perpetuity from 2014 (this is taken to be 125 years) for use as a SANG.

6.7.3 The SANG strategy[9] identifies and describes the site, and assesses its suitability for SANG use against Natural England (2008) guidance on SANG standards. It sets out a commitment to produce a 10-year management plan, defines a series of management objectives for the site and describes measures to monitor and review implementation. It includes estimates of the cost of works required to initially establish the site as SANG, including an upgraded 3km circular walking route with an all-weather surface, as well as costs for longer term management initiatives.

6.7.4 The SANG strategy assesses the site's capacity to act as SANG by examining the nature and extent of current land uses and existing level of visitor use. The overall site area is 40.8ha, of which 4.2ha is used for formal sports provision. A visitor survey at the site was published in 2013 which concluded that existing visitor use equates to 3.45ha. After discounting the overall site area for current uses, the remaining area of land available for SANG is 33.15ha. Should the SANG approach capacity, then the Site Allocations DPD may make provision for further SANG sites.

6.7.5 Finally, the SANG strategy establishes a tariff to be applied to residential developments resulting in a net increase in dwellings within the zone of influence so that the cost of implementing the management plan can be funded. The SANG tariff payable depends on the number of bedrooms in a dwelling and this is calculated from local occupancy rates. This results in a scale of four different tariffs that are proportionate to the number of bedrooms, ranging from £886 for a one bedroom dwelling to £2,033 for properties with four or more bedrooms.

6.7.6 The purpose of the Strategic Access Management and Monitoring Strategy is to mitigate the adverse effects of disturbance caused by the proportion of visits from new residential developments close to the SPA which will not be avoided through the provision of SANG. The Council has developed an interim SAMM Strategy[10] to implement the recommendations of earlier versions of the HRA. This has been in place since August 2013 and sets out mitigation measures which have been discussed and agreed in collaboration with the Conservators of Ashdown Forest, Natural England and the other affected local authorities (Lewes District Council, Wealden District Council and Tunbridge Wells Borough Council). These measures focus on protecting the SPA from new recreational pressures through managing access (visitor)

[9] Mid Sussex District Council (2014): *East Court & Ashplats Wood Suitable Alternative Natural Greenspace Strategy*. [accessed February 2015]: http://www.midsussex.gov.uk/planning/8716.htm

[10] Mid Sussex District Council (2013): *Ashdown Forest Special Protection Area (SPA) and Special Area of Conservation (SAC) Strategic Access Management and Monitoring (SAMM) – Interim Mitigation Strategy* [accessed September 2014]: http://www.midsussex.gov.uk/planning/8716.htm

behaviour and monitoring both birds and visitors. The interim SAMM Strategy will be superseded by a joint SAMM Strategy with Wealden District Council, Lewes District Council, Tunbridge Wells Borough Council, Sevenoaks District Council and Tandridge District Council, and this work is underway.

6.7.7 Development contributions are being collected towards the interim SAMM Strategy via Section 106 of the Town and Country Planning Act 1990. Development contributions towards delivering the SANG and SAMM Strategies will be collected via Section 106 planning obligations, the Community Infrastructure Levy or alternative mechanisms.

6.8 Impact Assessment

6.8.1 This section assesses whether the District Plan can be expected to adversely affect the ecological integrity of the Ashdown Forest SPA as a result of disturbance impacts. It does this by considering the sites' conservation objectives (Table 3.2), with reference to the characteristics of the site (Chapter 4) and its qualifying features (Table 3.1), and in the context of available data on disturbance impacts and the District Plan's policy response as outlined above (sections 6.1 to 6.7).

Objective 1: Extent and distribution of the habitats of the qualifying features

6.8.2 Ashdown Forest is classified as an SPA for its breeding populations of Dartford warbler and nightjar, which are listed on Annex 1 of the Birds Directive. Breeding woodlark (also an Annex 1 species) are present in qualifying numbers. The East Court and Ashplats Wood SANG is designed to avoid the majority of additional recreational visits to the SPA resulting from planned residential developments within the District Plan. Together with the (current) interim SAMM Strategy and (future) joint SAMM Strategy, this will ensure that a sufficient extent and distribution of suitable breeding and foraging habitat (in the absence of excess disturbance) for Dartford warbler and nightjar (and woodlark) is likely to be maintained on a long-term basis.

Objective 2: Structure and function of the habitats of the qualifying features

6.8.3 The SANG and SAMM Strategies are considered to demonstrate that sufficient measures are available to ensure that there will be no adverse effect on the structure and function of the habitats of qualifying species as a result of increased visitor impacts.

Objective 3: Supporting processes on which the habitats of the qualifying features rely

6.8.4 The SANG and SAMM Strategies are considered to demonstrate that sufficient measures are available to ensure that there will be no adverse effect on the supporting processes on which the habitats of qualifying species rely as a result of increased visitor access and disturbance.

Objective 4: Population of each of the qualifying features

6.8.5 The SANG and SAMM Strategies are considered to demonstrate that sufficient measures are available to ensure that there will be no adverse effect on the populations of qualifying species as a result of increased disturbance impacts.

Objective 5: Distribution of qualifying features within the site

6.8.6 The SANG and SAMM Strategies are considered to demonstrate that sufficient measures are available to ensure that there will be no adverse effect on the distributions of qualifying species within the site as a result of increased visitor access and disturbance.

6.9 Conclusions

6.9.1 It can be concluded that the District Plan will not result in adverse effects on the conservation objectives of the Ashdown Forest SPA.

7 Determining Adverse Effects on Integrity

7.1 Introduction

7.1.1 Using the information presented in Chapters 5 and 6, the following sections consider whether there will be adverse effects on the integrity of the Ashdown Forest SAC or SPA.

7.1.2 English Nature (2004; now Natural England) has produced guidance on determining site integrity which includes a 'simple, pragmatic checklist' for assessing likely effects on integrity. This requires the assessor to pose a series of five questions to consider whether the Appropriate Assessment has shown:

- That the area of Annex 1 habitats (or composite features) will not be reduced?
- That there will be no direct effect on the population of the species for which the site was designated or classified?
- That there will be no indirect effects on the populations of species for which the site was designated due to loss or degradation of their habitat (quantity/quality)?
- That there will be no changes to the composition of the habitats for which the site was designated (e.g. reduction in species structure, abundance or diversity that comprises the habitat over time)?
- That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?

7.1.3 The guidance suggests that if the answer to all of these questions is 'Yes' then it is reasonable to conclude that there is not an adverse effect on integrity. If the answer is 'No' to one or more of the questions then further site-specific factors need to be considered in order to reach a decision. Such factors include:

- Scale of impact;
- Long term effects and sustainability;
- Duration of impact and recovery/reversibility;
- Dynamic systems;
- Conflicting feature requirements;
- Off-site impacts; and
- Uncertainty in cause and effect relationships and a precautionary approach.

7.1.4 This two-step process is applied to determine whether there will be adverse effects on the Ashdown Forest SAC or SPA as a result of the Mid Sussex District Plan.

7.2 Ashdown Forest SAC

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced?	**Yes**
That there will be no direct effect on the population of the species for which the site was designated or classified?	**Yes**
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	**Yes**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)?	**Yes**
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?	**Yes**

7.2.1 It can be concluded that there will be no adverse effects on the ecological integrity of the Ashdown Forest SAC. The District Plan can be considered compliant with the Habitats Regulations in this respect.

7.3 Ashdown Forest SPA

Step-one tests

Has the Appropriate Assessment shown:	Y/N
That the area of annex I habitats (or habitats of qualifying features) will not be reduced?	**Yes**
That there will be no direct effect on the population of the species for which the site was designated or classified?	**Yes**
That there will be no indirect effects on the populations of species for which the site was designated or classified due to loss or degradation of their habitat (quantity/quality)?	**Yes**
That there will be no changes to the composition of the habitats for which the site was designated (eg reduction in species structure, abundance or diversity that comprises the habitat over time)?	**Yes**
That there will be no interruption or degradation of the physical, chemical or biological processes that support habitats and species for which the site was designated or classified?	**Yes**

7.3.1 It can be concluded that there will be no adverse effects on the ecological integrity of the Ashdown Forest SPA. The District Plan can be considered compliant with the Habitats Regulations in this respect.

8 Summary and Conclusions

8.1 Summary

8.1.1 This document sets out the Habitats Regulations Assessment for the Main Modifications District Plan for Mid Sussex. It draws on information previously published in other documents which form part of the overall HRA procedure for the District Plan, including research reports and earlier versions of the HRA.

8.2 Scope of the Assessment

8.2.1 Two nature conservation sites of European importance are addressed by the assessment; Ashdown Forest SAC and SPA. The following impact pathways were considered during the assessment:

- Atmospheric pollution which could affect qualifying habitats; and
- Disturbance to qualifying breeding birds.

8.2.2 The assessment addresses the following proposed policies within the District Plan:

- DP2 Sustainable Economic Development;
- DP3 Town Centre Development;
- DP5 Housing;
- DP5A Planning to Meet Future Housing Need;
- DP8 Strategic Allocation to the east of Burgess Hill at Kings Way;
- DP9 Strategic Allocation to the north and north-west of Burgess Hill;
- DP9A Strategic Allocation to the east of Pease Pottage;
- DP9B Strategic Allocation to the north of Clayton Mills, Hassocks;
- DP13 New Homes in the Countryside;
- DP30 Rural Exception Sites; and
- DP31 Gypsies, Travellers and Travelling Showpeople.

8.3 Findings

8.3.1 Adverse effects resulting from atmospheric pollution are not considered likely for the Ashdown Forest SAC. Disturbance impacts are assessed as potentially affecting the Ashdown Forest SPA, however, they are considered to be adequately avoided and mitigated by the District Plan policy response.

8.4 Conclusions

8.4.1 It can be concluded that the District Plan will not result in adverse effects on the ecological integrity of either the Ashdown Forest SAC or SPA. The District Plan can be considered compliant with the Habitats Regulations in respect of both sites.

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Appendix I: Updated Screening Assessment

The following table presents the updated findings of the HRA screening exercise, which categorises each policy proposal according to the likelihood of it leading to significant effects on a European site. The key which follows the table describes the colours and alphanumeric coding for each category.

No.	Policy title	Ashdown Forest	
		SAC	SPA
DP2	Sustainable economic development	D2	A4
DP3	Town centre development	D2	A4
DP4	Village and Neighbourhood Centre development	B	B
DP5	Housing	D2	D2
DP5A	Planning to Meet Future Housing Need	D2	D2
DP6	Settlement hierarchy	A5	A5
DP7	General principles for strategic development at Burgess Hill	A1	A1
DP8	Strategic allocation to the east of Burgess Hill at Kings Way	D2	A4
DP9	Strategic allocation to the north and northwest of Burgess Hill	D2	A4
DP9A	Strategic allocation to the east of Pease Pottage	D2	A4
DP9B	Strategic allocation to the north of Clayton Mills, Hassocks	D2	A4
DP10	Protection and enhancement of countryside	A1	A1
DP11	Preventing coalescence	A1	A1
DP12	Sustainable rural development and the rural economy	A1	A1
DP13	New homes in the countryside	A1	D2
DP14	High Weald Area of Outstanding Natural Beauty	A3	A3
DP15	Ashdown Forest SPA and SAC	A4	A4
DP16	Setting of the South Downs National Park	A3	A3
DP17	Sustainable tourism	A1	A1
DP18	Securing infrastructure	A1	A1
DP19	Transport	A1	A1
DP20	Rights of Way and other recreational routes	A1	A1
DP21	Communication infrastructure	A1	A1
DP22	Leisure and cultural facilities and activities	A1	A1
DP23	Community facilities and local services	A1	A1
DP24	Character and design	A1	A1
DP25	Dwelling space standards	A1	A1

No.	Policy title	Ashdown Forest	
		SAC	SPA
DP26	Accessibility	A1	A1
DP27	Noise, air and light pollution	A3	A3
DP28	Housing mix	A1	A1
DP29	Affordable housing	A1	A1
DP30	Rural exception sites	A1	D2
DP31	Gypsy, travellers and travelling showpeople	A1	D2
DP32	Listed Buildings and other heritage assets	A3	A3
DP33	Conservation Areas	A3	A3
DP34	Historic Parks and Gardens	A3	A3
DP36	Trees, woodland and hedgerows	A3	A3
DP37	Biodiversity	A3	A3
DP39	Sustainable design and construction	A3	A3
DP40	Renewable energy schemes	A3	A3
DP41	Flood risk and drainage	A3	A3
DP42	Water infrastructure and the water environment	A3	A3

Key: *Categories for the screening assessment of policies (derived from Tyldesley, 2009)*

Category A: No negative effect	
A1	Options / policies that will not themselves lead to development e.g. because they relate to design or other qualitative criteria for development, or they are not a land use planning policy.
A2	Options / policies intended to protect the natural environment, including biodiversity.
A3	Options / policies intended to conserve or enhance the natural, built or historic environment, where enhancement measures will not be likely to have any negative effect on a European Site.
A4	Options / policies that positively steer development away from European sites and associated sensitive areas.
A5	Options / policies that would have no effect because no development could occur through the policy itself, the development being implemented through later policies in the same plan, which are more specific and therefore more appropriate to assess for their effects on European Sites and associated sensitive areas.
Category B: No significant effect	
B	Options / policies that could have an effect, but the likelihood is there would be no significant negative effect on a European site either alone or in combination with other elements of the same plan, or other plans or projects.
Category C: Likely significant effect alone	
C1	The option, policy or proposal could directly affect a European site because it provides for, or steers, a quantity or type of development onto a European site, or adjacent to it.
C2	The option, policy or proposal could indirectly affect a European site e.g. because it provides for, or steers, a quantity or type of development that may be very close to it, or ecologically,

	hydrologically or physically connected to it or it may increase disturbance as a result of increased recreational pressures.
C3	Proposals for a magnitude of development that, no matter where it was located, the development would be likely to have a significant effect on a European site.
C4	An option, or policy that makes provision for a quantity / type of development (and may indicate one or more broad locations e.g. a particular part of the plan area), but the effects are uncertain because the detailed location of the development is to be selected following consideration of options in a later, more specific plan. The consideration of options in the later plan will assess potential effects on European Sites, but because the development could possibly affect a European site a significant effect cannot be ruled out on the basis of objective information.
C5	Options, policies or proposals for developments or infrastructure projects that could block options or alternatives for the provision of other development or projects in the future, which will be required in the public interest, that may lead to adverse effects on European sites, which would otherwise be avoided.
C6	Options, policies or proposals which depend on how the policies etc are implemented in due course, for example, through the development management process. There is a theoretical possibility that if implemented in one or more particular ways, the proposal could possibly have a significant effect on a European site.
C7	Any other options, policies or proposals that would be vulnerable to failure under the Habitats Regulations at project assessment stage; to include them in the plan would be regarded by the EC as 'faulty planning'.
C8	Any other proposal that may have an adverse effect on a European site, which might try to pass the tests of the Habitats Regulations at project assessment stage by arguing that the plan provides the imperative reasons of overriding public interest to justify its consent despite a negative assessment.
Category D: Likely significant effects in combination	
D1	The option, policy or proposal alone would not be likely to have significant effects but if its effects are combined with the effects of other policies or proposals provided for or coordinated by the LDD (internally) the cumulative effects would be likely to be significant.
D2	Options, policies or proposals that alone would not be likely to have significant effects but if their effects are combined with the effects of other plans or projects, and possibly the effects of other developments provided for in the LDD as well, the combined effects would be likely to be significant.
D3	Options or proposals that are, or could be, part of a programme or sequence of development delivered over a period, where the implementation of the early stages would not have a significant effect on European sites, but which would dictate the nature, scale, duration, location, timing of the whole project, the later stages of which could have an adverse effect on such sites.

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Appendix II: Air Pollution Modelling Results

The following tables present predicted nutrient nitrogen deposition at points along transects across the four roads studied. The maximum predicted increase in nutrient nitrogen deposition is 0.06kg N/ha/yr (0.006% of the minimum critical load) at a point 5m from the A275. The maximum decrease is 0.06kg N/ha/yr (0.006% of the minimum critical load), at a point 5m from the A26. Figure A1 below shows the locations of the modelled transects.

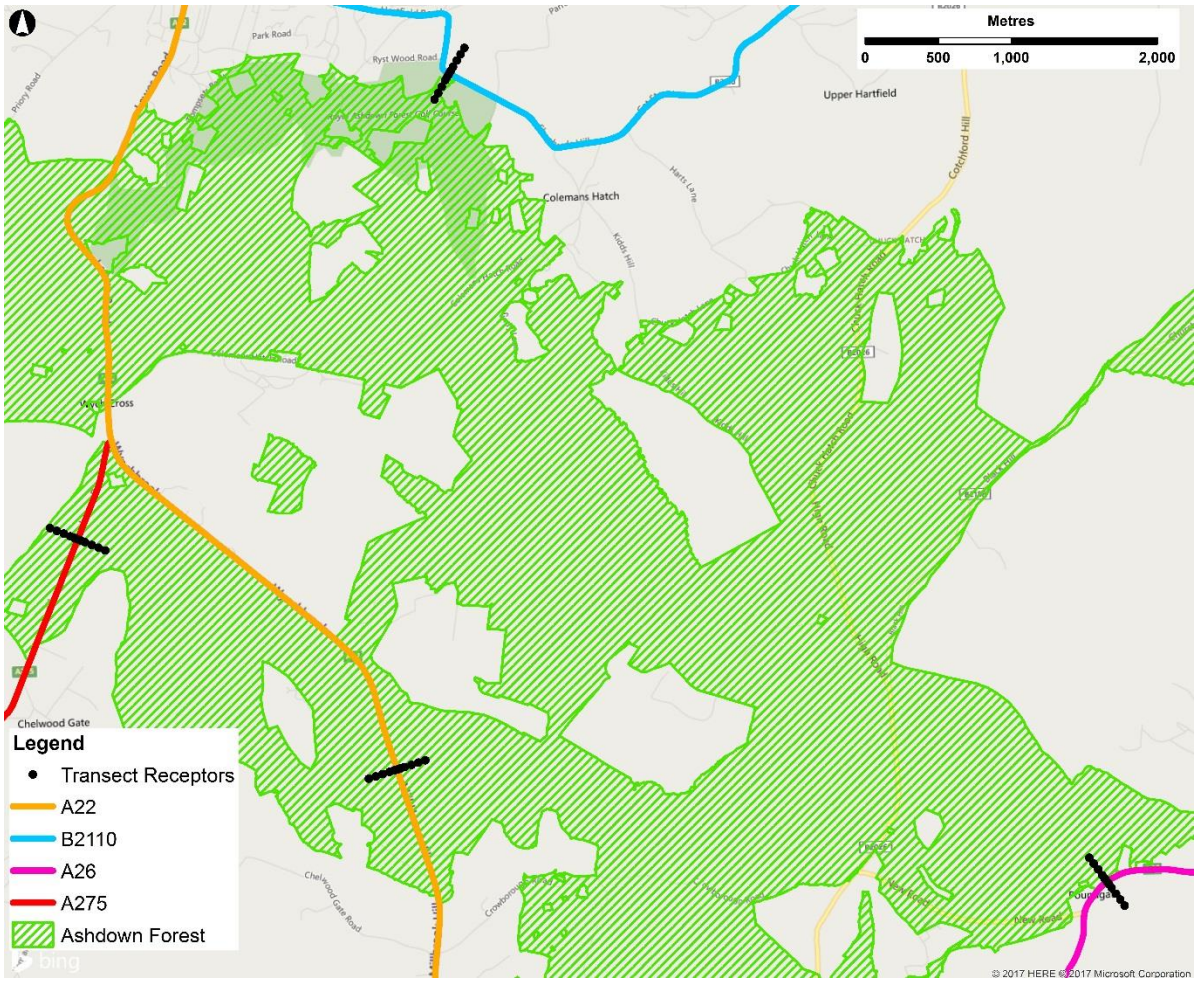

Figure A1: Modelled transects

Table A1: EPUK/LAQM nitrogen deposition assessment results for dry heaths

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
A275	a275-se-5m	10-20	0.05	0.52%	11.26	113%	56%
A275	a275-se-10m	10-20	0.04	0.40%	10.89	109%	54%
A275	a275-se-20m	10-20	0.03	0.26%	10.48	105%	52%
A275	a275-se-50m	10-20	0.01	0.14%	10.12	101%	51%
A275	a275-se-100m	10-20	0.01	0.06%	9.95	100%	50%
A275	a275-se-150m	10-20	0.01	0.06%	9.89	99%	49%
A275	a275-se-200m	10-20	0.00	0.03%	9.86	99%	49%
A275	a275-nw-5m	10-20	0.06	0.58%	11.36	114%	57%
A275	a275-nw-10m	10-20	0.04	0.43%	10.97	110%	55%
A275	a275-nw-20m	10-20	0.03	0.29%	10.53	105%	53%
A275	a275-nw-50m	10-20	0.01	0.14%	10.15	101%	51%
A275	a275-nw-100m	10-20	0.01	0.06%	9.97	100%	50%
A275	a275-nw-150m	10-20	0.01	0.06%	9.90	99%	49%
A275	a275-nw-200m	10-20	0.01	0.06%	9.87	99%	49%
A22	a22-sw-5m	10-20	-0.01	-0.06%	10.84	108%	54%
A22	a22-sw-10m	10-20	0.00	-0.03%	10.55	106%	53%
A22	a22-sw-20m	10-20	0.00	0.00%	10.29	103%	51%
A22	a22-sw-50m	10-20	0.00	-0.03%	10.01	100%	50%
A22	a22-sw-100m	10-20	0.00	0.00%	9.89	99%	49%
A22	a22-sw-150m	10-20	0.00	0.00%	9.84	98%	49%
A22	a22-sw-200m	10-20	0.00	0.00%	9.82	98%	49%
A22	a22-ne-5m	10-20	-0.01	-0.06%	11.43	114%	57%
A22	a22-ne-10m	10-20	-0.01	-0.06%	10.99	110%	55%
A22	a22-ne-20m	10-20	0.00	-0.03%	10.59	106%	53%
A22	a22-ne-50m	10-20	0.00	0.00%	10.17	102%	51%

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
A22	a22-ne-100m	10-20	0.00	-0.03%	9.98	100%	50%
A22	a22-ne-150m	10-20	0.00	0.00%	9.91	99%	50%
A22	a22-ne-200m	10-20	0.00	0.00%	9.87	99%	49%
A26	a26-nw-5m	10-20	-0.06	-0.60%	11.08	111%	55%
A26	a26-nw-10m	10-20	-0.04	-0.43%	10.71	107%	54%
A26	a26-nw-20m	10-20	-0.03	-0.29%	10.36	104%	52%
A26	a26-nw-50m	10-20	-0.01	-0.12%	10.03	100%	50%
A26	a26-nw-100m	10-20	-0.01	-0.09%	9.89	99%	49%
A26	a26-nw-150m	10-20	-0.01	-0.06%	9.83	98%	49%
A26	a26-nw-200m	10-20	0.00	-0.03%	9.81	98%	49%
A26	a26-se-5m	10-20	-0.03	-0.35%	10.49	105%	52%
A26	a26-se-10m	10-20	-0.03	-0.26%	10.29	103%	51%
A26	a26-se-20m	10-20	-0.02	-0.17%	10.11	101%	51%
A26	a26-se-50m	10-20	-0.01	-0.12%	9.94	99%	50%
A26	a26-se-100m	10-20	-0.01	-0.06%	9.87	99%	49%
A26	a26-se-150m	10-20	-0.01	-0.06%	9.84	98%	49%
A26	a26-se-200m	10-20	-0.01	-0.06%	9.82	98%	49%
B2110	b2110-ne-5m	10-20	-0.06	-0.63%	10.24	102%	51%
B2110	b2110-ne-10m	10-20	-0.05	-0.46%	10.12	101%	51%
B2110	b2110-ne-20m	10-20	-0.03	-0.35%	10.00	100%	50%
B2110	b2110-ne-50m	10-20	-0.02	-0.20%	9.88	99%	49%
B2110	b2110-ne-100m	10-20	-0.01	-0.12%	9.83	98%	49%
B2110	b2110-ne-150m	10-20	-0.01	-0.09%	9.81	98%	49%
B2110	b2110-ne-200m	10-20	-0.01	-0.09%	9.80	98%	49%
B2110	b2110-sw-5m	10-20	-0.04	-0.40%	10.05	101%	50%
B2110	b2110-sw-10m	10-20	-0.03	-0.29%	9.97	100%	50%
B2110	b2110-sw-20m	10-20	-0.02	-0.20%	9.89	99%	49%

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
B2110	b2110-sw-50m	10-20	-0.01	-0.09%	9.82	98%	49%
B2110	b2110-sw-100m	10-20	-0.01	-0.06%	9.79	98%	49%
B2110	b2110-sw-150m	10-20	0.00	-0.03%	9.78	98%	49%
B2110	b2110-sw-200m	10-20	0.00	-0.03%	9.77	98%	49%

Table A2: EPUK/LAQM nitrogen deposition assessment results for northern wet heath (Erica tetralix dominated wet heath)

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
A275	a275-se-5m	10-20	0.05	0.52%	11.26	113%	56%
A275	a275-se-10m	10-20	0.04	0.40%	10.89	109%	54%
A275	a275-se-20m	10-20	0.03	0.26%	10.48	105%	52%
A275	a275-se-50m	10-20	0.01	0.14%	10.12	101%	51%
A275	a275-se-100m	10-20	0.01	0.06%	9.95	100%	50%
A275	a275-se-150m	10-20	0.01	0.06%	9.89	99%	49%
A275	a275-se-200m	10-20	0.00	0.03%	9.86	99%	49%
A275	a275-nw-5m	10-20	0.06	0.58%	11.36	114%	57%
A275	a275-nw-10m	10-20	0.04	0.43%	10.97	110%	55%
A275	a275-nw-20m	10-20	0.03	0.29%	10.53	105%	53%
A275	a275-nw-50m	10-20	0.01	0.14%	10.15	101%	51%
A275	a275-nw-100m	10-20	0.01	0.06%	9.97	100%	50%
A275	a275-nw-150m	10-20	0.01	0.06%	9.90	99%	49%
A275	a275-nw-200m	10-20	0.01	0.06%	9.87	99%	49%

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
A22	a22-sw-5m	10-20	-0.01	-0.06%	10.84	108%	54%
A22	a22-sw-10m	10-20	0.00	-0.03%	10.55	106%	53%
A22	a22-sw-20m	10-20	0.00	0.00%	10.29	103%	51%
A22	a22-sw-50m	10-20	0.00	-0.03%	10.01	100%	50%
A22	a22-sw-100m	10-20	0.00	0.00%	9.89	99%	49%
A22	a22-sw-150m	10-20	0.00	0.00%	9.84	98%	49%
A22	a22-sw-200m	10-20	0.00	0.00%	9.82	98%	49%
A22	a22-ne-5m	10-20	-0.01	-0.06%	11.43	114%	57%
A22	a22-ne-10m	10-20	-0.01	-0.06%	10.99	110%	55%
A22	a22-ne-20m	10-20	0.00	-0.03%	10.59	106%	53%
A22	a22-ne-50m	10-20	0.00	0.00%	10.17	102%	51%
A22	a22-ne-100m	10-20	0.00	-0.03%	9.98	100%	50%
A22	a22-ne-150m	10-20	0.00	0.00%	9.91	99%	50%
A22	a22-ne-200m	10-20	0.00	0.00%	9.87	99%	49%
A26	a26-nw-5m	10-20	-0.06	-0.60%	11.08	111%	55%
A26	a26-nw-10m	10-20	-0.04	-0.43%	10.71	107%	54%
A26	a26-nw-20m	10-20	-0.03	-0.29%	10.36	104%	52%
A26	a26-nw-50m	10-20	-0.01	-0.12%	10.03	100%	50%
A26	a26-nw-100m	10-20	-0.01	-0.09%	9.89	99%	49%
A26	a26-nw-150m	10-20	-0.01	-0.06%	9.83	98%	49%
A26	a26-nw-200m	10-20	0.00	-0.03%	9.81	98%	49%
A26	a26-se-5m	10-20	-0.03	-0.35%	10.49	105%	52%
A26	a26-se-10m	10-20	-0.03	-0.26%	10.29	103%	51%
A26	a26-se-20m	10-20	-0.02	-0.17%	10.11	101%	51%
A26	a26-se-50m	10-20	-0.01	-0.12%	9.94	99%	50%
A26	a26-se-100m	10-20	-0.01	-0.06%	9.87	99%	49%
A26	a26-se-150m	10-20	-0.01	-0.06%	9.84	98%	49%

Road Name	ID	Nitrogen critical loads (kg N/ha//yr)	Process Contribution (kg N/ha/yr)	Process Contribution as % of minimum CL	PEDR (kg N/ha/yr)	PEDR as % of minimum CL	PEDR as % of maximum CL
A26	a26-se-200m	10-20	-0.01	-0.06%	9.82	98%	49%
B2110	b2110-ne-5m	10-20	-0.06	-0.63%	10.24	102%	51%
B2110	b2110-ne-10m	10-20	-0.05	-0.46%	10.12	101%	51%
B2110	b2110-ne-20m	10-20	-0.03	-0.35%	10.00	100%	50%
B2110	b2110-ne-50m	10-20	-0.02	-0.20%	9.88	99%	49%
B2110	b2110-ne-100m	10-20	-0.01	-0.12%	9.83	98%	49%
B2110	b2110-ne-150m	10-20	-0.01	-0.09%	9.81	98%	49%
B2110	b2110-ne-200m	10-20	-0.01	-0.09%	9.80	98%	49%
B2110	b2110-sw-5m	10-20	-0.04	-0.40%	10.05	101%	50%
B2110	b2110-sw-10m	10-20	-0.03	-0.29%	9.97	100%	50%
B2110	b2110-sw-20m	10-20	-0.02	-0.20%	9.89	99%	49%
B2110	b2110-sw-50m	10-20	-0.01	-0.09%	9.82	98%	49%
B2110	b2110-sw-100m	10-20	-0.01	-0.06%	9.79	98%	49%
B2110	b2110-sw-150m	10-20	0.00	-0.03%	9.78	98%	49%
B2110	b2110-sw-200m	10-20	0.00	-0.03%	9.77	98%	49%

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