



**FOOTPRINT
ECOLOGY**



Habitats Regulations Assessment of
the Mid Sussex Site Allocations
Development Plan Document at Draft
Plan Stage - September 2019

Rachel Hoskin, Sophie Lake, Phil Saunders & Durwyn
Liley

FOOTPRINT ECOLOGY, FOREST OFFICE, BERE
ROAD, WAREHAM, DORSET BH20 7PA
WWW.FOOTPRINT-ECOLOGY.CO.UK
01929 552444



FOOTPRINT ECOLOGY

Footprint Contract Reference: 482

Date: 6th September 2019

Version: Draft for consultation

Recommended Citation: Hoskin, R., Lake, S., Saunders, P. & Liley, D. (2019) Habitats Regulations Assessment of the Mid Sussex Site Allocations Development Plan Document. Unpublished report for Mid Sussex District Council.

Non-Technical Summary

This report is the Habitats Regulations Assessment (HRA) of the Mid Sussex Site Allocations Development Plan Document (DPD) at Regulation 18 stage. This HRA report has been prepared by Footprint Ecology, on behalf of Mid Sussex District Council. HRA is the step by step process of ensuring that a plan or project being undertaken by, or permitted by a public body, will not adversely affect the ecological integrity of a European wildlife site. European sites include Special Protection Areas (SPAs), which are classified for their bird populations of European interest, and Special Areas of Conservation (SACs), which are designated for habitats and species of European interest. The legislation sets out a clear step by step approach for decision makers considering any plan or project.

The Site Allocations DPD is part of the Mid Sussex Development Plan, with the District Plan having already been adopted in 2018. The Site Allocations DPD provides the sites necessary to deliver the growth set out within the District Plan, alongside the strategic allocations in the adopted District Plan, which has similarly been through the HRA process.

HRA Process

Due to the close proximity, known potential risks, and current development of measures to mitigate for potential impacts, Ashdown Forest Special Area of Conservation (SAC) and Special Protection Area (SPA) is the primary focus of the HRA work. The first stage is a screening stage, whereby each aspect of the plan is checked to establish whether there are any risks to the European sites. The HRA identifies 'impact pathways' i.e. any means by which there might be an impact on the European site from the plan content and its future implementation. Any identified likely significant effects, or where there is uncertainty, leads to the appropriate assessment stage. This is a more detailed analysis of the nature of the potential risks and what the consequences may be for the habitats and/or species that are interest features of the European sites. The key impact pathways are discussed below, with recreation impacts primarily relating to risks to SPA features, and air quality impacts primarily relating to risks to SAC features.

Recreation

Mid Sussex District Council is currently working with neighbouring local planning authorities on a collaborative approach to assessing and mitigating for recreation impacts on Ashdown Forest. Additional residential development can bring more access pressure to Ashdown Forest, bringing disturbance to species and damage to habitats through trampling, erosion or nutrient enrichment, and the previous HRA work has highlighted the need to take a strategic approach to managing additional access.

Evidence has been used to establish a zone of influence for recreation pressure (a zone within which it is deemed from available evidence that new development will contribute towards adverse effects on the protected site in the absence of mitigation). This zone extends into Mid Sussex District, and is used by the local planning authorities to determine the area where additional growth that brings further recreation pressure to Ashdown Forest will need to be mitigated. The strategic approach has been developed with available evidence and is supported by Natural England as the statutory nature conservation body.

This HRA of the Site Allocations DPD assesses the current progress of strategic mitigation and whether the mitigation approach can contribute to supporting the forthcoming site allocations.

A package of mitigation measures, to manage recreation is primarily provided for through developer contributions funding as new development comes forward. This money is used to provide access management that is delivered either on-site (i.e. managing access on the European site) or off-site (i.e. providing alternative greenspaces for recreation that provide a similar experience and offer good visitor facilities in response to identified need).

Key considerations include the location, accessibility, size and means of managing the sites into the long term. This HRA for the Site Allocations DPD assesses the current progress in developing a SANGs approach within the District. A number of potential SANGs sites are being considered to establish whether they are potentially suitable. A strategic SANG is in place at East Court and Ashplats Wood in East Grinstead. This SANG has provided the off-site mitigation for residential development coming forward since January 2015, and with permissions given to date, is now nearing capacity based on SANGs good practice in terms of the number of new residents per ha of SANG provided.

New SANG options are proposed and are considered to present a viable option for additional SANG capacity to meet the growth provided for by the site allocations. SANG provision should be plan led so that there is certainty that there will be SANG capacity provided alongside new housing growth. The SANG options need to be secured within the final DPD, with the key requirements set out within policy. This will need to be followed by more detailed design considerations within site specific masterplans or formal mitigation strategy documentation.

Air Quality

Mid Sussex District Council has recognised the potential for growth within the emerging Mid Sussex Site Allocations DPD to have air quality implications for Ashdown Forest and has appointed specialist consultants to assist with the consideration of potential impacts. Reductions in air quality through increased Nitrogen deposition associated with increased traffic can impact on sensitive vegetation communities, leading to habitat deterioration.

The transport consultants, Systra have modelled predicted traffic changes as a result of proposed growth scenarios. The air quality consultants, Wood are using the traffic modelling to undertake modelling of the predicted resultant changes in atmospheric pollutants as a result of the traffic modelling, and Footprint Ecology is using the air quality modelling to inform this HRA. A number of growth scenarios have gone through this process. Each scenario has used the same model and predictions in air pollutant increases as a result of the growth scenarios modelled for transect points on roads through and in close proximity to Ashdown Forest.

The combined effect of Mid Sussex growth with that of neighbouring local planning authorities is such that critical loads (identified by a national data source) of pollutants are breached at some transect points. These are all points in close proximity to the road, where background loads are already relatively high. The modelling indicates that Nitrogen will be under the maximum critical threshold for all modelled points greater than 10m away from the road under all growth scenarios. It is concluded that this constitutes a likely significant effect, for all growth scenarios modelled, i.e. it is concluded that the air quality impact pathway requires appropriate assessment.

The preferred growth scenario (Scenario 8), as proposed in the DPD at Regulation 18 stage, does not present air quality impacts that are significantly higher than other growth scenarios, and includes additional measures in terms of highways improvements that will serve to improve the functioning of the road network and reduce congestion. It is apparent from the modelling results that these improvements are likely to be making a small but positive contribution to reducing the air quality impacts of new growth. It is therefore concluded that the highways improvements are likely to be an important mitigation measure for air quality impacts and should be an integral part of the plan.

It is recognised practice that a breach of the critical loads that is greater than 1% is considered to be a likely significant effect for HRA purposes. This is standard practice for HRA of plans and projects, enabling potential risks to be assessed further to establish whether adverse effects on European sites can or cannot be ruled out.

The modelling results for the growth scenarios are such that the breaches of 1% of the critical loads are so low that, having regard for the wider context, they are considered to be a minor retardation low enough to be ruled out from adverse effects. This conclusion is drawn with consideration of the beneficial influence of a number of factors set out within the appropriate assessment, and with reference to relevant evidence, case law and expert opinion, including advice sought from Natural England.

The factors considered are the long-term trajectory of air quality improvement and the scientific basis of those predictions, and consideration of other wider measures relating to Ashdown Forest that are likely to come forward.

Conclusions

This HRA uses evidence-based justifications to rule out adverse effects in relation to the key impact pathways, notwithstanding the fact that a HRA report is not complete until the final plan is checked prior to adoption. At this point in time, it is concluded that the Mid Sussex Site Allocations DPD does not present any potential risks to European sites that it is considered are not capable of being mitigated for.

However, further work needs to be undertaken to finalise the appropriate assessment with a clear and justified narrative for conclusions drawn and agreement with Natural England. This will inform the next stage of plan making and give certainty to the Council as the competent authority that adverse effects on European site integrity can be ruled out. This report will therefore be updated and expanded accordingly to inform the Regulation 19 stage of plan making.

Contents

Acknowledgements	9
1. Introduction and Background Information.....	10
Context.....	10
<i>Mid Sussex District.....</i>	<i>11</i>
<i>Plan led development for the Mid Sussex District.....</i>	<i>12</i>
Habitats Regulations Assessment process	12
European sites	14
<i>Ashdown Forest SPA/SAC</i>	<i>16</i>
The relevance of HRA within biodiversity aspects of national policy	19
Previous HRA work and other evidence and assessment.....	20
<i>The adopted Mid Sussex District Plan HRA.....</i>	<i>20</i>
<i>The District Plan policy for Ashdown Forest.....</i>	<i>22</i>
<i>Developing a Recreation Mitigation Strategy.....</i>	<i>22</i>
<i>Sustainability Appraisal for the emerging Local Plan.....</i>	<i>23</i>
Identifying impact pathways	24
<i>Recreation.....</i>	<i>24</i>
<i>Habitat Fragmentation</i>	<i>24</i>
<i>Supporting habitat loss.....</i>	<i>24</i>
<i>Air quality.....</i>	<i>25</i>
<i>Water quality and water abstraction.....</i>	<i>25</i>
<i>Urbanisation effects</i>	<i>26</i>
2. Screening for Likely Significant Effects.....	27
What constitutes a likely significant effect?	27
Screening conclusions	29
3. Appropriate Assessment of Impact Pathways.....	40
Appropriate assessment topics	41
Topics screened out from further assessment	41
<i>Urbanisation effects</i>	<i>41</i>
<i>Water resources, water quality and flood risk.....</i>	<i>43</i>

<i>Biodiversity net gain</i>	43
4. Appropriate Assessment of Air Quality Impacts	45
Context for the appropriate assessment of air quality	45
Summary of atmospheric pollution impacts on interest features	46
Establishing likely significant effects in relation to air quality.....	48
Assessing growth scenarios for the Site Allocations DPD.....	49
Recent case decisions and guidance.....	54
<i>The Wealden Judgment</i>	54
<i>Current progress of air quality related HRA work within neighbouring authorities</i>	55
<i>European Court - Joined Cases C-293/17 and C-294/17</i>	55
<i>Guidance on assessing air quality impacts for designated sites</i>	56
<i>Natural England Guidance</i>	56
Predictions for improved vehicle emissions	58
Results of air quality modelling for the Site Allocations DPD	58
Interpretation of air quality modelling in relation to critical loads	62
<i>Pollutant concentrations - Oxides of nitrogen NO_x</i>	62
<i>Pollutant concentrations - Ammonia NH₃</i>	63
<i>Deposition - Nitrogen</i>	63
<i>Deposition - Acid</i>	64
Drawing on the available evidence and expert opinion	65
Drawing conclusions on air quality impacts having regard for all influencing factors	66
5. Appropriate Assessment of Recreation Pressure Impacts	68
Summary of impacts of recreation on interest features.....	68
Establishing the parameters for likely significant effects in relation to recreation.....	70
The strategic approach to mitigating for recreation pressure to date.....	71
Assessing the recreation impact of the Site Allocations DPD.....	73

<i>Review of SAMM provision</i>	76
<i>Review of SANG provision</i>	76
6. Conclusions	78
Recreation pressure	78
Air quality	78
Recommendations and next steps	78
7. References	80
8. Appendix 1 - The Habitats Regulations Assessment Process	83
9. Appendix 2 – Conservation Objectives	88

Acknowledgements

Cover image © Durwyn Liley, Footprint Ecology.

Footprint Ecology is grateful to Jennifer Hollingum and Andrew Maxted at Mid Sussex District Council for their assistance during the preparation of this report. We are also grateful to Lauren Grows and Christelle Escoffier of Wood Environment and Infrastructure Solutions UK Ltd for their cooperation in relation to air quality data requirements for the HRA. Lauren and Christelle have assisted with helpful discussion in relation to the interpretation of data. We are also grateful for the assistance of Marian Ashdown of Natural England, who has advised on the emerging findings of the HRA. As this report progresses alongside the emerging DPD, a number of other contacts will be involved in the work and added here.

1. Introduction and Background Information

Context

- 1.1 This report is the Habitats Regulations Assessment (HRA) of the Mid Sussex District Council Site Allocations Development Plan Document (DPD). This HRA report has been prepared by Footprint Ecology on behalf of Mid Sussex District Council. It seeks to assess the potential implications of the DPD for European wildlife sites in the vicinity of Mid Sussex District. This report has been written with the benefit of ongoing discussions with planning officers within Mid Sussex District Council, and forms part of the evidence base for the Site Allocations DPD.
- 1.2 The Mid Sussex Site Allocations DPD will sit alongside the Mid Sussex District Plan, which was adopted in March 2018, covering a plan period of 2014 to 2031. The two plans will work together, along with a number of neighbourhood plans, to provide the direction of sustainable development for Mid Sussex District. The District Plan provides the strategy for the District, including a proposed level of development, and includes planning policies to inform development. The District Plan includes a number of strategic allocations, which represent the most important sites for delivering growth. The Site Allocations DPD specifically focusses on identifying the remaining sites needed to meet growth needs, informed by a range of evidence relating to site sustainability, so that the proposed allocations represent the most optimal locations to meet the needs of the District. Local planning documents are regularly reviewed to ensure that they remain up to date in terms of evidence underpinning the identified growth needs, and national policy, particularly planning policy. The Site Allocations DPD also includes a number of policies in addition to the site allocations, which complement the policies within the District Plan, informed by up to date evidence and national policy direction.
- 1.3 Plan making undertaken by a local planning authority proceeds through a number of stages, which include public consultations. These are set out within the Town and Country Planning (Local Planning) (England) Regulations 2012. The current stage of plan making for the Site Allocations DPD is known as the ‘Regulation 18’ stage and provides a draft version of the plan for public consultation. The evidence base will continue to be expanded, and the plan further developed in response to the consultation. The plan will be refined and republished at Regulation 19 stage, before being submitted for Examination in Public, a process overseen by the Planning Inspectorate. The appointed Examining Inspector will assist the authority to ensure that the plan is sound

through a series of public Hearing Sessions. Any modifications required will be consulted upon again before the plan is finally adopted.

- 1.4 HRA is a key piece of evidence to support a plan and is similarly added to and refined throughout the plan making process, informing and informed by the developing plan. This HRA report therefore will continue to be worked on with the planning officers and other stakeholders, only providing a final HRA after Examination in Public when any final modifications to the plan are checked.
- 1.5 This section provides the background context for this HRA. A HRA considers the implications of a plan or project for European wildlife sites, in terms of any possible harm to the habitats and species that form an interest feature of the European sites in close proximity to the proposed plan or project, which could occur as a result of the plan or project being put in place. In this instance, the HRA is undertaken at plan level. HRA will also be required for development projects coming forward in the future in accordance with the Local Plan. An explanation of the HRA assessment process is summarised in this section below, and also described in greater detail in Appendix 1.

Mid Sussex District

- 1.6 Mid Sussex District lies in the South East of England and is rural in nature, with nearly half of the District being within the High Weald Area of Outstanding Natural Beauty, and some of the District also falling within the South Downs National Park (The District Plan and the Site Allocations DPD do not apply to that part of the District within the South Downs National Park). The majority of the Mid Sussex population are living within the three towns of Burgess Hill, East Grinstead and Haywards Heath. The 2011 census put the District's population at approximately 140,000.
- 1.7 The District is seen as a high quality and desirable place to live. It is one of the least deprived areas in England, has high employment levels, and is known for its beautiful countryside and rich heritage, along with a thriving small business sector. Furthermore, the District is within commuting distance of London, with good road and rail linkages.
- 1.8 Road infrastructure and the traffic generated by new growth is a key consideration for Mid Sussex, and for this HRA. The District Plan highlights that the road network has some constraints due to the rural nature of many of the roads and a number of congestion problems are already recognised, with the A22 being specifically noted within the plan, alongside the A264. Further infrastructure deficits are noted as being waste-water and water supply infrastructure, and more formal open space provision.

- 1.9 The economic prosperity of the District also relates to its wider context with proximity to Gatwick Airport, the south coast and the coastal city of Brighton, which is an area of focussed growth and investment. The District Council is therefore a partner in a number of economic initiatives and strategies including the Gatwick Diamond (looking at connections between business and the airport related economy and international connections), the Coast to Capital Local Enterprise Partnership (LEP) and the Greater Brighton City Deal (overseeing funding and investment in the city and wider area).
- 1.10 It is within this context that this HRA seeks to robustly assess, whilst positively supporting the plan making process and plan content in terms of European site protection and interrelated wider biodiversity considerations.

Plan led development for the Mid Sussex District

- 1.11 The District Plan sets a housing requirement of 16,390 dwellings to meet housing need identified through a range of evidence and assessment methodologies set by Government. The housing figure includes allowance for an unmet housing need within the wider Northern West Sussex Housing Market Area of 1,498 dwellings.
- 1.12 The District Plan sets housing delivery at 876 dwellings per annum up to 2023/24, and subsequently this increases to 1090 dwellings per annum up to 2030/31. The District Plan and the emerging Site Allocations DPD both make clear that the later housing delivery is subject to having confidence that Ashdown Forest will not be adversely affected, and this will be secured through future HRA work as the plans are reviewed over time. Ashdown Forest is a European wildlife site that is the main focus of this HRA, as explained in the European sites section below.
- 1.13 The Site Allocations DPD provides the allocations necessary to meet housing need alongside the strategic allocations in the District Plan. The strategic allocations for housing are primarily focussed at Burgess Hill, with two additional strategic sites, located at Pease Cottage and Hassocks. The Site Allocations DPD allocates a further 22 sites for housing, delivering 1,962 dwellings, primarily at Burgess Hill and East Grinstead.

Habitats Regulations Assessment process

- 1.14 A 'Habitats Regulations Assessment,' normally abbreviated to HRA, is the step by step process of ensuring that a plan or project being undertaken by, or permitted by a public body, will not adversely affect the ecological integrity of a European wildlife site. Where it is deemed that adverse effects cannot be ruled out, a plan or project must not proceed, unless exception tests are met. This is

because European legislation, which is transposed into domestic legislation and policy, affords European sites the highest levels of protection in the hierarchy of sites designated to protect important features of the natural environment.

- 1.15 The relevant European legislation is the Habitats Directive 1992¹ and the Wild Birds Directive 2009², which are transposed into domestic legislation through the Conservation of Habitats and Species Regulations 2017, as amended. These Regulations are normally referred to as the 'Habitats Regulations' and the most recent update consolidates previous versions and corrects some minor errors in transposition. The 2017 Regulations have not changed any of the requirements in relation to European sites. Further minor amendments were undertaken in 2018.
- 1.16 European sites include Special Protection Areas (SPAs), which are classified for their bird populations of European interest, and Special Protection Areas (SACs), which are designated for habitats and species of European interest. The legislation sets out a clear step by step approach for decision makers considering any plan or project. In England, those duties are also supplemented by national planning policy through the National Planning Policy Framework (NPPF) 2019³. This national planning policy also refers to Ramsar sites, which are listed in accordance with the international Ramsar Convention. The NPPF requires decision makers to apply the same protection and process to Ramsar sites as that set out in legislation for European sites. Formally proposed sites, i.e. sites proposed for European designation and going through the designation process, and those providing formal compensation for losses to European sites, are also given the same protection. This report refers to all the above sites as 'European sites' for assessment purposes, as the legislation is applied to all such sites, either directly or as a result of policy. The Government's published National Planning Practice Guidance, which accompanies the NPPF, has recently been updated in 2019 to include guidance on HRA. Footprint Ecology's approach to HRA preparation follows the principles of the NPPG.
- 1.17 It should be noted that the European Directives operate on the basis that sites are in place to serve as an ecologically functioning network, and ultimately it is the preservation of that network as a whole that is the overall aim of the European Directives. The network is often referred to as the Natura 2000 Network or 'N2K.'

¹ Council Directive 92/43/EEC

² Council Directive 2009/147/EC

³ <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

- 1.18 The duties set out within the Habitats Regulations apply to any public body or individual holding public office with a statutory remit and function, referred to as ‘competent authorities.’ The requirements are applicable in situations where the competent authority is undertaking or implementing a plan or project, or authorising others to do so. A more detailed guide to the step by step process of HRA is provided in this report at Appendix 1.
- 1.19 In assessing the implications of any plan or project, in this case a local plan, for European sites in close proximity, it is essential to fully understand the sites in question, their interest features, current condition, sensitivities and any other on-going matters that are influencing each of the sites. Every European site has a set of ‘interest features,’ which are the ecological features for which the site is designated or classified, and the features for which Member States should ensure the site is maintained or, where necessary restored.
- 1.20 Each European site has a set of ‘conservation objectives’ that set out the objectives for the site interest, i.e. what the site should be achieving in terms of restoring or maintaining the special ecological interest of European importance. These objectives are set by Natural England and published for each European site in high level generic form and then with supplementary advice that relates to the interpretation of these at each individual site.
- 1.21 The site conservation objectives and supplementary advice are relevant to any HRA, because they identify what should be achieved for the site, and HRA may therefore consider whether any plan or project may compromise the achievement of those objectives.
- 1.22 A summary of relevant European sites is provided within this section below. Further information on European site interest and links to the conservation objectives can be found at Appendix 2 of this report.

European sites

- 1.23 In undertaking HRA it is necessary to gather information on the European sites that could be potentially affected by the plan or project. Footprint Ecology takes a precautionary approach to checking the potential for European sites to be significantly affected by the content of a Local Plan, normally initially checking up to 20km buffer from the edge of the District. This buffer is used by Footprint Ecology for local plan HRAs as it is deemed precautionary enough to capture most potential impact pathways (i.e. the means by which a European site may be affected) between plan implementation within a local planning authority’s administrative area.

- 1.24 The European sites in the vicinity of Mid Sussex District are shown on Map 1, alongside the proposed site allocations within the Site Allocations DPD at Regulation 18 stage. The initial list of European sites shown on Map 1 has been evaluated in terms of relevant threats, vulnerabilities and current issues. The European sites shown on Map 1 are:
- Ashdown Forest SPA
 - Ashdown Forest SAC
 - Castle Hill SAC
 - Lewes Downs SAC
 - Mole Gap to Reigate Escarpment SAC.
- 1.25 These sites are also those initially considered within the HRA for the Mid Sussex District Plan.
- In considering the European sites, their distance from the District and their sensitivities and interest features, Castle Hill SAC, Lewes Down SAC and Mole Gap to Reigate Escarpment SAC were ruled out from further assessment for the District Plan HRA, primarily due to distance.
- 1.26 These three European sites are each at a considerable distance from Mid Sussex District, as shown on Map 1. The site sensitivities and risks will be more closely related to development in closer proximity in neighbouring local planning authority areas. It is similarly concluded again for this HRA of the Site Allocations DPD that these three sites can be ruled out from further consideration within this HRA, concurring with the previous HRA conclusions that there are no identifiable impact pathways
- 1.27 The European sites deemed to be of relevance to this HRA due to their proximity to the Mid Sussex District, and the sensitivity of the species and habitats for which they are designated and classified are as follows:
- Ashdown Forest SPA
 - Ashdown Forest SAC.
- 1.28 Full details of the interest features and current pressures/threats for each of these sites are summarised in Appendix 3. These European sites are the subject of the assessment within this HRA, both at the screening for likely significant effects stage and the subsequent appropriate assessment stage.
- 1.29 The Habitats Directive requires competent authorities to ‘maintain and restore’ European sites. Where sites are meeting their conservation objectives, the requirement is to maintain this position and not allow deterioration. Where a site requires restoration, competent authorities should work to bring site interest features back to a status that enables conservation objectives to be met.

- 1.30 In addition to conservation objectives, Natural England produces Site Improvement Plans (SIPs) for each European site in England as part of a wider programme of work under the 'Improvement Programme for England's Natura 2000 sites.' Each plan includes a set of actions for alleviating issues that are impeding the delivery of conservation objectives, with lead delivery bodies identified and indicative timescales. The SIPs can provide an additional useful reference for HRA work, identifying where there are site sensitivities. These will be reviewed to inform the appropriate assessment within this HRA report.

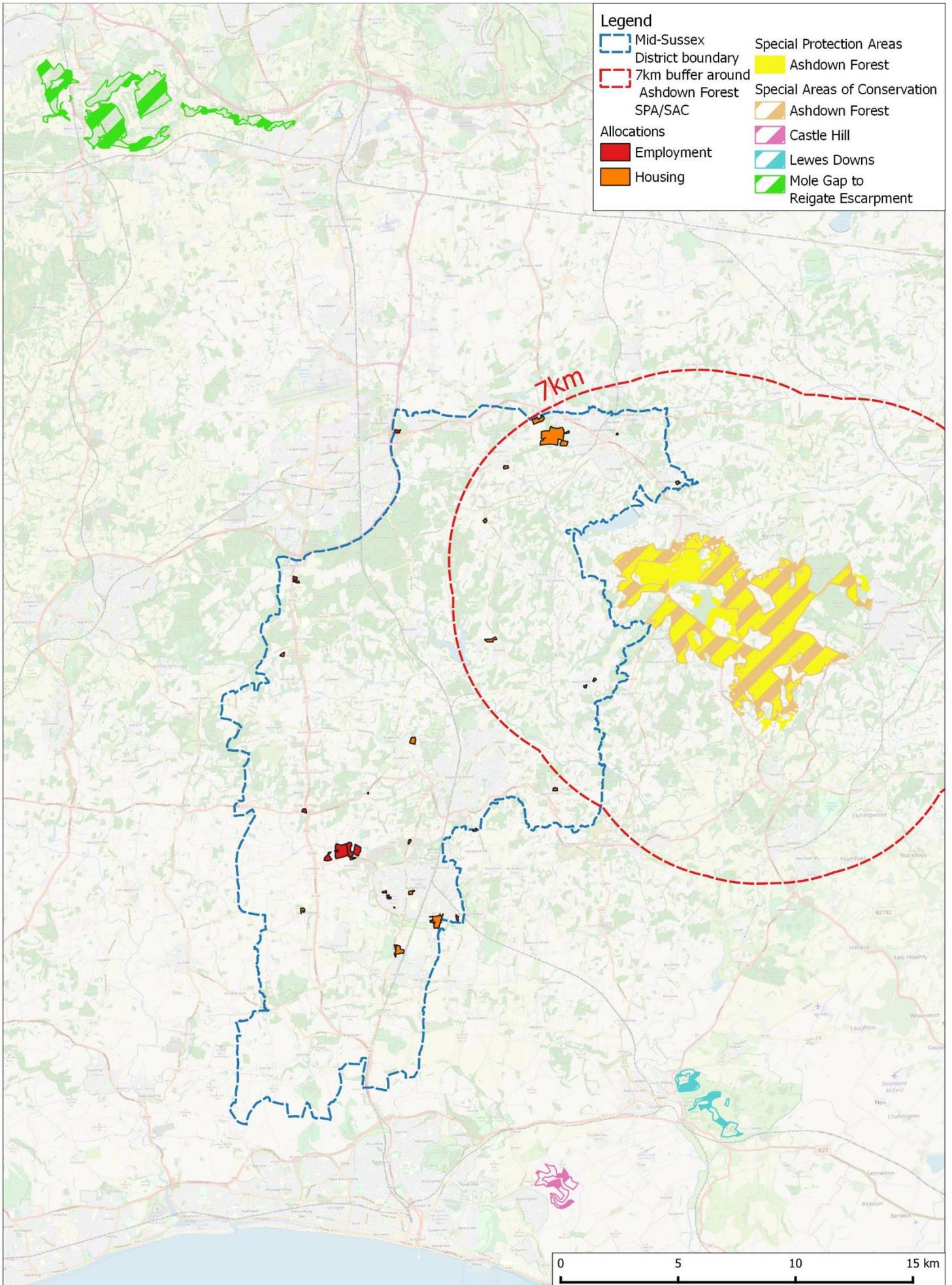
Ashdown Forest SPA/SAC

- 1.31 Ashdown Forest is located approximately 48km to the south of London, within the High Weald Area of Outstanding Natural Beauty (AONB) on sandy soils of low fertility. The extensive heathland is the largest continuous expanse of lowland heath in the south east, where considerable losses and fragmentation of this once much more widespread habitat have occurred.
- 1.32 Due to the close proximity, known potential risks, and current development of measures to mitigate for potential impacts, Ashdown Forest SAC and SPA is the primary focus of the HRA work. Ashdown Forest is located close to the north-east boundary of Mid Sussex District. The predominant habitat is heathland, and the site holds 2.5% of the UK extent of heathland - approximately 2,500ha. Wet and dry heaths are an interest feature of the SAC and provide the habitat to support the SPA birds.
- 1.33 The SIP lists the need for appropriate and comprehensive management across the site as a key issue, highlighting that a suitable grazing management plan should be in place to enable long term habitat management.
- 1.34 It is recognised that this can be developed with a partnership approach but would need to be led by the Conservators of Ashdown Forest, an independent body charged by historic Acts of Parliament with the duty of managing the forest. The Conservators are currently developing a comprehensive grazing plan for Ashdown Forest, with the advice of Natural England and liaison with relevant local planning authorities and those with an interest in Ashdown Forest.
- 1.35 Ashdown Forest SAC is designated for the following features (with European site feature codes):
- H4010 Northern Atlantic wet heaths with *Erica tetralix*
 - H4030 European dry heaths
 - S1166 *Triturus cristatus*: Great crested newt.

1.36 Ashdown Forest SPA is classified for the following features:

- A224 (Breeding) *Caprimulgus europaeus*: European nightjar
- A302 (Breeding) *Sylvia undata*: Dartford warbler.

Map 1: Location of Local Plan allocations and European Protected Sites



Contains Ordnance Survey data © Crown copyright and Database Right 2018. Contains map data © OpenStreetMap contributors. Terms: www.openstreetmap.org/copyright Designated site boundaries download from the Natural England website © Natural England.

The relevance of HRA within biodiversity aspects of national policy

- 1.37 A Local Plan is produced by a local planning authority to set the quantum and direction of sustainable development for the forthcoming plan period. The NPPF 2019 states that sustainable development is the achievement of social, economic and environmental aspirations, and these three dimensions of sustainable development are mutually dependant. For the natural environment, the NPPF advises that sustainable development should include protecting, enhancing and improving biodiversity, and moving from a net loss of biodiversity to achieving net gains. The recently published Defra 25-year plan⁴ sets out an ambitious programme for improving the natural environment, including the achievement of environmental net gains through development, of which biodiversity is an important part.
- 1.38 The Defra strategy follows on from the review of England’s wildlife sites and ecological network, set out in the report to Defra in 2010 entitled ‘Making Space for Nature,’⁵ which was prepared by a group of national experts chaired by Professor Sir John Lawton. Within this report, it is identified that in order to make our ecological networks and wildlife sites capable of future resilience, there is a need for more wildlife sites, and that existing networks need to be bigger, better and more connected. The future health of designated sites is very much dependant on the future health of wider biodiversity and the ecological networks that sustain them. In planning for the long-term sustainability of designated sites, it is therefore necessary to protect and enhance wider biodiversity through the planning system as well as the designated sites.
- 1.39 The NPPF 2019 sets a requirement for biodiversity net gain as part of development, and it is widely anticipated that the forthcoming Environment Bill will make this requirement mandatory. There is already recently published good practice on biodiversity net gain through development, and Natural England published an update to the biodiversity metric used to calculate biodiversity net gain earlier this year. It is within this wider context of a need to ensure that biodiversity is central to spatial planning, that HRA fits, securing protection and enhancement of the most important wildlife assets at an international scale.

⁴ <https://www.gov.uk/government/publications/25-year-environment-plan>

⁵ <https://www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today>

- 1.40 Mid Sussex District has the benefit of a range of biodiversity and landscape assets, and the District Plan and emerging Site Allocations DPD both have a significant focus on the natural environment, with a clear recognition of the integral value of biodiversity as part of sustainable development. The environment features strongly in the District Plan objectives, and protective policies have been included within District Plan. A specific policy for Ashdown Forest SPA/SAC is included within the District Plan at DP17. The District Plan and Site Allocations DPD also recognise that traffic management is an important issue for Mid Sussex District, particularly with the relatively high levels of commuting residents. Traffic congestion on roads leading to and from the District into areas of close proximity to or through Ashdown Forest SPA/SAC is a concern given the sensitive heathland habitats present.
- 1.41 The strategic objective to protect valued landscapes for their visual, historical and biodiversity qualities is a reoccurring theme that is highlighted throughout the District Plan policies. As this HRA progresses, the importance of protecting, enhancing and restoring biodiversity as a whole, both within and outside designated wildlife sites will be recognised within the appropriate assessment section, particularly in relation to biodiversity gains through planning.
- 1.42 When embarking on new HRA work, it is important to take stock and consider how well the measures recommended or put in place to protect European site interest in previous plan iterations have progressed, and what evidence there is available to support the continuation of such measures, or to indicate that they may need modification. This HRA therefore looks at the measures that were recommended by the previous HRA and what progress has been made, if any, since those recommendations. In order to protect European sites, any changes in circumstances, evidence, statutory advice or local understanding of the issues needs to be considered. A summary of previous and other relevant HRA work is also provided in this section below.

Previous HRA work and other evidence and assessment

- 1.43 The following documents are of relevance to this HRA due to their consideration of the natural environment and resources, and also the historic HRA work for the documents that form the currently adopted Local Plan.

The adopted Mid Sussex District Plan HRA

- 1.44 This HRA for the adopted Mid Sussex District Plan was undertaken by Urban Edge Environmental Consulting in September 2017 and is available as part of the evidence base library for the District Plan. The HRA assesses the two identified impact pathways of air quality and recreation pressure. These two key risks are comprehensively assessed within the HRA report for the District Plan, and

during the iterative process of HRA assessment alongside the District Plan, the District Council was working with its neighbouring local planning authority partners in active discussions on both key impact pathways.

- 1.45 For recreation, the District Plan HRA identified recreation pressure as a risk that could lead to adverse effects on site integrity in the absence of mitigation measures. As discussed below, Mid Sussex District Council has been working with neighbouring local planning authority partners to consider the available evidence and what measures may be appropriate for managing access.
- 1.46 The supplementary advice published by Natural England on the relevant targets for conserving and restoring the site features of Ashdown Forest identifies good air quality as a supporting attribute upon which the heathland habitat relies in order for conservation objectives to be met. The document highlights that heathland habitats are sensitive to air pollution in terms of altering vegetation structure and composition, causing the loss of typical species.
- 1.47 For air quality, the District Plan HRA acknowledges that critical loads for key pollutants are already being exceeded. Critical loads are explained and discussed within this HRA at the appropriate assessment sections. The HRA for the District Plan refers to the Design Manual for Roads and Bridges (DMRB), which is produced and updated by Highways England (a current update commenced in 2018 and is due for completion in 2020).
- 1.48 Within this manual, a specific section on the assessment of impacts of highways and/or road projects on European sites is included, which sets thresholds for identifying where a project may result in a likely significant effect on a European site sensitive to air pollution, This includes a project that will result in a daily traffic flow of 1,000 annual average daily traffic (AADT) or more, within 200m of a European site. Transport modelling undertaken as part of the District Plan evidence base was used to show that the AADT would remain below 1,000 for the quantum of growth proposed within the District Plan.
- 1.49 As discussed within the appropriate assessment sections of this HRA, the conclusions drawn for the District Plan were accepted as being on the basis of the currently available evidence, advice and good practice, which has recently progressed since the publication of the District Plan HRA.
- 1.50 The HRA for the District Plan assessed potential impacts relating to air quality, and at the time of preparation, concluded that adverse effects on Ashdown Forest SAC in terms of air quality impacts could be ruled out. The District Plan commits to reviewing this conclusion within the supporting text for policy DP17, particularly if new evidence becomes available.

- 1.51 The appropriate assessment sections of this HRA report review the potential risks posed by air quality impacts, in light of the growth proposed within the Site Allocations DPD as part of the overall Local Plan for the District.

The District Plan policy for Ashdown Forest

- 1.52 Policy DP17 of the Mid Sussex District Plan has been developed from the District Plan HRA and evidence gathered in relation to potential impacts on Ashdown Forest, notably visitor survey data and analysis of recreation access patterns.
- 1.53 The policy sets a presumption against residential development within 400m of Ashdown Forest, which accords with a similar buffer used for European sites elsewhere where there are features sensitive to recreation and urbanisation impacts.
- 1.54 The policy then provides a series of requirements for residential development coming forward within 7km of Ashdown Forest. The 7km zone is highlighted on Map 1 and the site allocations proposed at regulation 18 stage that fall within or outside this zone are illustrated. The 7km zone is discussed below and in further detail within the appropriate assessment sections of this HRA report.

Developing a Recreation Mitigation Strategy

- 1.55 A strategic approach to mitigating for cumulative recreation pressure arising from new growth is a means by which sustainable housing growth can be delivered, whilst adequately protecting European wildlife sites. By developing an approach at a plan wide level, the strategy will provide a solution to the additional recreation pressure through an integrated suite of avoidance and mitigation measures that are supported by comprehensive evidence and experience gained from other European site mitigation strategies.
- 1.56 The local planning authorities within the vicinity of Ashdown Forest have embarked on the development of a multiple authority strategic mitigation scheme for Ashdown Forest, using the available visitor survey data to identify a zone within which it is anticipated that further residential development will significantly add to the recreation pressure on the site. In accordance with the visitor survey evidence, a zone of 7km is currently applied through policy DP17 of the District Plan. This is the zone within which the majority of visitors currently originate. It is therefore predicted to be the zone within which there will be significant additional recreation pressure, on the assumption that the residents of new dwellings within this zone will undertake similar recreation use and behaviour patterns.
- 1.57 The strategy is developed on the basis of the housing numbers coming forward within Mid Sussex District and neighbouring authority areas of Wealden, Lewes,

Tandridge and Sevenoaks Districts and Tunbridge Wells Borough. It is therefore a partnership approach, closely developed with Natural England, and focuses on delivering access management within Ashdown Forest.

- 1.58 The strategy has regard for the increased housing numbers and locations for growth identified within the Local Plans for each authority. Further analysis of this approach to mitigating for recreation pressure forms part of the appropriate assessment within this HRA report.
- 1.59 The evidence used to inform the emerging strategy, including the visitor survey data and analysis of visitor access patterns is also discussed further within the appropriate assessment sections of this HRA report.

Sustainability Appraisal for the emerging Local Plan

- 1.60 A sustainability appraisal is undertaken by local planning authorities on local planning documents to assess whether the economic, environmental and social needs of the local area are being met. The appraisal runs alongside the preparation of a local plan, appraising the options being taken forward and whether alternatives might have a greater positive or lesser negative effect on economic, environmental and social objectives. Sustainability appraisal also incorporates the requirements of the European Strategic Environmental Assessment Directive (2001/42/EC).
- 1.61 There are some elements of cross over between HRA and the sustainability appraisal. The appraisal will consider environmental sustainability in terms of natural resources such as air and water, and how they may be affected by the plan. These are similarly important supporting aspects of European site ecological integrity. The sustainability appraisal will include biodiversity objectives and a number of indicators that relate to European sites. The recommendations of this HRA will need to link into the sustainability appraisal in due course.

Identifying impact pathways

- 1.62 All aspects of the emerging site Allocations DPD, which are informing the required sustainable development for Mid Sussex District, are checked through this assessment for risks to European sites. European sites are at risk if there are possible means by which any aspect of a plan can, when being taken forward for implementation, pose a potential threat to the wildlife interest of the sites. This is often referred to as the 'impact pathway' as it is an identifiable means by which the plan or project could potentially affect the European site.
- 1.63 All policies and proposed allocations are checked as part of a HRA of a Local Plan document. Table 1 provides an initial summary of all potentially relevant impact pathways, having regard for available information in relation to the European sites. These impact pathways are precautionary, i.e. they are assumed and used to inform the screening for likely significant effects, and then the more detailed appropriate assessment will consider whether they are a risk to European site interest features. Where impact pathways are screened into the appropriate assessment, these are discussed within the appropriate assessment, in the context of available local and wider evidence of relevance.

Recreation

- 1.64 Recreation pressure on designated sites is now widely acknowledged and is a key topic within most plan level HRA work as well as strategic research to better understand the nature and scale of impacts, much of which has been commissioned by partnerships of local planning authorities and/or Natural England. Recreation pressure is already identified as a key concern for the District Plan HRA, and is accordingly progressed further within the appropriate assessment sections of this HRA.

Habitat Fragmentation

- 1.65 Fragmentation of habitats can occur directly or indirectly in close proximity to European sites, with development resulting in either direct or indirect habitat loss as a consequence of the operation of the development. The site allocations proposed are not in very close proximity to Ashdown Forest and this impact pathway is therefore screened out.

Supporting habitat loss

- 1.66 Where European site interest features are mobile and found to utilise habitat outside designated site boundaries, or a supporting function originates from outside a site boundary (such as a water supply) this land is referred to as supporting habitat or functionally linked land. HRAs should check that proposals

do not affect any land with the potential to be used by SPA birds seeking roosting or feeding habitat outside the SPA boundary, or land that provides any supporting function. Loss or damage to functionally linked land is a likely significant effect for which further assessment to consider the function and importance of the land is required. The site allocations proposed are at existing settlements or employment areas or are at a considerable distance away from Ashdown Forest and this impact pathway is therefore screened out.

Air quality

- 1.67 Reductions in air quality associated with increased traffic are primarily as a result of increased nitrogen deposition but are also related to increases in both sulphur and ammonia. Traffic generated air quality reductions can impact on vegetation communities (Bobbink, Hornung & Roelofs 1998; Stevens *et al.* 2011). The Design Manual for Roads and Bridges (DMRB) currently advises that the effect of traffic emissions is focussed on the first 200m to the side of a road. There is a declining effect out to 200m and beyond this it is currently agreed that the effects are *de minimis*, i.e. of no consequence against background levels.
- 1.68 Following a recent case decision from Ashdown Forest (Wealden v SSCLG 2017) it is essential that air quality considerations have appropriate regard for any impacts that may act in-combination in HRA work. Where there is risk of air quality deterioration in close proximity to a European site sensitive to air pollution, an appropriate assessment of air quality should be undertaken with regard for the principles of this recent case.
- 1.69 Air quality impacts are already identified as a key concern for the District Plan HRA and is accordingly progressed further within the appropriate assessment sections of this HRA.

Water quality and water abstraction

- 1.70 The SIP for Ashdown Forest highlights hydrological changes as a risk to the site, with the biological diversity of the wet heath habitat having declined over recent decades. The SIP acknowledges that there isn't sufficient information to pinpoint any underlying causes for the decline in this habitat feature, but identifies further research and survey work as the main action to then enable further targeted measures to be identified.
- 1.71 Water quality is also important for the great crested newt ponds within the site, and any changes in surface or ground water can present risks in terms of ponds drying out.

1.72 Hydrological risks are therefore currently considered to be uncertain and should be investigated further to have confidence that this impact pathway can be screened out at the plan level.

Urbanisation effects

1.73 Urbanisation is particularly relevant for the consideration of development site allocations. Urban effects relate to issues where development is close to the European site boundary and is an umbrella term relating to impacts such as cat predation, fly tipping, increased fire risk and vandalism (see Underhill-Day 2005 for review). Site allocations and policy wording will be checked to ensure this impact pathway is adequately considered.

Table 2: Summary of potential impact pathways - i.e. potential mechanisms whereby the different European sites could be impacted

Site	Recreation	Habitat fragmentation	Supporting habitat loss	Air quality	Water quality	Water abstraction	Urban effects
Ashdown Forest SPA	✓	X	X	✓	?	?	?
Ashdown Forest SAC	✓	X	X	✓	?	?	?

2. Screening for Likely Significant Effects

- 2.1 HRA is a step by step process, with the competent authority required to undertake screening for likely significant effects on European sites, after determining that the plan or project in question is not one that is entirely necessary for site management. Once relevant background information and potential impact pathways are understood, the HRA can progress to the screening for likely significant effects stage, fully informed by the background research undertaken. The screening for likely significant effects is undertaken on all policies within the plan. It is an initial check, made on a precautionary basis, to determine whether any part of the plan poses a risk to European sites in terms of its future implementation.
- 2.2 The Mid Sussex site Allocations DPD provides the sites necessary to deliver sustainable development in the District, and whilst protection and enhancement of the natural environment is an integral part of sustainable development, the plan is not singularly focussed on European site management. The screening for likely significant effects is therefore undertaken.
- 2.3 When a HRA is being undertaken on a plan or project that is initiated by the competent authority themselves, there is greater opportunity to identify potential issues arising from the plan or project in the initial stages of design or preparation. Where a competent authority is approving a project being proposed by another party, the application for permission is usually made when the proposal has already been designed and all details finalised, thus the opportunity to identify issues early on is more limited unless an applicant chooses to hold early discussions with the competent authority.
- 2.4 For the Mid Sussex Site Allocations DPD, the District Council is both the plan proposer and the competent authority, thus allowing the HRA to influence the plan in its earlier stages, at later refining stages and up to submission for Examination.

What constitutes a likely significant effect?

- 2.5 At the screening stage of HRA, there is the opportunity to identify changes to the plan that could be made to avoid risks to European sites. Any requirement for assessing the effectiveness of changes should be made at the appropriate assessment stage. The screening for likely significant effects is an initial check to identify risks or uncertainties in policy wording and recommend any obvious changes that can avoid those risks with clarifications, corrections or instructions for development project level HRA. Any recommendations that need to be justified in terms of effectiveness and applicability should be considered within

the appropriate assessment stage of HRA. As described in Appendix 1, screening for likely significant effects is an initial check to identify risks and uncertainties that could potentially be significant for the European sites, and to recommend any obvious changes that can avoid those risks. Where risks cannot be avoided with simple clarifications, corrections or instructions for project level HRA, a more detailed assessment is undertaken to gather more information about the likely significant effects and give the necessary scrutiny to potential mitigation measures. This is the appropriate assessment stage of HRA.

- 2.6 The screening check of each aspect of the plan is essentially looking for two things to enable a conclusion of no likely significant effect;
- Whether it is possible to say with certainty that there are no possible impacts on European sites, or
 - Whether, in light of a potential risk, simple clarifications can be built into the policy and/or its supporting text, which serve to avoid any likely impacts.
- 2.7 If one of these can be met, it enables a competent authority to screen out from further stages of assessment. Where there is the potential for European sites to be affected, or mitigation measures need to be checked to ensure they are effective and appropriate, more detailed consideration is required and this then screens those aspects of the plan into the appropriate assessment.
- 2.8 A likely significant effect could be concluded on the basis of clear evidence of risk to European site interest, or there could be a scientific and plausible justification for concluding that a risk is present, even in the absence of direct evidence. The latter is a precautionary approach, which is one of the foundations of the high-level of protection pursued by EU policy on the environment, in accordance with the EU Treaty.⁶ The precautionary principle should be applied at all stages in the HRA process and follows the principles established in case law relating to the use of such a principle in applying the European Directives and domestic Habitats Regulations. In particular, the European Court in the 'Waddensee' case⁷ refers to "*no reasonable scientific doubt*" and the 'Sweetman' case⁸ the Advocate General identified that a positive conclusion on screening for likely significant effects relates to where there "*is a possibility of there being a significant effect*".

⁶ Article 191 of the Treaty on the Functioning of the EU. Previously Article 174 of the Treaty of the EC.

⁷ European Court of Justice case C - 127/02

⁸ European Court of Justice case C - 258/11

- 2.9 An additional recent European Court of Justice Judgment in 2018 (Case C-323/17) clarified that the need to carefully explain actions taken at each HRA stage, particularly at the screening for likely significant effects stage. The Judgment is a timely reminder of the need for clear distinction between the stages of HRA, and good practice in recognising the function of each. The screening for likely significant effects stage should function as a screening or checking stage, to determine whether further assessment is required. Assessing the nature and extent of potential impacts on European site interest features, and the robustness of mitigation options, should be done at the appropriate assessment stage.
- 2.10 Table 2 below records the conclusions drawn and recommendations made with a check of each policy and site allocation for likely significant effects of the Mid Sussex Site Allocations DPD at Regulation 18 stage of plan making. Potential risks are highlighted. For a number of policies and allocations, particularly those relating to the overall quantum of growth provide for by the allocations, the screening identified likely significant effects.
- 2.11 After the Regulation 18 consultation, the HRA will progress with further detailed evidence gathering and assessment, and this will inform the preparation of the plan at Regulation 19 stage. A re-screen of the plan at this stage will be undertaken, and the appropriate assessment prepared. There may also be a need to undertake further screening on any proposed modifications which arise during the Examination of the plan, prior to adoption. This ensures that the final adopted Mid Sussex Site Allocations DPD has an up to date HRA report.

Screening conclusions

- 2.12 The screening table identified recreational impacts and air quality impacts as the two impact pathways requiring further detailed consideration at the appropriate assessment stage. Likely significant effects are not related to any individual policy or site allocation, but rather they relate to the overall quantum of development that may generate traffic increases, and therefore air pollution, or the overall quantum of development that may generate additional recreation pressure on Ashdown Forest.
- 2.13 The screening for likely significant effects has not identified any policy or supporting text changes that need to be made. There will be a need for the Site Allocations DPD to make explicit reference to mitigation measures, and these are discussed in the appropriate assessment sections of this HRA report, for the Council to consider inclusion at the next stage of plan making.

Table 2: Screening for likely significant effects – at Regulation 18 stage. To be re-screened at Regulation 19 stage

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
Introduction	No LSE – text is for information and clarity, explaining the relative functions and remits of the District plan and the Site Allocations DPD, and the conformity with the NPPF.	N/A	No further recommendations – policy/text does not have HRA implications.	
Site Allocations	Housing and employment allocations to complement the strategic allocations in the District Plan			
SA1 Sustainable Economic Development	LSE – allocations of employment land at Burgess Hill, Copthorne, Bolney and Pease Cottage, amounting to 16.8ha, adding to traffic on the road network, possibly including larger vehicles/including haulage.	Whilst the site allocations for employment are not in close proximity to Ashdown Forest, the site allocations are in locations that may add to the traffic volumes on roads in close proximity/through Ashdown Forest, including the A22.	Overall increases in traffic from both employment and residential allocations is assessed in the transport modelling, air quality modelling and this HRA at appropriate assessment.	
SA9 Science and Technology Park	LSE – allocation is for a science park with an anticipated 2,500 jobs created, adding to traffic on the road network, possibly including larger vehicles/haulage.	Whilst the site allocation for the Science and Technology Park is not in close proximity to Ashdown Forest, the site allocation will generate notable traffic volumes, which could include additional traffic in the vicinity of Ashdown Forest from commuting employers or commercial vehicles.	Overall increases in traffic from both employment and residential allocations is assessed in the transport modelling, air quality modelling and this HRA at appropriate assessment.	
SA10 Housing	LSE – the overall quantum of housing development is 16,390 houses, in the adopted District plan. Policy SA10 sets out how this will be delivered, with 1,962 dwellings provided for by the allocations	The District Plan HRA has already identified that adverse effects on site integrity for Ashdown Forest cannot be concluded without mitigation measures to manage	Strategic approach to mitigating for recreation needs to be checked as part of the appropriate assessment, for continued robustness as mitigation for recreation, and	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
	within the Site Allocations DPD. LSE from recreation pressure with new residents and air quality with increased traffic, for Ashdown Forest	increased access within a 7km zone of influence. New information, case law/authoritative decisions relating to the assessment of air quality impacts indicates a more precautionary approach than previously advocated by the DMRB.	suitability of application to the Site Allocations DPD Overall increases in traffic from both employment and residential allocations is assessed in the transport modelling, air quality modelling and this HRA at appropriate assessment. Site allocations presented have been assessed through modelling as Scenario 8, as discussed in the appropriate assessment.	
SA11 Additional Housing Allocations	LSE – each of the 22 housing/mixed use allocations within the DPD is listed within this policy, providing the Site Allocations DPD housing total of 1,962 dwellings.	In combination impacts relating to air quality, and also for recreation pressure for allocations inside the 7km ZOI. Each site allocation is individually checked below for any other impact pathways.	Appropriate assessment of air quality and recreation	
SA12 Land to the south of 96 Folders Lane, Burgess Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA13 Land East of Keymer Road and South of Folders Lane, Burgess Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
SA14 Land to the South of Selby Close, Hammonds Ridge, Burgess Hill	LSE – residential/mixed use development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA15 Land to south of Southway, Burgess Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA16 St. Wilfrid’s Catholic Primary School, School Close, Burgess Hill	LSE – residential/mixed use development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is within residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA17, Woodfield House, Isaacs Lane, Burgess Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to greenfield land, which is being developed as part of the Burgess Hill strategic development allocation within the District Plan for 3,500 houses. The land itself is a private house and garden. The allocation is a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
SA18 East Grinstead Police Station, College Lane, East Grinstead	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development, and distance from Ashdown Forest rules out other impact pathways.	Appropriate assessment of air quality and recreation	
SA19 Land South of Crawley Down Road, Felbridge	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development, and distance from Ashdown Forest rules out other impact pathways.	Appropriate assessment of air quality and recreation. Site allocation is adjacent to an area of search for potential SANG provision	
SA20 Land South and West of Imberhorne Upper School, Imberhorne Lane, East Grinstead	LSE – residential/mixed use development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development, and distance from Ashdown Forest rules out other impact pathways.	Appropriate assessment of air quality and recreation. Site allocation includes and is adjacent to an area of search for potential SANG provision alongside this housing site allocation. SANGs provision to be assessed further at appropriate assessment to check suitability as part of the mitigation package for recreation pressure on Ashdown Forest.	
SA21 Roger’s Farm, Fox Hill, Haywards Heath	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is within residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA22 Land North of	LSE – residential development adding to	In combination impacts relating to	Appropriate assessment of air	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
Burleigh Lane, Crawley Down	overall quantum of development	air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development, and distance from Ashdown Forest rules out other impact pathways.	quality and recreation	
SA23 Land at Hanlye Lane to the East of Ardingly Road, Cuckfield	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA24 Land to the North of Shepherd's Walk, Hassocks	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA25 Land West of Selsfield Road, Ardingly	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to and currently provides car parking for a showground, and distance from Ashdown Forest rules out other impact pathways.	Appropriate assessment of air quality and recreation	
SA26 Land South of Hammerwood Road, Ashurst Wood	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site is currently used as a workshop. The site allocation is 2.15km from	Appropriate assessment of air quality and recreation	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
		the nearest designated point of Ashdown Forest. Whilst in relatively close proximity, this distance and the current site use rules out other impact pathways.		
SA27 Land at St Martin Close, Handcross	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA28 Land South of The Old Police House, Birchgrove Road, Horsted Keynes	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development. The site allocation is 3.56km from the nearest designated point of Ashdown Forest. Whilst in relatively close proximity, this distance and the proximity of existing development rules out other impact pathways.	Appropriate assessment of air quality and recreation	
SA29 Land South of St.Stephen’s Church, Hamsland, Horsted Keynes	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development. The site allocation is 3.19km from the nearest designated point of Ashdown Forest. Whilst in relatively	Appropriate assessment of air quality and recreation	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
		close proximity, this distance and the proximity of existing development rules out other impact pathways.		
SA30 Land to the North of Lyndon, Reeds Lane, Sayers Common	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA31 Land to the rear Firlands, Church Road, Scaynes Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is adjacent to residential development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
SA32 Withypitts Farm, Selsfield Road, Turners Hill	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality, and also inside 7km ZOI for recreation pressure. Site allocation is currently used as an active farmstead in a village location. All other impact pathways ruled out.	Appropriate assessment of air quality and recreation	
SA33 Ansty Cross Garage, Cuckfield Road, Ansty	LSE – residential development adding to overall quantum of development	In combination impacts relating to air quality. Outside 7km ZOI for recreation pressure. Site allocation is within existing development and a good distance from Ashdown Forest, ruling out other impact pathways.	Appropriate assessment of air quality	
Development	A further 5 policies to complement the			

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
Policies	District Plan strategic policies to inform development			
SA34 Existing Employment Sites	No LSE – a policy that protects existing uses and sets high level criteria for any changes to existing uses. Does not promote a quantum or location of development	N/A	No further recommendations – policy/text does not have HRA implications.	
SA35 Safeguarding Land for and Delivery of Strategic Highway Improvements	No LSE – The District plan highlights the need for road improvements to ease congestion, which will in turn improve air quality	Project level HRA may be required, to ensure there aren't any localised issues during construction.	No further recommendations at plan level. Project level HRA may be required.	
SA36 Wivelsfield Railway Station	No LSE – improvement and expansion of the railway station at Wivelsfield. Localised project at a good distance from Ashdown Forest, therefore unlikely to generate any wider impact pathways	N/A	No further recommendations – policy/text does not have HRA implications.	
SA37 Burgess Hill/Haywards Heath Multifunctional Network	No LSE – An environmentally positive policy seeking to deliver a walking/cycling/equestrian route between Burgess Hill and Haywards Heath. This will reduce some localised road traffic thus contributing to overall air quality improvements in the Mid Sussex District	N/A	No further recommendations – policy/text does not have HRA implications.	
SA38 Air Quality	No LSE – The policy is a protective policy for the environment, seeking to prevent further deterioration of air quality for both human health and the natural environment. Wording in relation to Ashdown Forest ensures that at a project level, any development generating significant traffic increases will need project level HRA.	Wording is sufficient to have regard for additional traffic increases not predicted as part of the overall quantum of growth being brought forward by the site allocations and therefore not included in the transport modelling, which in turn has informed the air quality modelling and the appropriate assessment of this HRA.	No further recommendations – policy is supportive of HRA requirements	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
Implementing the Plan	No LSE – informative only, does not generate additional impacts	N/A	No further recommendations – policy/text does not have HRA implications.	
Appendices				
Appendix A – Mid Sussex Local Plan Saved Policies	LSE – List of saved policies from the Mid Sussex Local Plan 2004, predominantly housing sites for development.	Need to ensure adherence to the strategic approach for recreation within the 7km zone of influence for Ashdown Forest.	Where planning permission has not yet been given for a site within the Ashdown Forest 7km zone of influence, SAMM and SANG contributions will be required in accordance with District Plan Policy DP17. Sites have been included in the predicted 2031 baseline for air quality assessment. No further action required.	
Appendix B – Minimum Residual Amount of Development for each Settlement	No LSE – informative only, does not generate additional impacts. Housing development is accounted for at policies above and in the appropriate assessment sections of this HRA	N/A	No further recommendations – policy/text does not have HRA implications.	
Appendix C – General Principles for all Housing Site Allocations	No LSE – the principles include requirements for biodiversity, biodiversity net gain and highlight the need for developer contributions within the 7km zone of influence for recreation pressure on Ashdown Forest.	N/A	No further recommendations – policy/text does not have HRA implications.	
Appendix D – Existing Employment sites	No LSE – Maps within this appendix show sites within the District that currently operate as employment sites, for reference only	N/A	N/A	
Appendix E – Broad Locations to be Subject to Detailed	No LSE – identifies areas on the road network where highways improvements may take place. Overall benefit to the natural	N/A	N/A	

Mid Sussex Site Allocations DPD HRA

Policy reference	Likely significant effect (LSE) screening	Potential risks or opportunities	Recommendations and actions at Regulation 18 stage	Recommendations and actions taken for Regulation 19
Investigations for Highway Safeguarding	environment with the objective of reducing traffic congestion. Not in close proximity to Ashdown Forest SPA/SAC			
Appendix F – Monitoring Framework	No LSE – informs which indicators will be used for key policies. Monitoring of Ashdown Forest protection is part of the District Plan policy monitoring, notably DP17	N/A	N/A	
Glossary	No LSE – informative only, does not generate additional impacts	N/A	N/A	

3. Appropriate Assessment of Impact Pathways

- 3.1 The screening table has flagged two key topics for more in-depth consideration within an appropriate assessment. These impact pathways will now be assessed in detail as part of the appropriate assessment and to inform the Regulation 19 stage of plan making in due course.
- 3.2 Once a likely significant effect has been identified, the purpose of the appropriate assessment is to examine evidence and information in more detail to establish the nature and extent of the predicted impacts, in order to answer the question as to whether such impacts could lead to adverse effects on European site integrity.
- 3.3 An appropriate assessment should be based on evidence, and that can take different forms (direct evidence, comparable evidence, modelling, expert opinion, Natural England's advice etc). There is now a strong body of evidence showing how increasing levels of development, even when well outside the boundary of protected wildlife sites, can have negative impacts on the sites and their wildlife interest. This evidence will be reviewed as part of the appropriate assessment, where links between housing, development and nature conservation impacts are demonstrated.
- 3.4 Appropriate assessments at the plan stage are often undertaken with enough evidence to give confidence in potential mitigation options, but that project level HRAs remain critical in determining the detail of such mitigation. The assessment at plan level is therefore often drawing on the knowledge and experience of the assessors, to make scientifically justified decisions about eliminating risk whilst recognising the need for further detailed considerations.
- 3.5 The 'precautionary principle' is described in the screening section. It is equally relevant for the appropriate assessment as it is for screening likely significant effects. It is an accepted principle that is embedded within the wording of the legislation, and latterly within case decisions, both European and domestic. Essentially, the appropriate assessment stage is, in accordance with the Habitats Regulations, an assessment that enables a competent authority to only give effect to a plan or authorise/undertake a project after having ascertained that it will not adversely affect the integrity of the European site.
- 3.6 It is for the competent authority to gather the information and evidence necessary for the appropriate assessment to give them certainty that adverse effects will not occur. Fundamentally that therefore means that in the absence of certainty, the plan or project should not normally proceed (subject to the further exceptional tests explained in Appendix 1). Hence the precaution is in

the competent authority's duty to only allow plans or projects to proceed whether there is certainty and to apply a precautionary approach where uncertainties remain. Competent authorities should have enough evidence to satisfy themselves that there are feasible measures to prevent adverse effects. These should be feasible in terms of cost, practical implementation, timeliness and attributing responsibility.

Appropriate assessment topics

- 3.7 Mid Sussex District Council recognised this need for assessment of potential impacts relating to Ashdown Forest early in the development of the Site Allocations DPD, commissioning specialist consultants to assist with evidence gathering, modelling and analysis of potential impacts relating to air quality. For recreation pressure, the Council has already engaged proactively with neighbouring local planning authorities and Natural England during the preparation of the District Plan, and now has a strategic mitigation approach in place that will be refined over time.
- 3.8 The appropriate assessment sections that follow assess the two key impact pathways identified within by the screening for likely significant effects, being recreation pressure and air quality.

Topics screened out from further assessment

- 3.9 Table 1 highlighted some impact pathways with uncertainties until the policies and allocations were considered at the screening for likely significant effects, recorded at Table 2. These additional impact pathways, and wider biodiversity matters that links to HRA are screened out from appropriate assessment, as concluded below. These will be revisited at the Regulation 19 stage.

Urbanisation effects

- 3.10 Urbanisation effects relate to issues where development is close to the European site boundary and is an umbrella term relating to impacts such as cat predation, fly tipping, increased fire risk and vandalism. A number of heathland European sites (e.g. the Thames Basin Heaths, the Dorset Heaths, the East Devon Pebblebed Heaths) have a 400m zone around the boundary where there is a presumption of no further development (net increase in residential properties). This presumption reflects the issues with urbanisation and the lack of suitable mitigation and avoidance measures.
- 3.11 The choice of 400m is based on the literature (summarised in Underhill-Day 2005) and to some extent is a pragmatic choice. Studies of cat roaming behaviour have shown 400m to be an appropriate buffer width to limit cats in

very urban environments (Thomas, Baker & Fellowes 2014), however in more rural areas cats can roam considerably further and some studies have suggested ranges over 2km for more rural situations (Metsers, Seddon & van Heezik 2010; Hall *et al.* 2016).

- 3.12 Studies of fire incidence have shown that heathland sites with high levels of housing within 500m of the site boundary have a higher fire incidence (Kirby & Tantram 1999). Fires can start in a range of ways, including deliberate arson, children playing, campfires, barbeques, sparks from vehicles, discarded cigarettes etc.
- 3.13 Where housing is directly adjacent to sites, access can occur directly from gardens and informal access points. Parking areas can be used as residential parking and access can include short-cuts and a range of other uses that are not necessarily compatible with nature conservation. Fly-tipping and dumping of garden waste can be more common. As such, managing and looking after such sites can be more challenging.
- 3.14 Urban issues are perhaps most relevant to heathland sites, which are vulnerable to fire, nutrient enrichment and have sensitive ground-nesting birds. Urban effects are however relevant to other habitats and are a consideration for the Durham Coast SAC, where habitat features are sensitive to relatively small changes related to nutrient inputs, hydrological changes and invasive species, for example.
- 3.1 A development exclusion zone has been established around many other European sites to reflect the particular risks with development directly adjacent to the boundary. Local plans and strategic mitigation schemes include a presumption against development within these areas and such zones have become an established policy approach.
- 3.2 Examples of areas where a zone is in place include:
- Across the Thames Basin Heaths (11 local planning authorities)
 - Around the Dorset Heaths (five local planning authorities)
 - In the Brecks (e.g. Breckland District)
 - Around the East Devon Pebblebed Heaths (East Devon District Council)
 - Around Cannock Chase SAC (e.g. Cannock Chase Council Local Plan)
 - At Ashdown Forest SPA/SAC (e.g. Wealden District's Core Strategy Local Plan)
- 3.3 All the above examples are heathland sites and a 400m zone is used. The approach is widely accepted and reduces the risks from increasing urbanisation. It provides greater certainty that mitigation measures (such as access management) for the cumulative levels of urban growth will be successful as such measures can be targeted to those travelling some distance.

- 3.4 The District Plan Policy DP17 includes a presumption against residential development. No housing allocations are therefore proposed within 400m of Ashdown Forest as part of the District Plan or the Site Allocations DPD. All employment allocations are at a considerable distance from Ashdown Forest. This impact pathway is therefore screened out from further assessment at a plan level.

Water resources, water quality and flood risk

- 3.5 Water issues include water quality and water quantity (i.e. water availability), and flood management. Run-off, outflow from sewage treatments and overflow from septic tanks can result in increased nutrient loads and contamination of water courses. Abstraction and land management can influence water flow and quantity, resulting in reduced water availability at certain periods or changes in the flow. These impact pathways are most relevant to the overall quantum of development, and a check needs to be made of the relevant documentation, including specialist studies commissioned by the Council and those published by water utility companies, to have confidence that risks to European sites can be eliminated.
- 3.6 Water supply and wastewater services for the majority of the Mid Sussex District are provided by South East Water. The 2019 Water Resources Management Plan (WRMP) published by South East Water advises that in preparing the plan, a number of options were explored that represented a higher risk for the environment. As the WRMP was progressed the calculations for additional demand management reductions allowed for the higher risk options to be removed from the plan. This then enabled the final HRA for the WRMP to screen out any likely significant effects, and it was concluded that an appropriate assessment was not required.
- 3.7 This therefore gives confidence in excluding water supply and wastewater impacts from the assessment. Flood risk issues are also excluded on the basis of distance, with the nearest site allocation within the Site Allocations DPD being over 2km away from Ashdown Forest SPA/SAC. For this reason, any impacts on great crested newt ponds or terrestrial habitat within Ashdown Forest SAC is also excluded from further assessment.

Biodiversity net gain

- 3.8 Ensuring that wider biodiversity is adequately protected underpins European site protection and long-term maintenance. The future health of designated sites is very much dependant on the future health of wider biodiversity and the ecological networks that sustain them. In planning for the long-term sustainability of designated sites, it is therefore necessary to protect and

enhance wider biodiversity through the planning system as well as the designated sites. The NPPF sets out comprehensive requirements for the protection, restoration, enhancement and expansion of biodiversity. A Local Plan should include protecting, enhancing and improving biodiversity, and moving from a net loss of biodiversity to achieving net gains. The NPPF requirements are reflected within Policy DP38 of the District Plan and Appendix C of the Site Allocations DPD. It will be advisable to revisit the wording once the Environment Bill is published, to check conformity with the forthcoming legislation in relation to matters such as biodiversity net gain in development.

4. Appropriate Assessment of Air Quality Impacts

- 4.1 Increased growth within Local Plans is of relevance to HRAs where increased traffic volumes as a result of new growth will occur in close proximity to European sites hosting habitats that are sensitive to reduced air quality.

Context for the appropriate assessment of air quality

- 4.2 Historically, HRA consideration of air quality from traffic emissions has predominantly relied upon the advice given within the Design Manual for Roads and Bridges (DMRB), a Highways England publication that provides the national standards for road and bridge design, construction and operation, including assessment of impacts. The HRA for the District Plan particularly relied upon the advice given within this manual, in order to draw a conclusion of no adverse effects arising from the quantum of growth proposed within the District Plan in terms of air quality.
- 4.3 A recent and highly relevant judgment from our domestic courts, known as ‘the Wealden Judgment’, along with a number of European cases and a range of new evidence, advice and guidance to inform HRA assessments in relation to air quality, provide clear reasons for ensuring that this HRA for the Site Allocations DPD is prepared with full regard for current information, whilst still having regard for the DMRB advice.
- 4.4 The formal documentation published by Natural England for Ashdown Forest SPA/SAC identify air pollution as a key issue for the site. The SIP advises that the site exceeds relevant critical loads for pollutants and that the vegetation is becoming increasingly grass dominated as a result, with heather reducing as more vigorous grass species take over.
- 4.5 An action to develop a Site Nitrogen Action Plan (SNAP) is listed within the SIP. Whilst this is yet to be formally published by Natural England, there has already been positive work to date, with measures to reduce the impacts of nitrogen enrichment being the focus of measures within agri-environment schemes. Natural England will review the effectiveness of measures being brought forward to help inform the SNAP.
- 4.6 The site improvement plan for Ashdown Forest identifies good air quality as a supporting attribute upon which the heathland habitat relies in order for conservation objectives to be met. The document highlights that heathland habitats are sensitive to air pollution in terms of altering vegetation structure and composition, causing the loss of typical species. Natural England’s current

position on the relative impact of air borne pollutants from vehicle emissions on the site is provided within the supplementary advice document, which states that:

“Increases in development coming forward within plans would increase nitrogen deposition, Nitrogen oxides and ammonia adjacent to roads that run through Ashdown Forest from associated transport. However, assessment of improvements in vehicular technology and in particular Euro6/VI standards that all vehicles are currently being manufactured to, will outweigh impacts from new development. The improvements will be marginally retarded by additional development, but future nitrogen deposition and concentration will continue to decline with the existing trend.... background levels of Nitrogen are expected to decline with EU and Government clean air strategies.”

- 4.7 This position is important for this HRA of the Mid Sussex Site Allocations DPD, in that it recognises the need to assess implications of the plan against background trends and the trajectory of vehicle emission improvements, which are discussed further below.

Summary of atmospheric pollution impacts on interest features

- 4.8 Atmospheric pollutants of concern to sensitive habitats that are derived from vehicles include oxides of nitrogen (NO_x), ammonia (NH₃) and the consequential deposition of nitrogen (N) and acid on habitat, which can then lead to changes in species composition. Pollution from air-borne and direct inputs of pollutants from agriculture is also a major concern, and for Ashdown Forest, agricultural sources are likely to be the primary source, notwithstanding the fact that vehicle emissions are still an important factor.
- 4.9 It is known that traffic emissions lead to an increase in N, and that this presents a major concern for sensitive habitats. Ashdown Forest is sensitive to increased N, whereby the composition of a plant community changes to favour those that are most successful in high N environments. Critical thresholds, beyond which plant communities may change in response to pollutants, have been developed for a range of habitat types, and are available from the Air Pollution Information Service (APIS). This database is funded and provided by the Centre for Ecology and Hydrology and the UK pollution and conservation agencies including Natural Resources Wales (NRW), the Environment Agency, Northern Ireland Environment Agency, Natural England, the Joint Nature Conservation Committee (JNCC), Scotland and Northern Ireland Forum for Environmental Research (SNIFFER), the Scottish Environment Protection Agency (SEPA), and Scottish Natural Heritage (SNH).
- 4.10 Wet and dry heathland are habitats that are adapted to low N loads, but in many locations where heathland occurs, critical loads are being breached. There are a

number of reasons for this, and pollutant sources can differ at different locations. Traffic, agriculture and land management are some of the key sources of increased NO_x, and NH₃.

4.11 APIS holds data and threshold information specifically in relation to habitat sensitivity rather than human health. Summary information of relevance is given in Table 3.

Table 3: Summary of key air pollutants

Pollutant	Source	National trend	Impact
NO _x	Combustion, mainly vehicles and power stations	Decline (55% since 1986)	Mainly through N deposition, but also gaseous NO _x close to source. Synergy with SO ₂
NH ₃	Natural and anthropogenic; main source is agriculture	Smaller decline which has now flattened	Direct toxicity and N-accumulation

4.12 The main impacts of NO_x and NH₃ are through N deposition and acidification. N deposition can lead to an increase in N loving species at the expense of other species; an increased risk of frost damage in spring, increased sensitivity to drought; increased incidence pest and pathogen attack and direct damage to sensitive species. The impacts of acid deposition are often indirect, resulting from a change of pH in soils and water. Chemical changes lead to nutrient deficiencies, release of toxins and changes in microbial N transformations.

4.13 Heathlands are naturally low-nutrient systems and therefore particularly susceptible to nutrient enrichment via N deposition. Lowland heaths in the vicinity of major roads have been identified as being at particular risk. The potential impacts of N and acid deposition on the interest features of Ashdown Forest are:

- A shift in dominance from heath species, mosses (including bog-mosses) and lichens to grasses such as Wavy Hair-grass *Deschampsia flexuosa* and Purple Moor-grass *Molinia caerulea* through shading or an inability to compete for limiting resources
- Increased incidence of Heather Beetle *Lochmaea suturalis* damage
- Increased litter fall, inhibiting ground-dwelling species
- Direct damage to lichens, mosses and liverworts
- Increased susceptibility of Heather *Calluna vulgaris* to winter and summer drought.

4.14 In addition, NH₃ exposure can lead to the acceleration of the Heather lifecycle, leading to leggy Heather resulting in increased grass invasion and changes in the ground flora, including lichens, mosses and liverworts.

4.15 Great Crested Newt is an additional interest feature of Ashdown Forest SAC. This species may be vulnerable to increased acidification of its habitats, particularly aquatic habitats. However, critical loads/levels are not available for this species as APIS focusses on habitat types. By checking the air quality modelling for implications for the heathland habitats, a general consideration of air quality changes from vehicle emissions is being made, and the modelling of end of plan scenarios gives some indication of changes that may be relevant to Great Crested Newt. Direct agricultural run off to aquatic habitat is far more likely to be a significant factor for this species, which should be a consideration in the forthcoming SNAP.

4.16 Critical loads have been established for pollutants and these are summarised in Table 4 in relation to heathland habitats.

Table 4: Summary of pollutants and critical loads (provided by Wood) The averaging period is annual for all except NO_x EAL, which is daily.

Pollutant	AQS/EAL/Target	Objective (UK)
NO _x	AQS	30 µmg ⁻³ (all vegetation)
NO _x	EAL	200 µmg ⁻³ (all vegetation)*
NH ₃	Target	1 µmg ⁻³ (lichens or bryophytes present)
Nutrient N deposition	Target	10-20 Kg N/ha/yr (for European Dry Heaths & Northern Atlantic wet heaths with <i>Erica tetralix</i>)
Acidity deposition	Target	MinCLminN: 0.499-MaxCLminN:0.714 (for European Dry Heaths, Northern Atlantic wet heaths with <i>Erica tetralix</i>)

* The critical load is 75 µmg⁻³ if concentrations of SO₂ and O₃ breach their respective limits, 200 µmg⁻³ if not. SO₂ and O₃ do not breach limits at Ashdown Forest, therefore a 200 µmg⁻³ is most appropriate.

Establishing likely significant effects in relation to air quality

4.17 The DMRB highlights the potential for impacts on sensitive habitats within 200m of a road, and the need for further assessment where changes to the road network or traffic volumes might increase daily traffic flows by 1,000 Average Annual Daily Traffic (AADT) or more. This is a simple measurement of change, using the total volume of traffic on a road and dividing it by 365 days to give a daily average.

4.18 Natural England and its partner UK statutory nature conservation bodies have a specialist air quality technical group known as the Air Quality Technical Advisory Group (AQTAG). This group regularly meets to discuss key issues in relation to air quality concerns for designated sites and will occasionally issue formal advice notes on key topics. AQTAG21 is an advice note that includes reference to a 1%

threshold to be used in air quality assessments. This threshold has been consistently used by the statutory nature conservation bodies over a number of years to indicate where an increase in atmospheric pollutant might be deemed significant. The AQTAG21 refers to a 1% threshold in terms of the relevant critical load for the habitat type. Where the pollutant contribution is less than 1% of the critical load, it is deemed to be inconsequential (*de minimis*) and does not warrant further consideration for likely significant effects.

- 4.19 The thresholds provided in Table 4 have been used in the development of the appropriate assessment considerations for the emerging site allocation options, using a 1% of critical load calculation, i.e. where critical loads are breached by 1% or more of the critical load, a likely significant effect is concluded requiring further investigation of potential risks, drawing on a number of guidance documents, data sources and expert opinion.

Assessing growth scenarios for the Site Allocations DPD

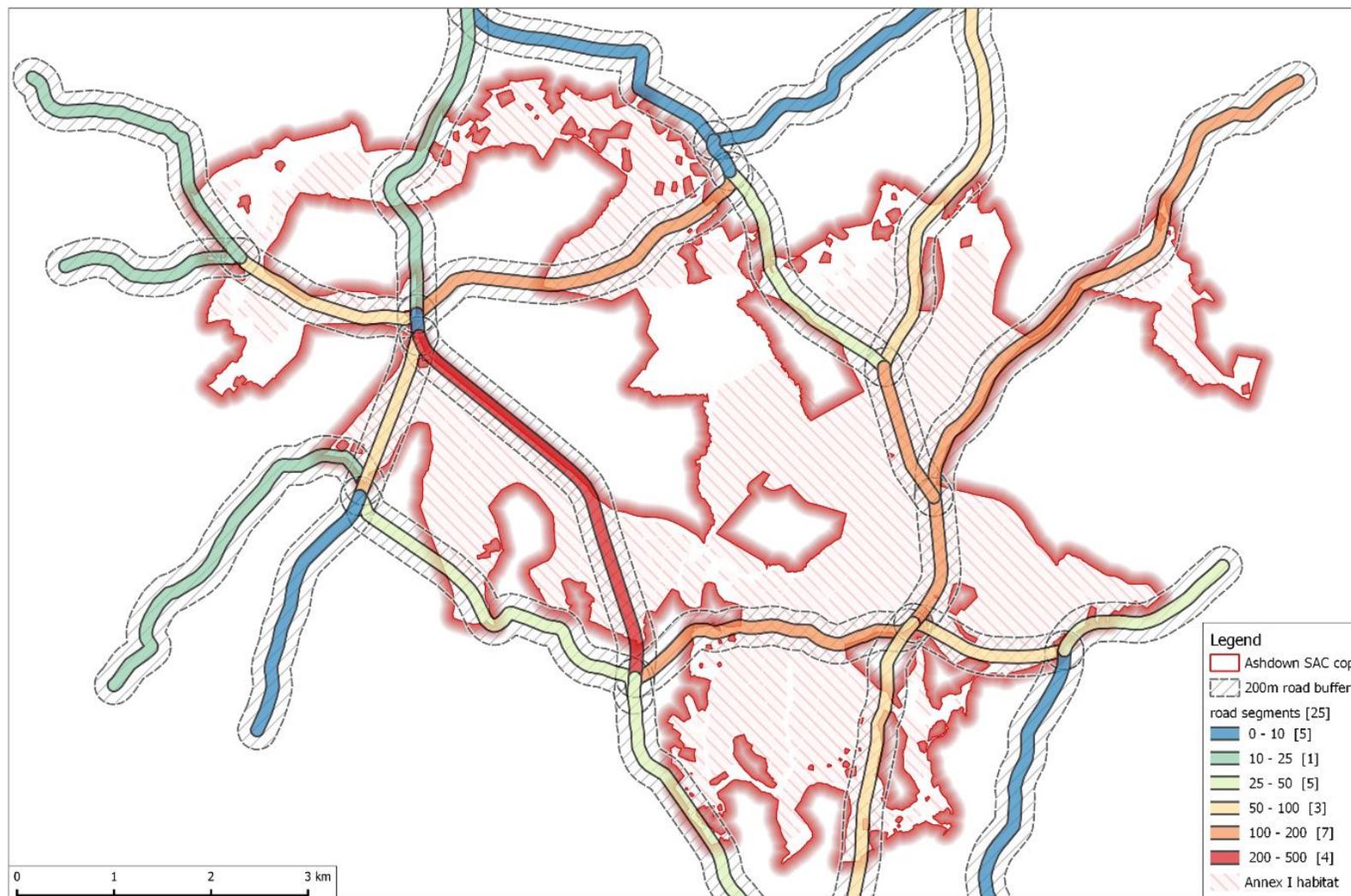
- 4.20 Mid Sussex District Council has recognised the potential for growth within the emerging Mid Sussex Site Allocations DPD to have air quality implications for Ashdown Forest and therefore appointed specialist consultants to assist with the consideration of potential impacts at an early point in the development of the Site Allocations DPD.
- 4.21 Systra, the traffic modelling consultants, have been modelling predicted traffic changes as a result of proposed growth scenarios, Wood, the air quality consultants, have then used the traffic modelling to undertake modelling of the predicted resultant changes in atmospheric pollutants as a result of the traffic modelling. This work has then allowed Footprint Ecology to use the analysis of traffic changes and the air quality modelling to inform this HRA.
- 4.22 Traffic modelling and air quality modelling has been undertaken on several growth scenarios. Growth scenario 8 most closely reflects the preferred growth option and is reflected in the Site Allocations DPD for consultation at Regulation 18 stage.
- 4.23 Prior to the commencement of this work, discussions between Wood and Footprint Ecology were held at a meeting on 16th October 2018 at the Wood offices in Canary Wharf, London. At this meeting agreement was reached over which road stretches included in the transport work should be modelled for levels of atmospheric pollutants. Footprint Ecology used a map of the modelled roads to determine the area of SAC habitats per m² of road for each of the road stretches. This enabled Footprint Ecology to generate a ‘heat map’ of road stretches that potentially have the greatest implications for the SAC, i.e. the

greatest risk because of the amount of SAC habitat within 200m each side of the road. The heat map is shown at Map 2.

- 4.24 The key on Map 2 shows the colours for road stretches and the m² of SAC habitat, with the red ones being road stretches with greater than 200 m² of SAC habitat within 200m each side of the road, per m of road. Footprint Ecology shared this approach with Natural England to confirm it was an acceptable means of identifying the highest risks. The red and orange stretches include the A22 and A26, which Natural England advised may be of most concern.
- 4.25 Wood then undertook their modelling of predicted resultant changes in atmospheric pollutants for each of the red and orange road stretches, i.e. the ones with the greatest implications for the SAC. This was undertaken for a number of growth scenarios. Transect locations used by Wood for the modelling are identified on Map 3, provided by Wood.
- 4.26 Levels of atmospheric pollutants along transects perpendicular to roads crossing or adjacent to Ashdown Forest SAC were modelled by Wood. The modelling scenarios have regard for predicted changes in emissions factors as a result of vehicle technology improvements over time. The modelling scenarios are:
- 2017 baseline of pollutants. This uses 2017 background concentrations of pollutants, and the 2017 emissions factors and traffic flows.
 - Scenario A – 2031 projected baseline of pollutants. This uses the 2017 background concentrations of pollutants and traffic flows, but with the predicted 2030 emission factors, i.e. irrespective of growth, pollutants should reduce with the predicted emissions factors.
 - Scenario B – Baseline + in-combination development from surrounding local planning authorities. This uses the projected baseline for pollutants in 2031, but with the effect of the surrounding growth from neighbouring local planning authorities.
 - Scenario C – Baseline + in-combination + Mid-Sussex development. This uses Scenario B and then adds in the additional effect of growth proposed for Mid Sussex, as per the relevant growth scenario being tested.
- 4.27 The predicted 2030 emissions factors used within the modelling scenarios are explained below. The allocations within the Mid Sussex District Plan are adopted allocations, with some already having the benefit of planning permission. These allocations are therefore included within the background traffic flows for the projected baseline of 2031, i.e. modelling scenario A. This projected baseline represents the baseline situation in 2031 including any committed development, highways improvements already in progress or committed. Modelling scenario C therefore includes the development proposed within the Site Allocations DPD, ensuring that it is the potential impact of the DPD that is assessed.

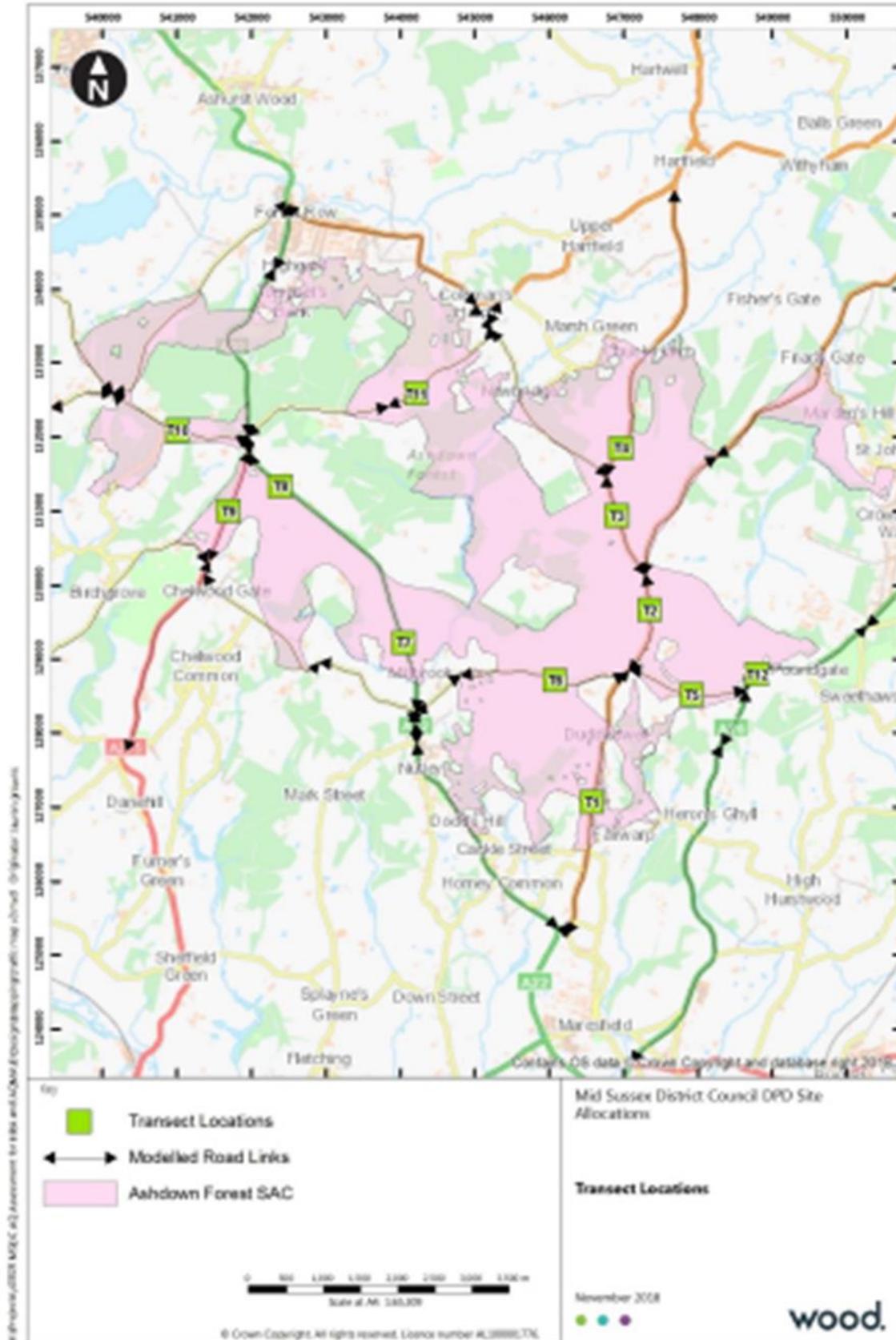
- 4.28 The pollutant levels were modelled by Wood along 12 transects, with nine points at each side of the road at 0, 2, 3, 10, 25, 50, 100, 150 and 200m from the kerb. The modelling undertaken by Wood provided N, and also NH₃, levels and resultant N and acid deposition, at each point on the transects and the points at which pollutants breached critical thresholds were highlighted.
- 4.29 During the progression of modelling of the differing growth scenarios, Wood consultants, the air quality specialists, highlighted that critical loads for acid deposition vary marginally when taking into account the background sulphur concentration, which can be factored in using the APIS critical load function tool: <http://www.apis.ac.uk/critical-load-function-tool>).
- 4.30 This then uses a higher maximum critical load of 0.952 rather than 0.714 shown in the table above. As discussed later below, this slightly alters the findings in terms of where acid deposition is above 1% of the critical load.

Map 2: Road segments within or adjacent to the Ashdown Forest SAC categorised by the area of Annex I habitat per m of road.



Contains Ordnance Survey data © Crown copyright and Database Right 2018. Contains map data © OpenStreetMap contributors. Terms: www.openstreetmap.org/copyright Designated site boundaries download from the Natural England website © Natural England.

Map 3: Location of transects used for atmospheric pollutant modelling in the Ashdown SAC (Map provided by Wood)



Recent case decisions and guidance

- 4.31 As noted in earlier sections of this HRA, the Site Allocations DPD is being assessed with the benefit of a number of recent case decisions that provide an interpretation of the application of the Habitats Regulations and its parent European Directives in relation to air pollution. These are discussed here to highlight their relevance to this appropriate assessment.
- 4.32 Relevant case law at both the European and national level assists with understanding interpretation of the legislation and can provide precedents that may be referred to again in future cases. They are also helpful in considering the types of evidence used to justify conclusions drawn in relation to the application of the legislation.

The Wealden Judgment

- 4.33 Use of the DMRB and AQTAG21 for the purposes of assessing air quality within a plan level HRA was scrutinised through a High Court Judgment⁹ whereby Wealden District Council challenged the HRA conclusions of the Joint Core Strategy (JCS) for Lewes District and South Downs National Park. Whilst the HRA had made conclusions of no likely significant effect on the basis of growth within the JCS alone, the High Court found that the HRA had failed to consider the combined effect of growth within multiple Local Plans in the vicinity of Ashdown Forest, thus necessitating an appropriate assessment. Natural England's advice given at the time deemed both the DMRB 1000AADT and the 1% of the critical load to be thresholds below which further assessment was not required. The Judgment relies on the caveat set out within AQTAG21, which advises that if there was to be a concentration of plans or projects in the same area, at the same time, then there may be cause for case specific assessment and the 1% threshold may not automatically apply.
- 4.34 In light of this case it is important therefore for any HRA to refer to a range of evidence and advice when considering air quality impacts and the DMRB thresholds, the AQTAG21 advice and the findings of the High Court in the Wealden case should be considered together, alongside any other relevant research and evidence. With this in mind, the traffic modelling scenarios used, as described above, include modelling scenario B, which has regard for proposed development in neighbouring Local Plans, and then modelling scenario C, which includes both neighbouring Local Plans and growth within Mid Sussex.

^{9 9} *Wealden v SSCLG (2017)*

Current progress of air quality related HRA work within neighbouring authorities

- 4.35 Lewes District Council, Tunbridge Wells Borough Council and the South Downs National Park Authority have recently commissioned air quality analysis to inform their HRA work. AECOM consultants have worked with both local planning authorities to provide air quality modelling that is similar to that undertaken for Mid Sussex District Council, in that it uses baseline scenarios, predicted forecasts in vehicle emission improvements, and assesses predictions for the individual Council's contribution to a combined effect, having regard for growth within neighbouring local planning authority administrative areas.
- 4.36 For both authorities, AECOM have concluded that the retardation of the improving trajectory does not provide a basis for preventing a conclusion of no adverse effect on Ashdown Forest SAC. HRAs and evidence documents relating to air quality are available on the Council websites.
- 4.37 It is important to note that the Wealden Local Plan has currently progressed through the first stage of Examination Hearings, and the Council is awaiting a letter from the Examining Inspector, following hearing sessions which included detailed consideration of the approach to dealing with air quality impacts on Ashdown Forest. It will be important for this HRA of the Mid Sussex Site Allocations DPD to have regard for the Inspector's direction to Wealden District Council in relation to Ashdown Forest, which should be reviewed to inform the next iteration of this HRA, once available.

European Court - Joined Cases C-293/17 and C-294/17

- 4.38 Coöperatie Mobilisation (Joined Cases C-293/17 and C-294/17), which are now being generally referred to as "the Dutch Case" for nitrogen deposition. This Netherlands co-joined case brought before the European Court is an important recent case in the interpretation of the European Directives for plans and projects with potential air pollution impacts. The case focusses on agricultural derived nitrogen deposition, and essentially questions whether it is appropriate to rely on strategic measures to alleviate air pollution that may create capacity for individual projects to be approved despite their individual contribution of additional pollutants.
- 4.39 The European Court Judgment focusses on the fact that where a European site is already deteriorating, projects that then worsen the situation should not be approved, unless there are clear and definitive measures underway to restore the situation and maintain favourable conservation status. The Netherlands Government has an approach that relies upon a programme of nitrogen reduction measures. What is key to the assessment of traffic increases relating

to Local Plans, and indeed the assessment of any other potential impacts at the plan level, is that the European Court was clear that measures should not be relied upon if they are uncertain, have not yet been carried out, are not certain to take place, or have poor scientific basis.

- 4.40 The case therefore highlights the need to have certainty in any measures being relied upon to allow a conclusion of no adverse effects where they are expected but not yet completed. Importantly, any such measures need to be scientifically certain and secured (in terms of responsibility, finances, practical delivery etc.), rather than just forecasts.

Guidance on assessing air quality impacts for designated sites

- 4.41 As noted earlier within this report, the DMRB has a specific section on assessing the impacts of road projects on designated sites, and has been the standard source of guidance for considering traffic generated air quality impacts. The Institute of Air Quality Management has very recently published new guidance in June 2019 entitled 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites'.
- 4.42 This new guidance contains detailed and relevant advice in relation to the assessment of traffic generated air quality impacts, which accords with the principles used to model traffic increases and air quality changes for the Mid Sussex Site Allocations DPD. The guidance highlights the 1% threshold as a widely used threshold, below which fluctuations are not likely to be discernible from background fluctuations/measurements, and above which a need for further assessment is identified but does not automatically imply damage will occur.
- 4.43 This new guidance will be reviewed in greater detail to inform the next iteration of this HRA to ensure that the approach is compliant. Some details in relation to transects used and modelling calculations will be checked by Wood consultants.

Natural England Guidance

- 4.44 With growing interest from competent authorities in the correct approach to assessing air quality impacts following recent court cases, Natural England has been assisting local planning authorities across the country with advice on what should be considered within a HRA. Natural England has a number of research reports available within its publications webpages, including the following:
- 4.45 **NECR210 – Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance** - This publication highlights that the majority of designated sites in the UK are currently exceeding their critical loads for N

deposition, and this is leading to significant changes in these sensitive habitats as a consequence. There are particular concerns in relation to lower plants, which are highly sensitive to N deposition.

- 4.46 Habitat responses to N deposition are not fully understood. However, it is apparent that there isn't a linear relationship between increased pollutants and habitat deterioration (declines in species richness and species composition). Critical loads identify a point at which significant vegetation change is likely to occur, but changes do not continue on a linear basis beyond the critical threshold.
- 4.47 **Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations**¹⁰ - This guidance makes clear that it is for the competent authority, not Natural England, to acquire enough evidence to support its HRA conclusions. Helpfully, the document highlights that the 1% threshold can be used to establish whether further assessment is necessary, but should not be used to determine whether an adverse effect can or cannot be ruled out.
- 4.48 Importantly, this document indicates that traffic management measures and habitat management measures or interventions that limit the dispersal of traffic emissions might constitute mitigation measures.
- 4.49 For Ashdown Forest, the extent to which other wider measures relating to the site may be relied upon to give greater confidence in a conclusion of no adverse effect on site integrity has been discussed with Natural England. It is widely agreed that the main source of pollutants to Ashdown Forest is agriculture, although other contributing sources in the wider environment are also a factor (for example, international/transboundary sources).
- 4.50 Natural England is working positively with landowners to explore the impacts of positive land management measures in contributing to site restoration and increasing site resilience into the longer term. This includes off-site measures to manage and reduce pollution sources from farmland, and on-site measures to more appropriately manage the SAC. Natural England has committed to the preparation of a Site Nitrogen Action Plan (SNAP) for Ashdown Forest.
- 4.51 It is concluded that whilst these measures alone do not enable a conclusion of no adverse effect as the extent of their effectiveness is not yet quantified, they can be considered as additional measures that positively support such a conclusion.

¹⁰ <http://publications.naturalengland.org.uk/publication/4720542048845824>

Predictions for improved vehicle emissions

- 4.52 Given the recent “Dutch Case” discussed above, it is imperative that this HRA highlights the use of vehicle emissions improvement trajectories to inform HRA conclusions. The case highlights the risk of reliance on future predictions where there is uncertainty in delivery. The Government’s Emissions Factor Toolkit is used for the modelling scenario B; the predicted baseline at 2013 using the predicted emissions improvements up to 2030. This uses data relating to improving vehicle technologies and the gradual reduction in older vehicles on the road over time. This is essentially a programme that is being relied upon to inform a conclusion of no adverse effect but has not yet been completed. The “Dutch Case” highlights that circumstances where future measures can be relied upon are limited.
- 4.53 The question is therefore whether the Emissions Factor Toolkit is scientifically certain and secured, or whether it is a mere forecast. Discussions with Natural England have concluded that the Toolkit is scientifically sound, and its use is not at odds with the “Dutch Case.” It is Natural England’s view that the Toolkit is a realistic prediction with sound scientific basis. On this basis, it is accepted within this HRA that the modelling undertaken accords with the “Dutch Case.”

Results of air quality modelling for the Site Allocations DPD

- 4.54 The modelling results for the growth scenario 8, which most closely reflects the growth option presented within the Site Allocations DPD are summarised within Table 5 below. The results show the combined effect of Mid Sussex growth with that of neighbouring local planning authorities is such that critical loads are still breached at some transect points, even though the modelling has had regard for the predicted vehicle emissions improvements. The points at which the critical loads are breached are all points in close proximity to the road, where background loads are already relatively high. The modelling indicates that N will be under the maximum critical threshold for all modelled points greater than 10m away from the road under all growth scenarios, including scenario 8 which is the growth options within the Site Allocations DPD.
- 4.55 Having regard for all guidance and case decisions summarised above, it is concluded that this constitutes a likely significant effect for all growth scenarios modelled. A screening of likely significant effect triggers more detailed consideration, and requires all influencing factors to be analysed in order to draw a conclusion as to whether the risks identified at the likely significant effect stage of HRA will manifest into an adverse effect on site integrity, or whether such adverse effects cannot be ruled out, or whether there is evidence to conclude that there will not be an adverse effect.

Table 5: Summary of results for housing scenario 8 indicating sites where pollutants are predicted to exceed critical loads under modelling scenario C. Transect point with the highest level is in bold.

Pollutant	Result		Modelling scenarios under which loads are breached				Max distance from kerb at which scenarios breach	Notes
			2017	A	B	C		
NO _x annual	Below critical level in all scenarios at 5 out of 12 sites	T1	✓	✓	✓	✓	0	Levels are lower under scenario C than B except for at T5, T6, T9, T11 and part of T8, T10
		T2	✓	✓	✓	✓	0	
		T3	✓					
		T4	✓					
		T5	✓					
		T7	✓	✓	✓	✓	5	
		T8	✓	✓	✓	✓	0	
		T9	✓	✓	✓	✓	0	
		T10	✓	✓	✓	✓	2	
		T12	✓	✓	✓	✓	5	
NO _x daily	Below critical level at all points	All	-	-	-	-	Note that 200 µg ⁻³ is used as the critical level as SO ₂ and O ₃ levels are not breached.	
NH ₃	Above critical level at some points at all locations except T11	T1	✓	✓	✓	✓	5	Levels under scenario C are lower than B except for at T5, T6, T9, T10, T11, T12
		T2	✓	✓	✓	✓	5	
		T3	✓	✓	✓	✓	2	
		T4	✓	✓	✓	✓	2	
		T5	✓	✓	✓	✓	0	
		T6	✓			✓	0	
		T7	✓	✓	✓	✓	10	

Mid Sussex Site Allocations DPD HRA

Pollutant	Result		Modelling scenarios under which loads are breached				Max distance from kerb at which scenarios breach	Notes
			2017	A	B	C		
		T8	✓	✓	✓	✓	0	
		T9	✓	✓	✓	✓	5	
		T10	✓	✓	✓	✓	10	
		T11	✓					
		T12	✓	✓	✓	✓	2	
Nutrient N deposition	Min. critical load exceeded throughout. Max. critical load exceeded at T1, T2, T7, T8, T9, T10, T12. Scenarios lower than baseline throughout	T1	✓	✓	✓	✓	0	Levels at C are lower than or equal to B at all locations except T5, T6, T9, T11, T12 (difference does not exceed 1% of min critical load at any point)
		T2	✓	✓	✓	✓	0	
		T3	✓					
		T4	✓					
		T5	✓					
		T7	✓	✓	✓	✓	5	
		T8	✓	✓	✓	✓	0	
		T9	✓	✓	✓	✓	0	
		T10	✓	✓	✓	✓	2	
		T12	✓	✓	✓	✓	5	

Mid Sussex Site Allocations DPD HRA

Pollutant	Result		Modelling scenarios under which loads are breached				Max distance from kerb at which scenarios breach	Notes
			2017	A	B	C		
Acid deposition	Min. & max. critical load exceeded at all points Scenarios lower than baseline throughout	All	All	All	All	All	180-200	C marginally lower than or equal to B at about half of locations but not at T5, T6, T9, T11, T12 and parts of T2, T3, T7, T8 and T10. (C-B difference >1% of min critical load at T5, T6 at 2m from kerb, T9 at 0m from kerb)

Interpretation of air quality modelling in relation to critical loads

- 4.56 The analysis of air quality modelling for growth scenario 8, which most closely reflects that presented in the Site Allocations DPD, found that for a small number of transects, and at close proximity to the roads, the change in predicted pollutant loads was marginally greater than 1% of the critical loads.
- 4.57 It is important to highlight that the later modelling of scenarios 7 and 8 includes additional measures in terms of highways improvements that will serve to improve the functioning of the road network and reduce congestion. It is apparent from the modelling results that these improvements are likely to be making a small but positive contribution to reducing the air quality impacts of new growth. It is therefore concluded that the highways improvements are likely to be an important mitigation measure for air quality impacts and should be an integral part of the plan.
- 4.58 The following description focusses on the later modelling of growth scenarios 7 and 8, with 8 being the scenario included in the DPD, and then compares back with earlier modelling for earlier growth scenarios.

Pollutant concentrations - Oxides of nitrogen NO_x

- 4.59 The overall picture for growth scenarios 7 and 8 are very similar, with only occasional very marginal differences (e.g. of 0.1 μmg^{-3}). Predicted levels under growth scenario 7 are generally smaller than under growth scenario 8, except for at transect locations T10 and T11. Under both growth scenarios, critical levels are expected to be breached at 7 transect locations at up to 5m from the kerb. As with previous scenarios, T12, located on the A26, has the highest level (max 56.0 μmg^{-3} for modelling scenario C under growth scenario 7 and 56.1 μmg^{-3} under growth scenario 8). Levels are not expected to be breached at over 5m from the kerb for any location.
- 4.60 Under both growth scenarios, pollutant levels under modelling scenario C (“do something”) are expected to be lower than the 2017 baseline due to predicted improvements in background emissions. The predicted improvements are discussed further in Section 6, and will be assessed in more detail within the HRA. Background levels of NO_x are currently breached at all locations except for T6 and T11.

- 4.61 The predicted levels under modelling scenario C are marginally higher than modelling scenario B except at all or part of four locations for growth scenario 7 and all or part of three locations for growth scenario 8.
- 4.62 The daily NO_x level is not expected to breach the critical level at any site (using the less conservative 200 µg⁻³ level) for either growth scenario 7 or growth scenario 8.
- 4.63 **Comparison with earlier growth scenarios** - The findings for NO_x levels for growth scenarios 7 and 8 is very similar to the earlier growth scenarios. It is concluded that the differences between the scenarios is insignificant for the HRA.

Pollutant concentrations - Ammonia NH₃

- 4.64 Levels of ammonia are expected to exceed the 1 µg critical level relevant at Ashdown Forest (due to the presence of lower plants) at one or more transect points for every transect location except T11 for both growth scenarios. The critical level is just breached at T6 for site scenario C under scenario 8 but not under scenario 7.
- 4.65 The critical level is not exceeded at over 10m from the kerb at any location under either growth scenario 7 or 8.
- 4.66 The highest expected level under modelling scenario C for both growth scenarios is 1.8 µg⁻³ at T12. Levels are very marginally higher under growth scenario 8 than 7 at all transect locations except for T10 and T11.
- 4.67 Under both growth scenarios, levels under scenario C are lower than B except for at T5, T6, T9, T10, T11, T12. The greatest difference between modelling scenario B and C is at T5, for both growth scenarios.
- 4.68 **Comparison with earlier growth scenarios** - The findings for ammonia levels for growth scenarios 7 and 8 is very similar to the earlier growth scenarios. It is concluded that the differences between the scenarios is insignificant for the HRA.

Deposition - Nitrogen

- 4.69 N deposition exceeds the minimum critical load for dry and wet heath at all transect points under both growth scenarios. The maximum is exceeded at 7 out of 12 transect locations at up to 5m from the kerb under both scenarios. The highest load under modelling scenario C is 28.40 kg N/ha/yr at T12 for growth scenario 7 and 28.41 kg N/ha/yr at T12 for growth scenario 8. At all points the load is lower under modelling scenario C than for the baseline.

- 4.70 Under both growth scenario 7 and 8, loads are for modelling scenario C are lower than those for B, except for at T5, T6, T9, T11, T12 and also, for growth scenario 7 only, at T10. The difference remains below 1% of the minimum critical load. Note that this is the case whether or not the maximum critical load is adjusted for background sulphur concentration.
- 4.71 The predicted loads are marginally lower for scenario 8 than for scenario 7 under modelling scenario C (but not B, for which they are equal) at most locations, except for T10 and T11, where they are marginally higher.
- 4.72 **Comparison with earlier growth scenarios** - Growth scenarios 7 and 8 are found to be slightly more favourable than earlier growth scenarios. For growth scenario 4, the greatest difference between modelling scenario B and C is 0.21 kg N/ha/yr at T12, an increase representing 2.1% of the minimum critical load.

Deposition - Acid

- 4.73 The critical load range for acid deposition from N is exceeded at all transect locations under both growth scenarios. Background concentrations are high and at all points the loads are lower in modelling scenario C than the baseline.
- 4.74 The highest load in modelling scenario C is expected to be 2.02 keq N/ha/yr at T12 under both growth scenarios.
- 4.75 Loads under modelling scenario C are expected to be lower than or equal to modelling scenario B at half of the locations, but not at T5, T6, part of T8, T9, T10, T11, T12 under growth scenario 7, and T5, T6, T9, T11, T12 and parts of T2, T3, T7, T8 and T10 under growth scenario 8, for which the loads are predicted to be marginally higher. The increase between B and C is greater than 1% of the minimum critical load at 0m from the kerb at location T5 (1.35%), T6 (1.24%) and T9 (1.13%) under growth scenario 7 and at 2m from the kerb at locations T5 (1.72% at 0m, 1.23% at 2m) and T6 (1.52% and 1.14%) and 0m from the kerb at T9 (1.3%) under growth scenario 8.
- 4.76 It should be noted that when the maximum critical load is adjusted for background sulphur concentration, the increase between B and C remains below 1% of the critical load.
- 4.77 **Comparison with earlier growth scenarios** - As noted above, background concentrations are high and at all points the loads are lower in modelling scenario C than the baseline.
- 4.78 The highest load in modelling scenario C for growth scenario 4 is expected to be 2.04 keq N/ha/yr at T12. This is comparable with 2.02 keq N/ha/yr at T12 under growth scenarios 7 and 8.

4.79 Under growth scenario 4, the biggest difference between modelling scenario B and C is 0.02 keq N/ha/yr is at T12, which is 2.1-3.0% higher than the critical range. Whilst these percentages are higher, they are focussed at T12, whereas the transect points where increase between B and C is greater than 1% of the minimum critical load for scenarios 7 and 8 are T5, T6 and T9.

Drawing on the available evidence and expert opinion

- 4.80 The key points of relevance for this HRA in terms of ecological responses to pollutants, and relevant guidance, case law and expert opinion are summarised here to show how the conclusions below have been drawn in relation to whether there are adverse effects on Ashdown Forest SPA/SAC.
- 4.81 As explained above in the summary of Natural England publications, the majority of designated sites in the UK are currently exceeding their critical loads for N deposition, but changes do not continue on a linear basis beyond the critical threshold.
- 4.82 The non-linear ecological response to increasing N is an important factor in any appropriate assessment, because it cannot and should not be assumed that if vegetation changes cease to be notable this can be taken to not result in adverse effects on European site interest features. A lack of direct ecological effect does not automatically constitute a lack of adverse effects. If continued increases in pollutants from plans or projects negate or impede measures being taken more widely to reduce pollutants, or restore the site, this could be considered to be an adverse effect.
- 4.83 With this in mind, it is taken that an increase in pollutants at Ashdown Forest could still constitute an adverse effect on site integrity. The traffic modelling undertaken uses a predicted 2031 baseline scenario that includes use of the Government's Emissions Factor Toolkit, which provides a prediction of an improving trajectory over time. It is concluded, on the basis of Natural England's advice, that this programme can be relied upon in terms of a sound scientific basis and certainty in delivery.
- 4.84 The air quality modelling results for a number of growth scenarios show that the growth option proposed within the Mid Sussex Site Allocations DPD has minimal deviation from other growth scenarios, and for both N and acid deposition is slightly more favourable than earlier scenarios. The addition of highways improvement options is likely to have had some influence on the results. There is therefore confidence that an optimal growth proposal is being taken forward, and that other scenarios do not represent notably more favourable options in terms of air quality impacts.

4.85 The modelling conclusions concur with those undertaken by AECOM for Lewes District Council, Tunbridge Wells Borough Council and the South Downs National Park Authority, where the modelling similarly included neighbouring authority growth.

Drawing conclusions on air quality impacts having regard for all influencing factors

4.86 The following factors are drawn together to enable a conclusion of no adverse effects on site integrity for Ashdown Forest SAC in relation to traffic emissions derived from growth proposed within the Site Allocations DPD:

- The predicted traffic emissions and resultant air quality changes do not notably deviate from the trajectory of improved air quality. The marginal retardation seen in the air quality modelling results is not deemed to represent an adverse effect in site integrity when compared with the predicted 2031 baseline, including consideration of the combined effect of growth from Mid Sussex and other neighbouring areas.
- Recent case law from the Netherlands (C-293/17 and C-294/17) has highlighted that expected benefits from factors on which the HRA conclusion relies must be certain. Where there is a lack of evidence and the predictions are merely predictions, they cannot be relied upon. There is confidence in the scientific evidence used to predict an improving emissions trajectory and certainty in its realisation over the plan period.
- Other wider measures relating to the site are Natural England's work with landowners to explore the impacts of positive land management measures in contributing to site restoration and increasing site resilience into the longer term. Natural England will prepare a SNAP for Ashdown Forest. Whilst these measures are not yet quantified in terms of their likely contribution towards site restoration, their progression adds to the confidence in the range of measures as a whole that enables a conclusion of no adverse effects.
- The air quality related HRA work being undertaken by neighbouring local planning authorities uses similar modelling to assess the impact of growth on Ashdown Forest SAC, concluding that adverse effects on site integrity can be ruled out, including when the combined effect of neighbouring growth is considered.
- The highways improvements added into the model are likely to bring positive benefits and should be an integral part of the plan in order to be deemed to be contributing mitigation measures.

4.87 The modelling results for the growth scenarios are such that the breaches of 1% of the critical loads are so low that, having regard for the wider context, they are considered to be a minor retardation low enough to be ruled out from adverse

effects, having regard for the beneficial influence of the other factors listed above and reference to relevant evidence, case law and expert opinion.

- 4.88 Importantly, the conclusions drawn here are specific to Ashdown Forest SAC. Other European sites with air pollution sensitivities cannot be directly compared as the conclusion for Ashdown Forest is drawn from the combination of all relevant factors, some of which are site specific. Air pollution impacts at sites such as Epping Forest SAC may lead to a differing conclusion, notably due to the differing habitat interest features and complex ecological issues relating to options for site restoration.

5. Appropriate Assessment of Recreation Pressure Impacts

- 5.1 This section of this HRA report for the Site Allocations DPD at Regulation 18 stage considers the impact of recreation on Ashdown Forest, arising from increased housing proposed within the DPD. The impact of recreation has already been assessed as part of the HRA for the District Plan, and during the preparation of the District Plan the HRA informed the progression of a strategic approach to mitigating for the impact of recreation, as discussed below.
- 5.2 This section summarises the typical impacts of recreation on European sites and explains how Mid Sussex District Council has progressed a mitigation approach to date, before considering the specific mitigation needs to conclude that the Site Allocations DPD will not result in adverse effects on site integrity for Ashdown Forest SPA/SAC.

Summary of impacts of recreation on interest features

- 5.3 Recreation undertaken on European sites can lead to a number of impacts, and the risks posed by increasing access are now widely recognised, including habitat damage, disturbance of species, increased fire risk and nutrient enrichment from dog fouling.
- 5.4 Damage to the heathland habitats for which Ashdown Forest SAC is designated, and the habitats which in turn support the SPA bird interest, can be realised through footfall (or wheels) on individuals, vegetation and soils. Issues relate to vegetation wear, soil compaction and erosion, i.e. largely unintentional consequences from the passage of people, pets and vehicles. These issues relate to plants and soils, but then changes in habitat extent (e.g. through the widening of footpaths and path erosion) and structure can also have consequences for a range of species and trampling can result in direct mortality for some fauna. In addition, damage can be deliberate, for example vandalism.
- 5.5 Nutrient enrichment is potentially an important issue for Ashdown Forest, which warrants further discussion with Natural England to determine whether the SAMM measures should include measures to target this impact. Dogs will typically defecate within 10 minutes of a walk starting, and as a consequence most (but not all) deposition tends to occur within around 400m of a site entrance (Taylor *et al.*, 2005). In addition, most faeces are deposited close to the path, with a peak at approximately 1m from the path edge (Shaw, Lankey & Hollingham 1995). Dogs will also typically urinate at the start of a walk, but they will also urinate at frequent intervals during the walk. The total volume deposited on sites may be surprisingly large. At Burnham Beeches National

Nature Reserve over one year, Barnard (2003) estimated total amounts of 30,000 litres of urine and 60 tonnes of faeces from dogs.

- 5.6 Nutrient levels in soil (particularly nitrogen and phosphorous) are important factors determining plant species composition. On heathland, dog fouling is the equivalent to applying a high level of fertilizer, resulting in a reduction in species richness and the presence of species typically associated with more 'improved' habitats. The impacts of dog fouling can often be seen in the form of grassy edges of paths on many heaths with high levels of access. This can be exacerbated by trampling, which has a lesser effect on species such as grasses, which grow from the base rather than the tip.
- 5.7 Fires can be caused accidentally from discarded cigarettes, by sparks from a campfire, BBQs or from burning a dumped or stolen car, from fireworks, as a result of a controlled fire getting out of control, from discarded bottles in strong sunlight, from children playing with matches or similar, and from deliberate arson.
- 5.8 Disturbance occurs where human activity influences an animal's behaviour or survival. By far the majority of the literature (and there are thousands of studies) focuses on birds (for general reviews see Hockin *et al.* 1992; Hill *et al.* 1997; Brawn, Robinson & Ill 2001; Lowen *et al.* 2008; Whitfield, Ruddock & Bullman 2008; Showler 2010; Steven, Pickering & Guy Castley 2011).
- 5.9 The presence of people in the countryside will influence wildlife in many ways. For many species, the people or their pets (e.g. dogs) are a potential threat and as such it is to be expected that the response will be to modify behaviour, for example fleeing. The relative trade-off as to when to change behaviour and respond to the threat will relate to the perceived scale of the threat and the costs involved (e.g. lost foraging time). This perspective can be used to understand the behavioural responses to people and led one author to describe human disturbance as predation-free predators (Beale & Monaghan 2004).
- 5.10 With people (and their pets) viewed as potential predators, there is clearly a greater threat posed (and therefore a greater behavioural response) when, for example, there are more people, in larger groups (Beale & Monaghan 2004, 2005) or when people approach directly (Smith-Castro & Rodewald 2010) or faster (Bellefleur, Lee & Ronconi 2009).
- 5.11 Disturbance can therefore have a range of different impacts potentially affecting distribution, breeding success and health. Impacts can be chronic, for example otherwise suitable nesting habitat being completely avoided (e.g. Liley & Sutherland 2007) or more short-term in nature, for example birds becoming

alert and then resuming the initial activity (e.g. Fernandez-Juricic, Jimenez & Lucas 2001).

- 5.12 It is often difficult to separate different types of activities as at many sites multiple activities tend to overlap in space and time. Nonetheless, dogs are often identified as having a disproportionate effect (Lafferty 2001; Thomas, Kvitek & Bretz 2003; Banks & Bryant 2007; Taylor, Green & Perrins 2007; Liley & Fearnley 2012; Cavalli *et al.* 2016); dogs are likely to be perceived as a greater threat, will actively chase birds and are able to track wildlife by smell. Dog walking is generally one of the most popular activities undertaken at European sites, with visitors tending to favour expansive greenspaces where it is felt that dogs can be let off lead. A key aspect of European site mitigation for recreation pressure is therefore often considering how dog walking can be better managed to reduce impacts.

Establishing the parameters for likely significant effects in relation to recreation

- 5.13 Once a likely significant effect from recreation is identified, most strategic mitigation schemes for recreation pressure on European sites which are now in progress or in place around the country are founded on visitor survey work as evidence to inform the level and extent of visits and the type of activities undertaken. Strategic mitigation schemes for recreation tend to also consider data on housing numbers, both currently within the vicinity of a European site, and then those proposed for the future, normally as set out within an adopted or emerging Local Plan. Key evidence needed for a strategic mitigation scheme for recreation is the distance at which the majority of people travel to a site, and then the predicted visitor increases with new housing within that distance.
- 5.14 Questions asked during visitor surveys include distance travelled to the European site, and it is normally the case that the visit rate decreases with distance, reflecting that people who live further away are less likely to visit. Visit rates tend to reduce with distance, and then normally appear to flatten out at a particular distance, beyond which visits are consistently low.
- 5.15 The 75th percentile (i.e. the distance within which 75% of interviewees lived) from the interview data provides a good measure of a potential overall zone of influence and this has been used widely at other sites to define a zone of influence within which additional development will be likely to result in increased levels of access. The 75th percentile has been used at heathland sites (such as Cannock Chase SAC, the Dorset Heaths and the Thames Basin Heaths SPA), coastal sites (such as the Solent) and at woodland SAC sites such as Epping Forest SAC. While these sites differ in recreation use and habitat, the overall

principle is sound. The use of the 75th percentile means the area within which the majority of visitors live can be identified, i.e. the 'zone of influence' from within which the majority of visitors originate.

- 5.16 It is also possible to use visitor survey data to make predictions about future changes in visitor use. This is normally undertaken by dividing the number of interviewees by the volume of current housing to give a value for the number of interviewees per residential property, essentially a measure of visit rate. Predictions can then be made of how many interviewees might be expected, were the survey repeated in the future, taking into account the proposed levels of development within a zone of influence.

The strategic approach to mitigating for recreation pressure to date

- 5.17 A strategic and plan led approach to protecting European sites from the impact of recreation is now widely recognised as being more effective than dealing with these impacts on a development by development basis. For example, educating visitors, reinforcing messages with site-based staff, and providing the right infrastructure to meet visitor needs and influence visitor behaviour cannot all be funded through an individual development. Mitigation for recreation pressure needs to be a multi measure approach, with measures working together in an integrated way (i.e. as a package of different measures) to give confidence that adverse effects can be ruled out.
- 5.18 Mid Sussex District Council is currently working with neighbouring local planning authorities on a collaborative approach to assessing and mitigating for recreation impacts on Ashdown Forest SAC/SPA through on-site access management measures. Evidence has been used to establish a current zone of influence for recreation pressure, which is the zone within which it is deemed from available evidence that new development will contribute towards adverse effects on the site in the absence of mitigation. This zone was established and assessed within the Mid Sussex District Plan HRA, using visitor survey analysis (Clarke, Sharp & Liley 2010) that is explained in detail within the District Plan HRA at Section 6, and therefore not repeated here. The District Plan has been adopted with DP17 in place to provide for a 7km zone of influence, derived from the visitor survey analysis and the District Plan HRA. The 7km zone of influence is shown on Map 1.
- 5.19 A zone of influence is necessary to define an area where new development will result in increased risk, and therefore identifies where new development needs to contribute towards strategic level avoidance and mitigation measures. Such a zone is however difficult to define as there is unlikely to be a particular clear

boundary. In essence, people who live closer to a European site will be more likely to visit it and visit rates will decrease with distance away from the site, gradually tailing off further away from the European site.

- 5.20 The distribution curve for visits to Ashdown Forest showed a tail off of visitors at a 7km distance from the site, representing approximately 80% of visitors. A 7km zone of influence was therefore agreed between the local planning authorities surrounding Ashdown Forest and with Natural England as statutory nature conservation body.
- 5.21 The 7km zone of influence extends into Mid Sussex District, and is used by the local planning authorities in the vicinity of Ashdown Forest to identify a zone within which there is a need to mitigate for additional growth that brings further recreation pressure to Ashdown Forest. The strategic approach and 7km zone is supported by Natural England.
- 5.22 In 2016 a new visitor survey was undertaken (Liley, Panter & Blake 2016), commissioned by the local planning authorities. This updated survey work found that 75% of interviewees lived within 9.643km. As this point in time, the local planning authorities have agreed to continue with the established zone of influence of 7km, following consideration of the detailed findings.
- 5.23 In the 2016 visitor survey the average (mean) distance between interviewee's home postcode and survey point was 8,402m (± 803) and the median 4,870m¹¹. A quarter (25%) of interviewees lived within 1,459m of the survey point and three quarters (75th percentile) lived within 9,643m. Clearly 7km will catch a high proportion of interviewees. The distances cited above are 'as the crow-flies' from survey location to the interviewee's home postcodes. The 7km drawn around the SPA/SAC boundary and therefore extends to well beyond 7km from the survey points used in the 2016 survey (which were usually well inside the SPA/SAC boundary). As such the 7km boundary captures 353 (81%) of the 434 interviewee postcodes (excluding holiday makers). This would indicate that 7km remains a robust choice of distance which will encompass those locations from which new residents would be expected to visit Ashdown Forest.
- 5.24 Zones of influence used in other strategic mitigation schemes around the country for recreation pressure on designated sites range from 5km to 15km, and as such, 7km at Ashdown Forest SPA/SAC is entirely consistent with other schemes.

¹¹ The median represents the midpoint in the data and is so markedly different to the mean due to the skew in the data, such that a few very large distances can result in a high mean.

- 5.25 The cross boundary strategic approach to mitigating for recreation pressure on Ashdown Forest SPA/SAC draws on good practice from a number of other strategic approaches in place elsewhere, whilst recognising the need for a locally relevant strategy. A package of mitigation measures to manage recreation is primarily funded through developer contributions, i.e. any residential development within the 7km zone of influence pays a tariff to provide funding for mitigation measures, which are put in place over time as the funding pot is established with new development that comes forward.
- 5.26 The zone of influence identifies a zone within which additional housing will cumulatively add to the recreation pressure on Ashdown Forest SPA/SAC, using assumptions that new residents will undertake recreation in a similar way to the existing residents surveyed. The measures that are funded by developer contributions to manage access are either access management within the European site, known as Strategic Access Management and Monitoring (SAMM) or the provision of alternative natural recreation spaces to divert some of the recreation use, known as Suitable Alternative Natural Greenspace (SANG), which should provide a similar experience and offer good visitor facilities in response to identified need. Each net increase in dwellings coming forward in planning applications triggers a need for a developer contribution for both a SAMM and SANG payment, which is collected under S106 of the Town and Country Planning Act 1990. Where a developer is able to provide suitable SANG as part of the development, this replaces the need for the SANG payment.
- 5.27 An Interim SAMM Strategy has been in place since 2013 in Mid Sussex District, with the first delivery of a strategic SANG in 2015. The current tariff for both SAMM and SANG is set out within the strategy documents as part of a dedicated section of the Mid Sussex District Council website, where all background documentation and instructions for developers are provided.
- 5.28 With the strategic approach in place, this HRA for the Site Allocations DPD includes a review of the current progress of the strategic approach below, and in particular the options for the DPD to deliver some of the key aspects of mitigation. The question for the HRA of the Site Allocations DPD is therefore not in relation to the principle of the approach, but rather whether it can and is being delivered appropriately within Mid Sussex.

Assessing the recreation impact of the Site Allocations DPD

- 5.29 The total quantum of housing growth required for the Mid Sussex District, as set out within the District Plan, is 16,390 dwellings, to be delivered by a combination of strategic site allocations within the District Plan, and further site allocations within the Site Allocations DPD. The site allocations within the DPD are listed in Table 6 below, highlighting which are within the 7km zone of influence.

- 5.30 When planning applications come forward for development on these sites, any permission given will include the need to make a S106 payment in accordance with the current tariff for SAMM, and for SANG unless bespoke provision of suitable SANG forms part of the proposal.

Table 6: Housing and mixed-use allocations within and outside the 7km zone of influence

Allocation	No. of dwellings	7km	Development type
Land south of Hammerwood Road, Ashurst Wood	12	Yes	Housing
Land south of St. Stephens Church, Hamsland, Horsted Keynes	30	Yes	Housing
Land south of Crawley Down Road, Felbridge	200	Yes	Housing
Land south and west of Imberhorne Upper School, Imberhorne Lane, East Grinstead	550	Yes	Housing
Land South of The Old Police House, Birchgrove Road, Horsted Keynes	25	Yes	Housing
Land west of Selsfield Road, Ardingly	100	Yes	Housing
East Grinstead Police Station, College Lane, East Grinstead	22	Yes	Housing
Withypitts Farm, Selsfield Road, Turners Hill	16	Yes	Housing
Land north of Burleigh Lane, Crawley Down	50	Yes	Housing
Land to the north of Shepherds Walk Hassocks	130	No	Housing
Land at Hanlye Lane to the east of Ardingly Road, Cuckfield	55	No	Housing
Land South of Southway, Burgess Hill	Up to 30	No	Housing
Ansty Cross Garage, Cuckfield Road, Ansty	12	No	Housing
Rogers Farm, Fox Hill, Haywards Heath	Up to 25	No	Housing
Land South of 96 Folders Lane, Burgess Hill	43	No	Housing
Land to the north Lyndon, Reeds Lane, Sayers Common	Up to 35	No	Housing
Woodfield House, Isaacs Lane, Burgess Hill	30	No	Housing
Land to the rear Firlands, Church Road, Scaynes Hill	20	No	Housing
Land at St. Martin Close Handcross	Up to 35 at St Martin Close (West)	No	Housing
Land East of Keymer Road and South of Folders Lane, Burgess Hill.	300	No	Housing
Land to the south of Selby Close, Hammonds Ridge, Burgess Hill	Up to 12 flats plus community use	No	Mixed use
St. Wilfrids Catholic Primary School, School Close, Burgess Hill (committed in the Burgess Hill Neighbourhood Plan)	Mixed use up to 200 dwellings plus 100 dwellings and community facilities.	No	Mixed use

Review of SAMM provision

- 5.31 Mid Sussex District Council along with Lewes, Sevenoaks, Tandridge and Wealden District Councils and Tunbridge Wells Borough Council is finalising a Joint SAMM Strategy. The Joint SAMM Strategy will supersede the Mid Sussex Interim SAMM Strategy. Mid Sussex District Council is currently collecting SAMM contributions in accordance with its tariff. Mitigation so far has focussed on the publication of the Code of Conduct for Dog Walkers.
- 5.32 The collection of SAMM contributions is within adopted planning policy in the District Plan and is working well. The next steps are to progress with more of the SAMM measures, and this is the subject of ongoing discussions with the other local planning authorities. The SAMM aspects of the mitigation strategy will continue as the site allocations within the Site Allocations DPD are brought forward for development. It is therefore concluded that the SAMM aspects of the strategy will continue to be implemented, giving certainty in the function of this part of the strategy.

Review of SANG provision

- 5.33 Mid Sussex District Council secured the first strategic SANG at East Court and Ashplats Wood, East Grinstead, in 2014, with a lease to Mid Sussex District Council. SANG contributions have been collected since January 2015 to support the ongoing long-term management of this SANG, in accordance with the published SANG strategy for this site, provided on the Council website. The capacity of the SANG is calculated on the minimum good practice standard for SANGs as 8ha per 1,000 population. Mid Sussex District Council has monitored the contributions coming forward and the SANG at East Court and Ashplats Wood is nearing capacity. Further SANG provision is therefore required to support the site allocations within the Site Allocations DPD.
- 5.34 SANG provision requires land to be identified in the right location, of the right size and providing the potential to deliver a high quality natural greenspace that can go some way to replicate the experience of undertaking recreation at Ashdown Forest. There needs to be confidence that there is enough SANG provision to meet the required capacity. SANG provision should therefore be an integral part of plan making, establishing the key principles and locations at the plan level. Attempting to secure SANGs at the project level, without plan policy, will be very difficult, and development may be significantly delayed by a lack of SANG capacity available at the right time for development coming forward. Plan led measures give better certainty in delivery and additional SANG capacity should therefore be pursued as part of the development of the Site Allocations DPD.

- 5.35 Key considerations include the location, accessibility, size (both overall and ability to provide a long enough circular walk) and means of managing the sites into the long term. Alongside the progression of the Site Allocations DPD, Mid Sussex District Council is in active discussions with relevant parties to consider potential SANGs sites.
- 5.36 The Site Allocations DPD at Regulation 18 stage includes one site allocation with an adjoining area of search for potential SANG provision. This is SA20 Land South and West of Imberhorne Upper School, East Grinstead.
- 5.37 This potential SANG area is in a location that provides a feasible alternative to Ashdown Forest, being well related to the large concentration of growth to the north and west of East Grinstead. The site allocations within the 7km zone of influence provide for just over 1,000 dwellings. The allocation with an area of search for SANG identified as part of and adjacent to the allocation together amount to 750 dwellings, and the total area of search is large enough to function as a strategic SANG, providing more capacity than the site allocation to which they are associated.
- 5.38 Development at Hill Place Farm, East Grinstead for 200 dwellings has outline planning permission, with a reserved matters application currently submitted. The SANG part of the development has full planning permission, with some details to be resolved as set out within the S106 planning obligation. There is potential for a SANG to be developed that provides more capacity than the associated development and this is currently being explored by the Council with relevant parties.
- 5.39 SA20 includes and is adjacent to an area of search for SANG that the Council has identified to meet good practice standards for SANGs, including enabling a suitable walk length in an attractive natural setting. This potential SANG proposal offers a potentially viable option at this stage in plan making, and will be further refined for the Regulation 19 stage, when SANGs provision should be included to a level of detail in the plan to offer certainty in delivery to accommodate the level of residential growth proposed within the Site Allocations DPD in the 7km zone of influence.
- 5.40 It is therefore concluded that the SANG aspects of the strategy need further refinement, but are currently presenting viable options that should give certainty in the function of this part of the strategy at the next HRA iteration. Discussions with Natural England should take place to inform the next iteration of the HRA in relation to both SAMM and SANGs provision.

6. Conclusions

- 6.1 This HRA report is the start of the HRA process for the assessment of the Mid Sussex Site Allocations DPD. It has been undertaken at the Regulation 18 stage of plan making, when preferred options are explored and consulted upon.
- 6.2 The screening for likely significant effects has not identified any individual policy issues that pose a risk to European sites, rather the screening has flagged that the overall quantum of development requires further detailed assessment to consider the implications of growth for Ashdown Forest SPA/SAC in terms of air quality and recreation pressure impacts. These topics are assessed in further detail in the appropriate assessment sections of this HRA report.

Recreation pressure

- 6.3 The collection of SAMM contributions is within adopted planning policy in the District Plan and is working well. The SAMM aspects of the strategy will continue to be implemented, giving certainty in the function of this part of the strategy.
- 6.4 An area of search for SANG is included within the Site Allocations DPD, recognising the need for further SANG capacity following the implementation of the first strategic SANG at East Court and Ashplats Wood, East Grinstead, in 2015. The potential SANG offers a potentially viable option at this stage in plan making, and will be further refined for the Regulation 19 stage. This should give certainty in the function of this part of the strategy at the next HRA iteration. Discussions with Natural England should take place to inform the next iteration of the HRA in relation to both SAMM and SANGs provision.

Air quality

- 6.5 The traffic and air quality modelling results for the growth scenarios are such that the breaches of 1% of the critical loads are so low that, having regard for the wider context, they are considered to be a minor retardation low enough to be ruled out from adverse effects. This conclusion has regard for a number of beneficial factors and reference to relevant evidence, case law and expert opinion.

Recommendations and next steps

- 6.6 At this point in time, the Mid Sussex Site Allocations DPD does not present any potential risks to European sites that it is considered are not capable of being

mitigated. Policy DP17 in the District Plan ensures that both SAMP and SANG measures for Ashdown Forest SPA/SAC are progressed. However, it is essential that further work continues in building on the appropriate assessment to inform the next stage of plan making and give certainty to the Council as the competent authority that adverse effects on European site integrity can be ruled out. This report will therefore be updated and expanded accordingly to inform the Regulation 19 stage of plan making.

- 6.7 It should be noted that the HRA process is iterative and this report will continue to be updated at any further stages until the plan is adopted. This may include any modifications to the plan that are proposed as a result of the Examination. These are likely to require a final check for HRA compliance and a final HRA record before adoption of the plan will be made.

7. References

- Banks, P.B. & Bryant, J.V. (2007) Four-legged friend of foe? Dog-walking displaces native birds from natural areas. *Biology Letters*, **3**, 611–613.
- Barnard, A. (2003) Getting the Facts - Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. *Countryside Recreation*, **11**, 16–19.
- Beale, C.M. & Monaghan, P. (2004) Human disturbance: people as predation-free predators? *Journal of Applied Ecology*, **41**, 335–343.
- Beale, C.M. & Monaghan, P. (2005) Modeling the Effects of Limiting the Number of Visitors on Failure Rates of Seabird Nests. *Conservation Biology*, **19**, 2015–2019.
- Bellefleur, D., Lee, P. & Ronconi, R.A. (2009) The impact of recreational boat traffic on Marbled Murrelets (*Brachyramphus marmoratus*). *Journal of Environmental Management*, **90**, 531–538.
- Bobbink, R., Hornung, M. & Roelofs, J.G.M. (1998) The effects of air-borne nitrogen pollutants on species diversity in natural and semi-natural European vegetation. *Journal of Ecology*, **86**, 717–738.
- Brawn, J., Robinson, S. & III, F.T. (2001) The role of disturbance in the ecology and conservation of birds. *Annual review of Ecology and Systematics*, **32**, 251–276.
- Cavalli, M., Baladrón, A.V., Isacch, J.P., Biondi, L.M. & Bó, M.S. (2016) Differential risk perception of rural and urban Burrowing Owls exposed to humans and dogs. *Behavioural Processes*, **124**, 60–65.
- Clarke, R.T., Sharp, J. & Liley, D. (2010) *Ashdown Forest Visitor Survey Data Analysis*. Natural England Commissioned Report, Natural England.
- Fernandez-Juricic, E., Jimenez, M.D. & Lucas, E. (2001) Alert distance as an alternative measure of bird tolerance to human disturbance: implications for park design. *Environmental Conservation*, **3**, 263–269.
- Hall, C.M., Bryant, K.A., Haskard, K., Major, T., Bruce, S. & Calver, M.C. (2016) Factors determining the home ranges of pet cats: A meta-analysis. *Biological Conservation*, **203**, 313–320.
- Hill, D., Hockin, D., Price, D., Tucker, G., Morris, R. & Treweek, J. (1997) Bird disturbance: Improving the quality and utility of disturbance research. *Journal of Applied Ecology*, **34**, 275–288.
- Hockin, D., Ounsted, M., Gorman, M., Hill, D., Keller, V. & Barker, M.A. (1992) Examination of the effects of Disturbance on birds with reference to its importance in Ecological Assessments. *Journal of Environmental Management*, **36**, 253–286.

- Kirby, J.S. & Tantram, D.A.S. (1999) *Monitoring Heathland Fires in Dorset: Phase 1*.
- Lafferty, K. (2001) Birds at a Southern California beach: seasonality, habitat use and disturbance by human activity. *Biodiversity and Conservation*, **10**, 1949–1962.
- Liley, D. & Fearnley, H. (2012) *Poole Harbour Disturbance Study*. Footprint Ecology / Natural England.
- Liley, D., Panter, C. & Blake, D. (2016) *Ashdown Forest Visitor Survey 2016*. Unpublished report by Footprint Ecology for Wealden, Mid Sussex, Lewes, Tunbridge Wells, Tandridge and Sevenoaks District Councils.
- Liley, D. & Sutherland, W.J. (2007) Predicting the population consequences of human disturbance for Ringed Plovers *Charadrius hiaticula*: a game theory approach. *Ibis*, **149**, 82–94.
- Lowen, J., Liley, D., Underhill-Day, J. & Whitehouse, A.T. (2008) Access and Nature Conservation Reconciliation: supplementary guidance for England.
- Metsers, E.M., Seddon, P.J. & van Heezik, Y.M. (2010) Cat-exclusion zones in rural and urban-fringe landscapes: how large would they have to be? *Wildlife Research*, **37**, 47–56.
- Shaw, P.J.A., Lankey, K. & Hollingham, S.A. (1995) Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. *The London Naturalist*, **74**, 77–82.
- Showler, D. (2010) *What Is the Impact of Public Access on the Breeding Success of Ground-Nesting and Cliff-Nesting Birds*. Systematic Review; completed review report, Collaboration for Environmental Evidence, Bangor University.
- Smith-Castro, J.R. & Rodewald, A.D. (2010) Behavioral responses of nesting birds to human disturbance along recreational trails. *Journal of Field Ornithology*, **81**, 130–138.
- Steven, R., Pickering, C. & Guy Castley, J. (2011) A review of the impacts of nature based recreation on birds. *Journal of Environmental Management*, **92**, 2287–2294.
- Stevens, C.J., Duprè, C., Dorland, E., Gaudnik, C., Gowing, D.J.G., Bleeker, A., Diekmann, M., Alard, D., Bobbink, R., Fowler, D., Corcket, E., Mountford, J.O., Vandvik, V., Aarrestad, P.A., Muller, S. & Dise, N.B. (2011) The impact of nitrogen deposition on acid grasslands in the Atlantic region of Europe. *Environmental Pollution*, **159**, 2243–2250.
- Taylor, E.C., Green, R.E. & Perrins, J. (2007) Stone-curlews *Burhinus oedicnemus* and recreational disturbance: developing a management tool for access. *Ibis*, **149**, 37–44.
- Thomas, R.L., Baker, P.J. & Fellowes, M.D.E. (2014) Ranging characteristics of the domestic cat (*Felis catus*) in an urban environment. *Urban Ecosystems*, **17**, 911–921.
- Thomas, K., Kvitek, R.G. & Bretz, C. (2003) Effects of human activity on the foraging behavior of sanderlings *Calidris alba*. *Biological Conservation*, **109**, 67–71.

Underhill-Day, J.C. (2005) *A Literature Review of Urban Effects on Lowland Heaths and Their Wildlife*. English Nature, Peterborough.

Whitfield, D.P., Ruddock, M. & Bullman, R. (2008) Expert opinion as a tool for quantifying bird tolerance to human disturbance. *Biological Conservation*, **141**, 2708–2717.

8. Appendix 1 - The Habitats Regulations Assessment Process

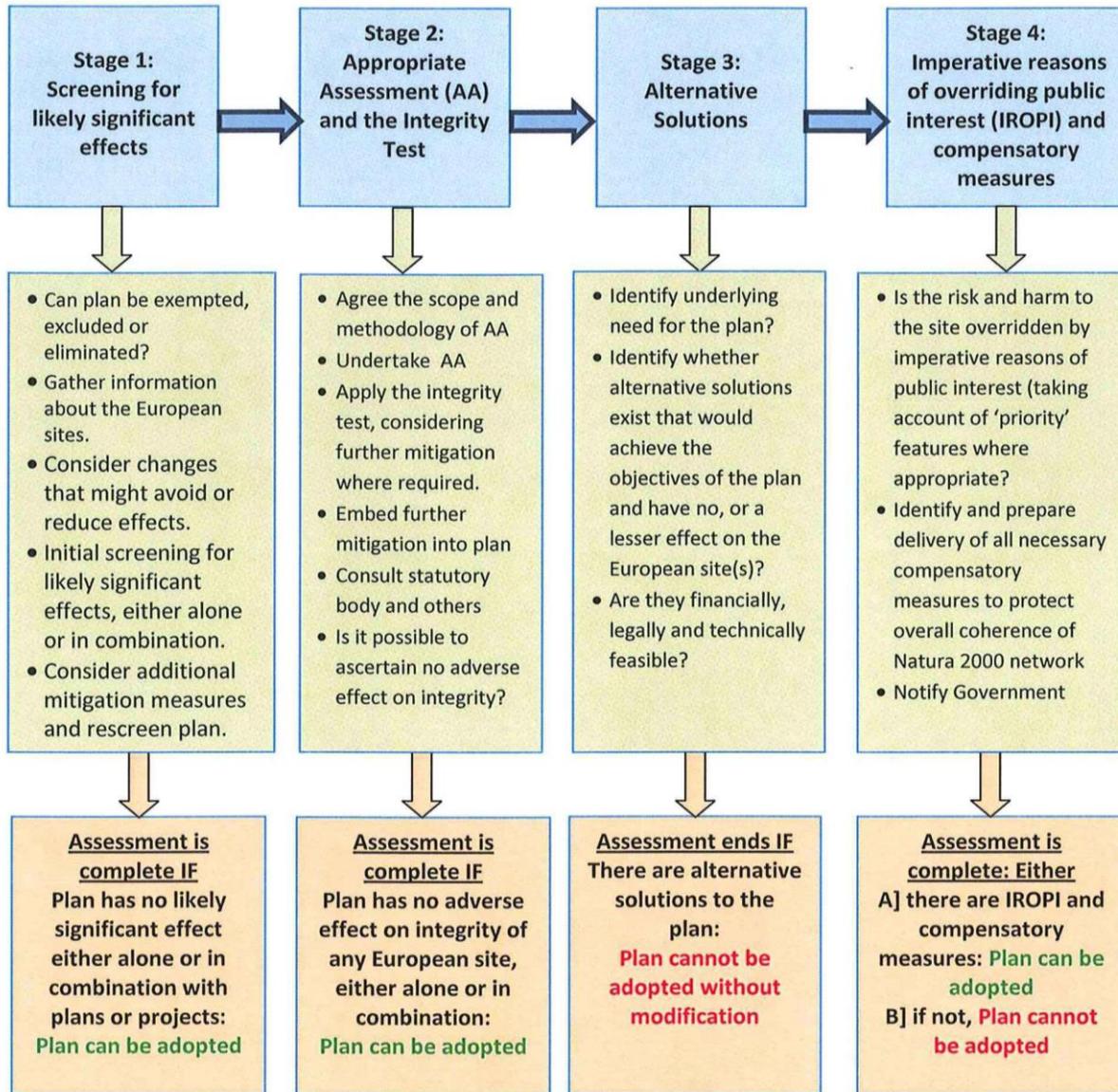
- 8.1 The designation, protection and restoration of European wildlife sites is embedded in the Conservation of Habitats and Species Regulations 2017, as amended which are commonly referred to as the 'Habitats Regulations.' The most recent version of the Habitats Regulations does not affect the principles of European site assessment as defined by the previous Regulations, and which forms the focus of this report. Regulation numbers have changed from the 2010 Regulations. A further update was made in 2018.
- 8.2 The Habitats Regulations are in place to transpose European legislation set out within the Habitats Directive (Council Directive 92/43/EEC), which affords protection to plants, animals and habitats that are rare or vulnerable in a European context, and the Birds Directive (Council Directive 2009/147/EC), which originally came into force in 1979, and which protects rare and vulnerable birds and their habitats. These key pieces of European legislation seek to protect, conserve and restore habitats and species that are of utmost conservation importance and concern across Europe. Although the Habitats Regulations transpose the European legislation into domestic legislation, the European legislation still directly applies, and in some instances, it is better to look to the parent Directives to clarify particular duties and re-affirm the overarching purpose of the legislation.
- 8.3 European sites include Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) classified under the Birds Directive. The suite of European sites includes those in the marine environment as well as terrestrial, freshwater and coastal sites. European sites have the benefit of the highest level of legislative protection for biodiversity. Member states have specific duties in terms of avoiding deterioration of habitats and species for which sites are designated or classified, and stringent tests have to be met before plans and projects can be permitted, with a precautionary approach embedded in the legislation, i.e. it is necessary to demonstrate that impacts will not occur, rather than they will. The overarching objective is to maintain sites and their interest features in an ecologically robust and viable state, able to sustain and thrive into the long term, with adequate resilience against natural influences. Where sites are not achieving their potential, the focus should be on restoration.
- 8.4 The UK is also a contracting party to the Ramsar Convention, which is a global convention to protect wetlands of international importance, especially those

wetlands utilised as waterfowl habitat. In order to ensure compliance with the requirements of the Convention, the UK Government expects all competent authorities to treat listed Ramsar sites as if they are part of the suite of designated European sites, as a matter of government policy, as set out in paragraph 176 of the National Planning Policy Framework. Most Ramsar sites are also a SPA or SAC, but the Ramsar features and boundary lines may vary from those for which the site is designated as a SPA or SAC.

- 8.5 It should be noted that in addition to Ramsar sites, the National Planning Policy Framework also requires the legislation to be applied to potential SPAs and possible SACs, and areas identified or required for compensatory measures where previous plans or projects have not been able to rule out adverse effects on site integrity, yet their implementation needs meet the exceptional tests of Regulation 64 of the Habitats Regulations, as described below.
- 8.6 The step by step process of HRA is summarised in the diagram below. Within the Habitats Regulations, local planning authorities, as public bodies, are given specific duties as ‘competent authorities’ with regard to the protection of sites designated or classified for their species and habitats of European importance. Competent authorities are any public body individual holding public office with a statutory remit and function, and the requirements of the legislation apply where the competent authority is undertaking or implementing a plan or project, or authorising others to do so. Regulation 63 of the Habitats Regulations sets out the HRA process for plans and projects, which includes development proposals for which planning permission is sought. Additionally, Regulation 105 specifically sets out the process for assessing emerging land use plans.
- 8.7 The step by step approach to HRA is the process by which a competent authority considers any potential impacts on European sites that may arise from a plan or project that they are either undertaking themselves or permitting an applicant to undertake. The step by step process of assessment can be broken down into the following stages, which should be undertaken in sequence:
- Check that the plan or project is not directly connected with or necessary for the management of the European site
 - Check whether the plan or project is likely to have a significant effect on any European site, from the plan or project alone
 - Check whether the plan or project is likely to have a significant effect on any European site, from the plan or project in-combination with other plans or projects
 - Carry out an Appropriate Assessment
 - Ascertain whether an adverse effect on site integrity can be ruled out

- 8.8 Throughout all stages, there is a continual consideration of the options available to avoid and mitigate any identified potential impacts. A competent authority may consider that there is a need to undertake further levels of evidence gathering and assessment in order to have certainty, and this is the Appropriate Assessment stage. At this point the competent authority may identify the need to add to or modify the project in order to adequately protect the European site, and these mitigation measures may be added through the imposition of particular restrictions and conditions.
- 8.9 For plans, the stages of HRA are often quite fluid, with the plan normally being prepared by the competent authority itself. This gives the competent authority the opportunity to repeatedly explore options to prevent impacts, refine the plan and rescreen it to demonstrate that all potential risks to European sites have been successfully dealt with.
- 8.10 When preparing a plan, a competent authority may therefore go through a continued assessment as the plan develops, enabling the assessment to inform the development of the plan. For example, a competent authority may choose to pursue an amended or different option where impacts can be avoided, rather than continue to assess an option that has the potential to significantly affect European site interest features.
- 8.11 After completing an assessment, a competent authority should only approve a project or give effect to a plan where it can be ascertained that there will not be an adverse effect on the integrity of the European site(s) in question. In order to reach this conclusion, the competent authority may have made changes to the plan, or modified the project with restrictions or conditions, in light of their Appropriate Assessment findings.
- 8.12 Where adverse effects cannot be ruled out, there are further exceptional tests set out in Regulation 64 for plans and projects and in Regulation 107 specifically for land use plans. Exceptionally, a plan or project could be taken forward for imperative reasons of overriding public interest where adverse effects cannot be ruled out and there are no alternative solutions. It should be noted that meeting these tests is a rare occurrence and ordinarily, competent authorities seek to ensure that a plan or project is fully mitigated for, or it does not proceed.
- 8.13 In such circumstances where a competent authority considers that a plan or project should proceed under Regulations 64 or 107, they must notify the relevant Secretary of State. Normally, planning decisions and competent authority duties are then transferred, becoming the responsibility of the Secretary of State, unless on considering the information, the planning authority is directed by the Secretary of State to make their own decision on the plan or

project at the local level. The decision maker, whether the Secretary of State or the planning authority, should give full consideration to any proposed 'overriding reasons' for which a plan or project should proceed despite being unable to rule out adverse effects on European site interest features, and ensure that those reasons are in the public interest and are such that they override the potential harm. The decision maker will also need to secure any necessary compensatory measures, to ensure the continued overall coherence of the European site network if such a plan or project is allowed to proceed.



Extract from *The Habitats Regulations Assessment Handbook*, www.dtapublications.co.uk
 © DTA Publications Limited (September) 2013 all rights reserved
 This work is registered with the UK Copyright Service

Figure 1: Outline of the assessment of plans under the Habitat Regulations

9. Appendix 2 – Conservation Objectives

- 9.1 As required by the Directives, 'Conservation Objectives' have been established by Natural England, which should define the required ecologically robust state for each European site interest feature. All sites should be meeting their conservation objectives. When being fully met, each site will be adequately contributing to the overall favourable conservation status of the species or habitat interest feature across its natural range. Where conservation objectives are not being met at a site level, and the interest feature is therefore not contributing to overall favourable conservation status of the species or habitat, plans should be in place for adequate restoration.
- 9.2 Natural England has embarked on a project to renew all European site Conservation Objectives, in order to ensure that they are up to date, comprehensive and easier for developers and consultants to use to inform project level HRAs in a consistent way. In 2012, Natural England issued a set of generic European site Conservation Objectives, which should be applied to each interest feature of each European site. These generic objectives are the first stage in the project to renew conservation objectives, and the second stage, which is to provide more detailed and site-specific information for each site to support the generic objectives, has recently been completed.
- 9.3 The new list of generic Conservation Objectives for each European site includes an overarching objective, followed by a list of attributes that are essential for the achievement of the overarching objective. Whilst the generic objectives currently issued are standardised, they are to be applied to each interest feature of each European site, and the application and achievement of those objectives will therefore be site specific and dependant on the nature and characteristics of the site. The second stage, provision of the more supplementary information to underpin these generic objectives, is nearing completion and is now providing much more site-specific information, and this detail will play a fundamental role in informing HRAs, and importantly will give greater clarity to what might constitute an adverse effect on a site interest feature. Natural England advises that HRAs should be supported by comprehensive and up to date background information that is locally relevant.
- 9.4 For SPAs, the overarching objective is to:
- 9.5 'Avoid the deterioration of the habitats of qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.'

- 9.6 This is achieved by, subject to natural change, maintaining and restoring:
- The extent and distribution of the habitats of the qualifying features.
 - The structure and function of the habitats of the qualifying features.
 - The supporting processes on which the habitats of the qualifying features rely.
 - The populations of the qualifying features.
 - The distribution of the qualifying features within the site.

- 9.7 For SACs, the overarching objective is to:

‘Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.’

- 9.8 This is achieved by, subject to natural change, maintaining and restoring:

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

- 9.9 Conservation objectives inform any HRA of a plan or project, by identifying what the interest features for the site should be achieving, and what impacts may be significant for the site in terms of undermining the site’s ability to meet its conservation objectives. Site specific supplementary advice highlights the importance of typical species, processes or ecological characteristics that are critical to the interest features of the site. Within the supplementary advice these are normally referred to as ‘attributes’ and can refer to a range of ecological characteristics such as population number, extent of habitat or a supporting process such as hydrology. Each attribute has a ‘target’ for the required condition of the attribute.