Appendix F
Air Quality Assessment

F.1 This addendum sets out the full Appropriate Assessment of air quality impacts undertaken since the Local Plan Regulation 19 consultation. The air quality assessment modelling report, by Air Quality Consultants (Logika), is included as an annex within this addendum.

F.2 Traffic data provided for the Reg.19 HRA indicated that there will be likely significant effects associated with vehicle emissions at Portholme SAC, Devil's Dyke SAC, and Ouse Washes SAC/SPA/Ramsar, due to the Local Plan alone or in combination with development from other sources (development included in the traffic model is set out in paragraph 4.73 of the HRA report).

F.3 Air quality assessment has therefore been undertaken by Air Quality Consultants (see Appendix A). The assessment has used dispersion modelling to predict the concentrations of nitrogen oxides, ammonia, nitrogen deposition and acid deposition, where roads pass within 200m of a Habitats Site. The results have been presented in Air Quality Consultants' report (see Annex within this Appendix) to show:

- The critical loads/levels that have been applied for each pollutant at each transect, based on the habitats present.
- The predicted total concentrations of each pollutant at a 2023 baseline, and 2046 future baselines, with and without the Local Plan and growth from other sources.
- The change over the plan period, due to the Local Plan alone and in combination, and whether that exceeds the screening criteria of 1% of the relevant critical load/level.
- Where background levels of a pollutant are falling, whether additional development associated with the plan delays the restoration of critical loads/levels by more than a year or not ('retardation').

F.4 This addendum takes the findings of the air quality assessment and considers whether the predicted increases in air pollutants could have an adverse effect on the integrity of the Habitats Sites.

Appropriate Assessment methodology

F.5 The Appropriate Assessment of the air quality assessment results has involved the following:

- Where the air quality assessment has been unable to screen out air quality impacts, information has been drawn from the assessment to understand which pollutants require further consideration and how far from the road significant increases in those pollutants could occur.
- Desktop assessment of the SAC, SPA, and Ramsar site habitats and species likely to be present in those areas, habitat condition, and their vulnerability/sensitivity to the relevant pollutants.
- Calculation of the approximate area of the SACs, SPA, and Ramsar site that is potentially impacted by the exceedances, as an indicator of the scale of impact.
- Professional judgement as to whether, taking into account the above, there will be an adverse effect on the integrity of any Habitats Site, due to the Local Plan alone or in combination; and therefore whether any further work or mitigation is required.

F.6 This assessment has been undertaken with reference to Natural England's 2025 standing advice **[See reference 1]** for the assessment of air pollution and development. The key steps of which are:

1. Check if emissions will reach a protected site – determined through the air quality assessment (Appendix A) and summarised below.
2. Check relevant 'critical loads' and 'critical levels' – set out in the air quality assessment (Appendix A).
3. Check if agricultural developments can use an emissions reduction approach - not relevant in this case.
4. Consider the proposal in combination with other projects – determined through the air quality assessment (Appendix A) and summarised below.
5. Complete a detailed air quality assessment – set out in this addendum.

F.7 The Natural England guidance states that the detailed air quality assessment should include: checking protected site details; considering whether total concentration of pollutants (predicted environmental contribution) will exceed critical loads, consideration of trends in background air quality, considering whether there

will be an adverse effect alone or in combination, and what mitigation may be required.

F.8 The total concentration of pollutants, exceedance of critical loads, and pollutant trends are set out in the air quality modelling report (see Annex 1) and summarised in paragraphs F.13-F.15. The ecological desk study (paragraphs F.16-F.39) confirms the Habitats Sites' qualifying features and information on supporting habitats and processes (e.g. as set out in Conservation Objectives Supplementary Advice **[See reference 2]**), as well as research to understand what habitats are present in the areas affected by predicted increases in air pollution. Whilst National Vegetation Classification (NVS) survey data is not available for these Habitats Sites, a broad assessment of the qualifying features within each Habitats Site has been undertaken using the following data sources:

- Aerial photography (Google Earth);
- Natural England designated sites information; and
- Defra's MAGiC Map **[See reference 3]**.

F.9 To provide additional information about each individual SAC, SPA, and Ramsar Site, Site Improvement Plans (SIP) and other supplementary advice [reference 2, as above] has been reviewed in the context of understanding whether air quality poses a potential threat to each Habitats Site meeting its Conservation Objectives. A review of the site condition has also been undertaken, based on available information from Natural England on the underlying Site of Special Scientific Interest (SSSI) Units, to better understand whether the site's ability to meet its Conservation Objectives has already been impacted by poor air quality. Natural England divides SSSIs into units, where there are different features within a site, and surveys each unit periodically to monitor unit condition. The boundaries, unit number, and information about the condition (e.g. 'favourable', or 'unfavourable') for each unit are published on Defra's MAGiC mapping site. It is considered that robust conclusions can be reached on the basis of this approach and on the information which is available.

F.10 'Adverse effects on integrity' are determined with reference to each site's Conservation Objectives. The following overarching Conservation Objective is standard for all SACs:

> Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:
>
> - The extent and distribution of qualifying natural habitats and habitats of qualifying species;

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

F.11 The following overarching Conservation Objective is standard for all SPAs:

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

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

F.12 Where there are additional Conservation Objectives for qualifying features, relating to air quality, these are set out in the information for each Habitats Site (Chapter 2).

Summary of air quality data relevant to the Appropriate Assessment

F.13 The air quality assessment (see Appendix A) has been able to screen out air pollution impacts for some pollutants at each of the three Habitats Sites. These have been screened out either because the total concentration (predicted environmental concentration; PEC) will remain below the relevant critical load/level, even with the Local Plan and growth from other sources; or because the change in pollution over the plan period is less than 1% of the relevant critical load/level. The data supporting this is set out in Chapter 4 of the air quality assessment and summarised in Table 8 in the assessment. In summary, the findings based on the information in Table 8 of the air quality assessment are that:

It is possible to discount all impacts except:

- Devil's Dyke SAC – ammonia (NH_3) concentrations and nitrogen deposition;
- Ouse Washes SAC, SPA and Ramsar - ammonia concentrations and nitrogen deposition;
- Portholme SAC – nitrogen deposition.

F.14 These pollutants are therefore the focus of this Appropriate Assessment.

F.15 The findings of the air quality assessment for these pollutants are summarised below in Tables 1.1-1.3, with reference to the transect locations (e.g. 'Portholme A') as described in the air quality assessment). The distance from the road is presented as a range, as the transect points provided by the air quality consultants are the furthest points at which exceedance does not occur; therefore the 1% threshold is crossed between that point and the previous transect point.

Table F.1: Summary of air quality assessment findings for locations screened in – Portholme SAC

Transect location	Pollutant	Max. distance from road that 1% threshold is exceeded – Local Plan alone	Max. distance from road that 1% threshold is exceeded – Local Plan in combination
Portholme A, south of A1307	Nitrogen deposition	44-65m	129-200m

Table F.2: Summary of air quality assessment findings for locations screened in – Devil's Dyke SAC

Transect location	Pollutant	Max. distance from road that 1% threshold is exceeded – Local Plan alone	Max. distance from road that 1% threshold is exceeded – Local Plan in combination
Devil's Dyke South; north of A1304	Nitrogen deposition	9-17m	65-129m

Transect location	Pollutant	Max. distance from road that 1% threshold is exceeded – Local Plan alone	Max. distance from road that 1% threshold is exceeded – Local Plan in combination
Devil's Dyke South; north of A1304	Ammonia	17-33m	65-129m
Devil's Dyke North; south of A14	Nitrogen deposition	n/a	200m
Devil's Dyke North; south of A14	Ammonia	n/a	200m

Table F.3: Summary of air quality assessment findings for locations screened in – Ouse Washes SAC,SPA/Ramsar

Transect location	Pollutant	Max. distance from road that 1% threshold is exceeded – Local Plan alone	Max. distance from road that 1% threshold is exceeded – Local Plan in combination
Ouse A, north of A1123	Nitrogen deposition	5-9m	65-129m
Ouse B, west of B1381	Nitrogen deposition	n/a	17-33m
Ouse C, southwest of A142	Nitrogen deposition	n/a	65-129m
Ouse C, southwest of A142	Ammonia	n/a	2-3m
Ouse D, northeast of A142	Nitrogen deposition	n/a	65-129m
Ouse D, northeast of A142	Ammonia	n/a	5-9m

Habitat presence and sensitivity

F.16 This section collates the information available on the habitats present and their likely sensitivity to nitrogen deposition (all three Habitats Sites) and ammonia (Devil's Dyke SAC and Ouse Washes SPA/Ramsar).

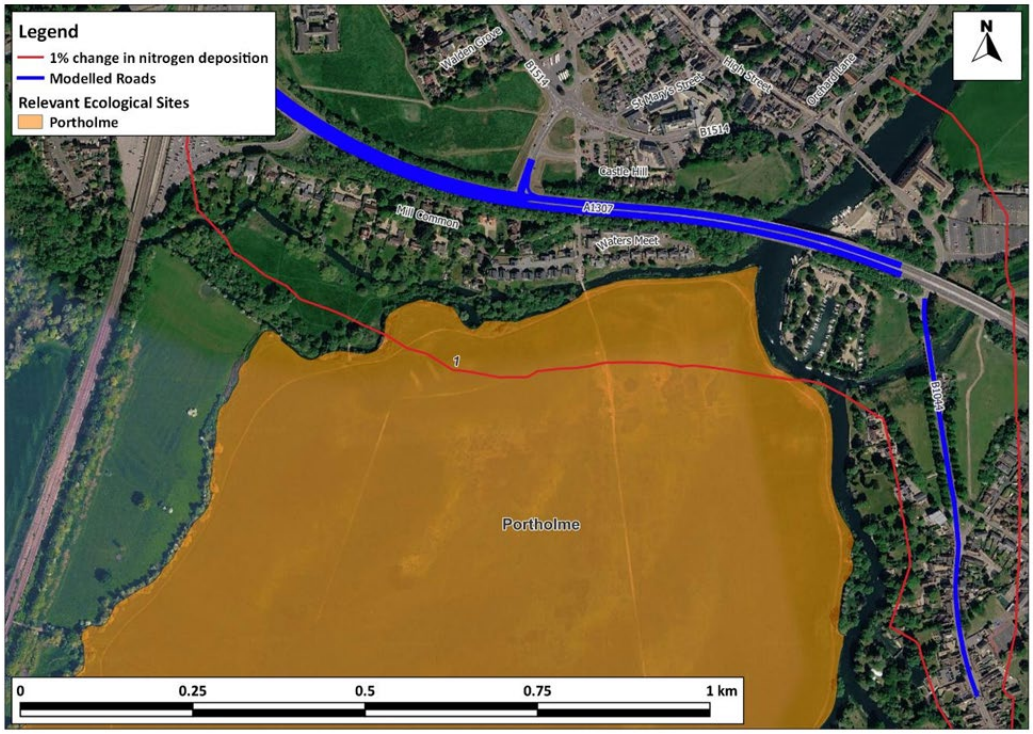
Portholme SAC

F.17 A1307 ('Portholme A'): the air quality data shows that nitrogen deposition will increase by >1% of the critical load screening threshold up to 200m from the road, due to the Local Plan in combination (and up to 65m due to the Local Plan alone). There is no exceedance of the ammonia screening threshold. The SAC is c.40m from this road at its nearest point, therefore habitats within 40-200m of the road have been studied. The areas in which the 1% screening threshold are exceeded due to the Local Plan alone and in-combination are shown in Figures 24 and 25 in the air quality assessment and are reproduced below (Figures 2.1 and 2.2); the area of exceedance is between the road and the red line.

Figure F.1: Area of Portholme SAC in which nitrogen deposition exceeds the screening threshold due to the Local Plan alone



Figure F.2: Area of Portholme SAC in which nitrogen deposition exceeds the screening threshold due to the Local Plan in combination



F.18 Qualifying features of the SAC:

- 6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)

F.19 Site improvement plan (SIP) and supplementary advice for conservation objectives:

- Natural England's SIP (2014 **[See reference 4]**) does not include air pollution as a pressure or threat to the site.
- The supplementary advice **[See reference 5]** says that lowland hay meadows are sensitive to changes in air quality, stating: "This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it."
- The target for air quality in the supplementary advice is to "Maintain as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk)".

F.20 SSSI condition **[See reference 6]**:

- The exceedance of the screening threshold occurs within Unit 1 of the underlying SSSI (the only SSSI unit for this site). This unit is in 'unfavourable recovering' condition (assessed 2011). There is no detail on the reasons for this condition assessment.

F.21 Habitat potentially impacted:

- Priority habitat data (on MAGiC) shows that, with the exception of a small area well away from the A1307, all of the SAC is mapped as lowland meadows, in the priority habitat inventory. The qualifying habitat ('lowland hay meadows') may therefore be present throughout the site.
- Aerial imagery (MAGiC) and Google streetview **[See reference 7]** indicate that the area within 200m of the A1307 contains a footpath around the perimeter of the SAC and some riparian habitats alongside the River Great Ouse. Away from the river (beyond c.10m), the affected area appears typical of the rest of the SAC and likely to be lowland hay meadow.
- The National Vegetation Classification (NVC) community that corresponds **[See reference 8]** with the SAC qualifying habitat is MG4 *Alopecurus pratensis – Sanguisorba officinalis* characterised by species-rich swards containing frequent red fescue *Festuca rubra*, crested dog's-tail *Cynosurus cristatus*, meadow foxtail *Alopecurus pratensis*, great burnet *Sanguisorba officinalis*, meadowsweet *Filipendula ulmaria* and meadow buttercup *Ranunculus acris*. It provides the main habitat in the UK for fritillary *Fritillaria meleagris*, and the site supports a small population of fritillary **[See reference 9]**.
- Portholme SAC is floodplain meadow, which typically floods in winter and spring. The site is used to grow hay, which is cut in the summer; and then the site is grazed by livestock. Hay cutting removes nitrogen from a meadow (as the hay is removed from the site) and grazing introduces nitrogen from animal droppings. Flooding can remove deposited air pollutants, before they are taken up by plants, but can also bring nutrient input from other sources.

F.22 Area of the SAC affected:

- The area in which the screening criteria is exceeded due to the Local Plan in combination (up to 200m from the road), as measured using Google Earth, is approximately 5ha, or c.5.5% of the total SAC area.

F.23 Potential effect of nitrogen deposition on habitat, over the plan period:

- Source attribute data from APIS **[See reference 10]** shows that road transport contributes 12.9% of the total nitrogen deposition at the SAC. The local contribution of vehicle emissions to nitrogen deposition between 2012-2018 (the

years for which the data is available) has fallen, whilst local contributions of other sources such as livestock and fertiliser application have risen.

- The nitrogen deposition expected as a result of the plan (in combination), up to a maximum of 15.0 kgN/ha/yr, exceeds the minimum critical load of 10 kgN/ha/yr. The maximum concentrations are predicted at the roadside; further information is provided in the air quality modelling report (Annex 1).
- The potential impacts associated with nitrogen deposition on neutral grasslands **[See reference** 11**]** are as follows:
  - "Increases in proportion of productive grasses at expense of fine leaved grasses.
  - Reduces species richness, especially among forbs.
  - Possible reductions in productivity.
  - Changes in species composition.
  - Loss of rare or endangered species.
  - Loss of annuals and forbs will have implications for sustainability, due to the short lived nature of the seed bank and the isolation of many of these small areas of grassland.
  - Loss of floral diversity, especially forbs/ herbs can reduce nutritional quality, nutrient levels, for grazing animals and increased prevalence of more common species such as perennial ryegrass *Lolium perenne*, Timothy grass *Phleum pratense*, cocks-foot *Dactylis glomerata*, broad-leaved dock *Rumex obtusifolius*."
- Nitrogen deposition has potential to influence the extent, distribution, structure and function of the lowland hay meadow grassland and therefore, the ability for the site to meet its Conservation Objectives.

Ouse Washes SAC, SPA and Ramsar site

F.24 The air quality data shows that the following will exceed 1% of the critical load screening threshold, as follows:

- A1123 ('Ouse A'): nitrogen deposition exceeds the screening threshold up to 129m from the road, due to the Local Plan in combination (and 9m due to the Local Plan alone). There is no exceedance of the screening threshold for ammonia. The SAC/SPA/Ramsar is adjacent to the A1123, at its nearest point; therefore, habitats within 0-129m of this road have been studied. The area of the SPA/Ramsar in which the 1% screening threshold is exceeded due to the

Local Plan alone and in-combination is shown in Figures 16, 21 and 23 in the air quality assessment and are reproduced below (Figures 2.3, 2.4 and 2.5). Note that the SAC, not shown on the figures, is a narrow strip (c.100m) within the western edge of the SPA/Ramsar site.

- B1381 ('Ouse B'): nitrogen deposition exceeds the screening threshold up to 33m from the road, due to the Local Plan in combination (there is no exceedance from nitrogen deposition, due to the Local Plan alone; and no exceedance due to ammonia, alone or in combination). The SPA/Ramsar is adjacent to the B1381; therefore, habitats within 0-33m of this road have been studied. See Figures 2.3 and 2.5, as above. The SAC is not affected in this location.
- A142 ('Ouse C', southwest of the road): nitrogen deposition exceeds the screening threshold up to 129m from the road; and ammonia up to 3m from the road, due to the Local Plan in combination. There is no exceedance due to the Local Plan alone. The A142 passes over the SPA/Ramsar; therefore, habitats within 0-129m of this road have been studied. The area in which the 1% screening threshold is exceeded due to the Local Plan in-combination is shown in Figures 14 and 22 in the air quality assessment and are reproduced below (Figures 2.6 and 2.7). The SAC is a narrow strip (c.60m) within the western edge of the SPA/Ramsar site, in this location.
- A142 ('Ouse D', northeast of the road): nitrogen deposition exceeds the screening threshold up to 129m from the road, and ammonia up to 9m from the road, due to the Local Plan in combination. There is no exceedance due to the Local Plan alone. The A142 passes over the SAC/SPA/Ramsar; therefore, habitats within 0-129m of this road have been studied. See Figures 2.6 and 2.7, as above.

Figure F.3: Area of Ouse Washes SPA/Ramsar (A & B) in which ammonia exceeds the screening threshold due to the Local Plan in combination

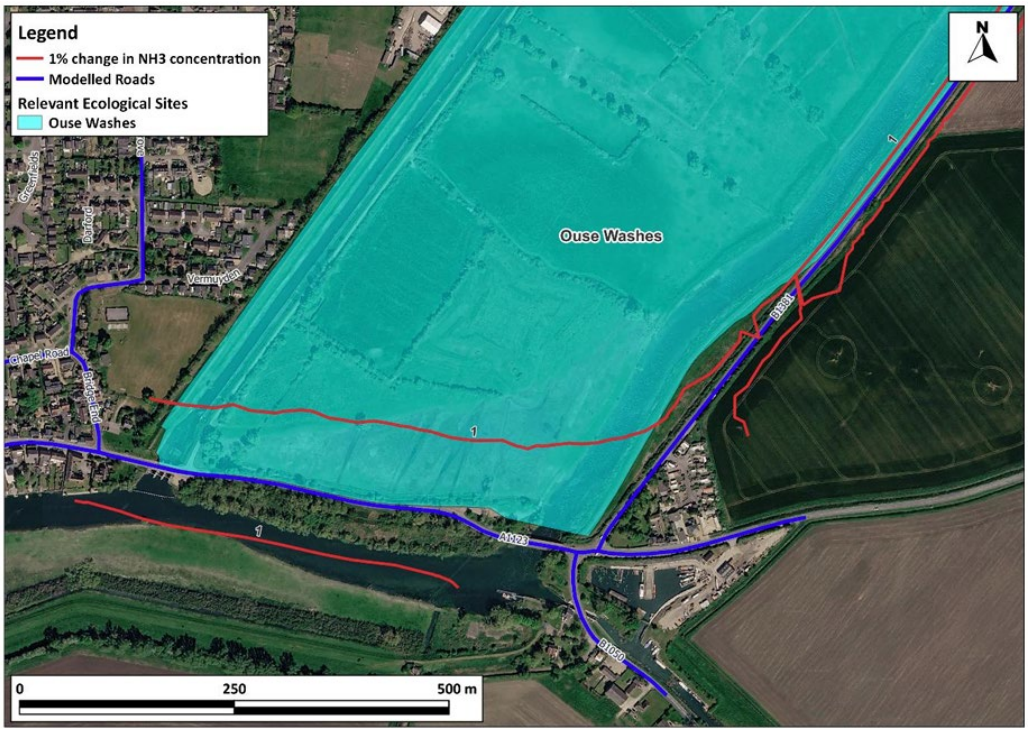


Figure F.4: Area of Ouse Washes SPA/Ramsar (A & B) in which nitrogen deposition exceeds the screening threshold due to the Local Plan alone

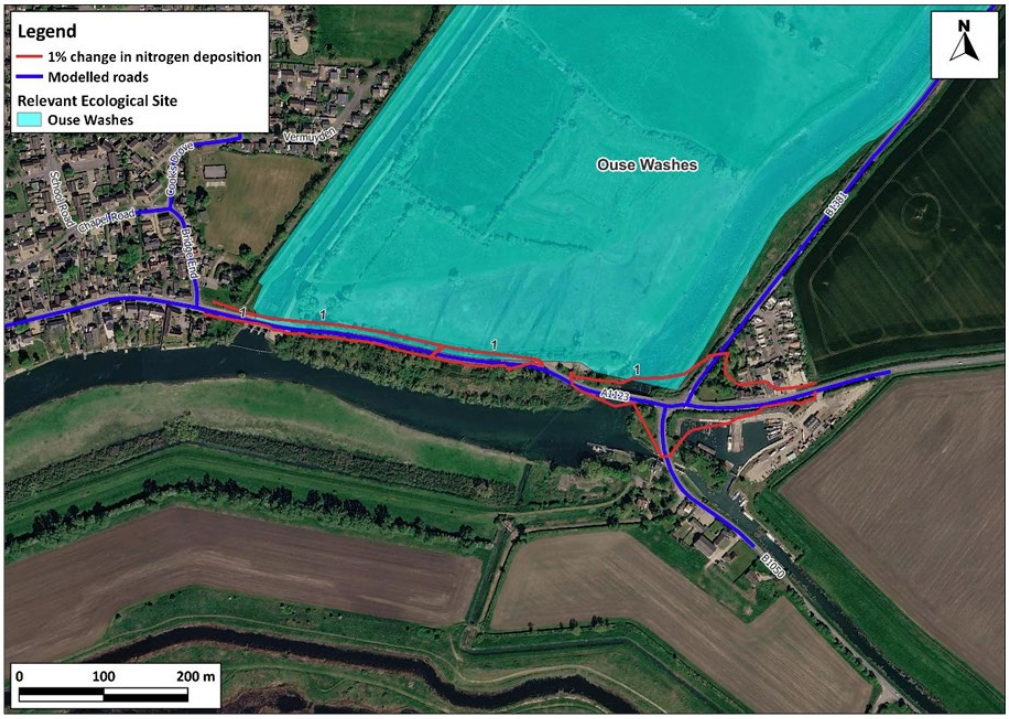


Figure F.5: Area of Ouse Washes SPA/Ramsar (A & B) in which nitrogen deposition exceeds the screening threshold due to the Local Plan in combination

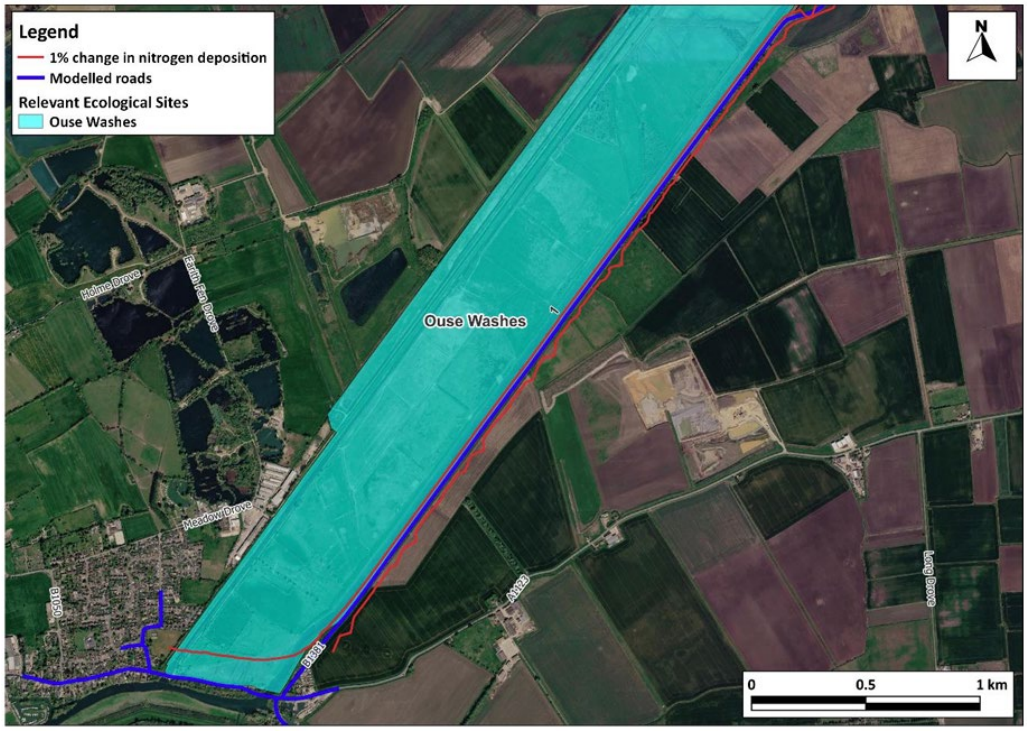


Figure F.6: Area of Ouse Washes SPA/Ramsar (C & D) in which ammonia exceeds the screening threshold due to the Local Plan in combination

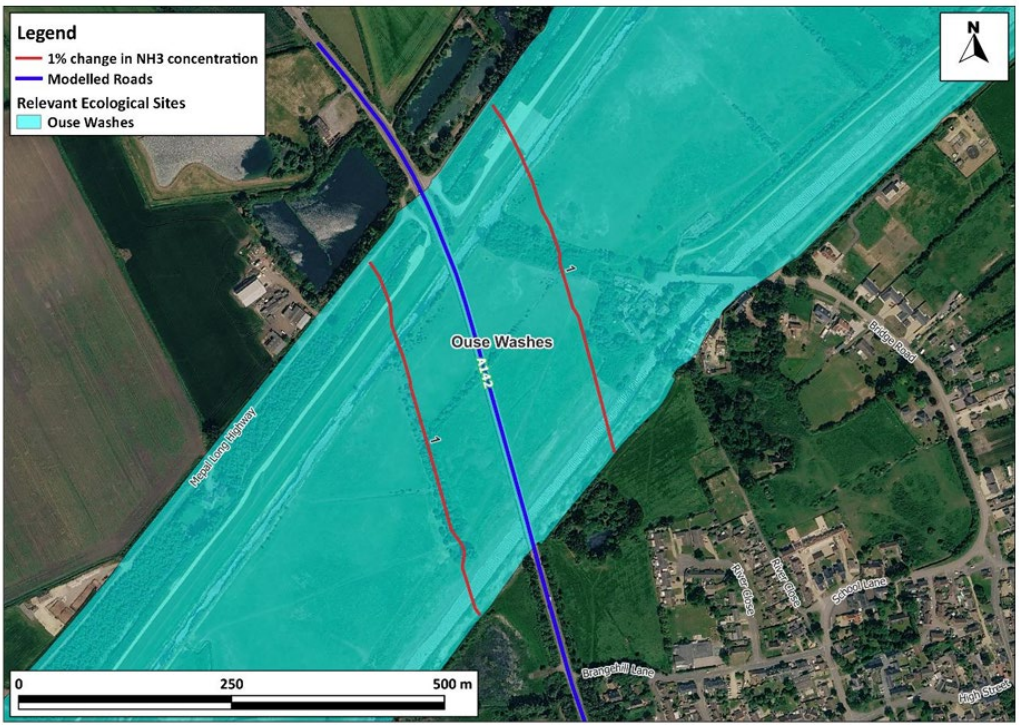
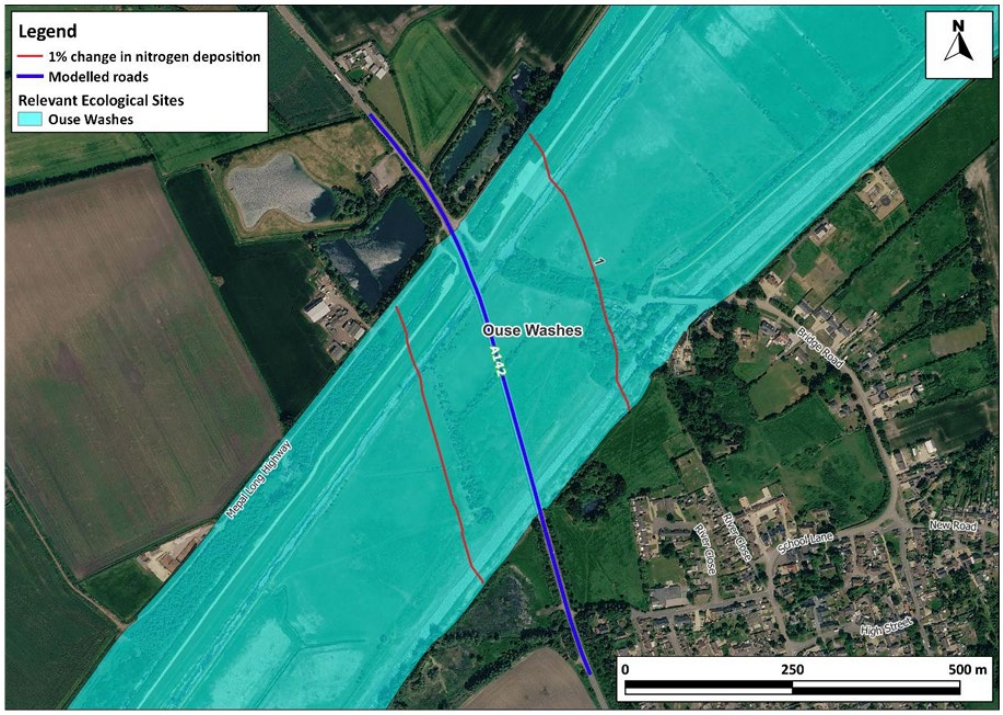


Figure F.7: Area of Ouse Washes SPA/Ramsar (C & D) in which nitrogen deposition exceeds the screening threshold due to the Local Plan in combination



F.25 Qualifying features of the SPA **[See reference** 12**]**:

- A037 *Cygnus columbianus bewickii*; Bewick's swan (Non-breeding);
- A038 *Cygnus cygnus;* Whooper swan (Non-breeding);
- A050 *Anas penelope;* Eurasian wigeon (Non-breeding);
- A051 *Anas strepera;* Gadwall (Breeding);
- A052 *Anas crecca;* Eurasian teal (Non-breeding);
- A053 *Anas platyrhynchos;* Mallard (Breeding);
- A054 *Anas acuta;* Northern pintail (Non-breeding);
- A055 *Anas querquedula;* Garganey (Breeding);
- A056 *Anas clypeata*; Northern shoveler (Non-breeding);
- A056 *Anas clypeata;* Northern shoveler (Breeding);
- A082 *Circus cyaneus*; Hen harrier (Non-breeding);
- A151 *Philomachus pugnax;* Ruff (Breeding);
- A156a *Limosa limosa limosa;* Black-tailed godwit (Breeding);

- Waterbird assemblage; and
- Breeding bird assemblage.

F.26 Qualifying features of the SAC **[See reference** 13**]**:

- *Cobitis taenia,* spined loach.

F.27 Qualifying features of the Ramsar site **[See reference** 14**]**:

- Ramsar criterion 1 – The site is one of the most extensive areas of seasonally-flooding washland of its type in Britain.
- Ramsar criterion 2 – The site supports several nationally scarce plants, including small water pepper *Polygonum minus*, whorled water-milfoil *Myriophyllum verticillatum*, greater water parsnip *Sium latifolium*, river waterdropwort *Oenanthe fluviatilis*, fringed water-lily *Nymphoides peltata*, long-stalked pondweed *Potamogeton praelongus*, hair-like pondweed *Potamogeton trichoides*, grass-wrack pondweed *Potamogeton compressus*, tasteless water-pepper *Polygonum mite* and marsh dock *Rumex palustris*. Invertebrate records indicate that the site holds relict fenland fauna, including the British Red Data Book species large darter dragonfly *Libellula fulva* and the rifle beetle *Oulimnius major*. The site also supports a diverse assemblage of nationally rare breeding waterfowl associated with seasonally flooding wet grassland.
- Ramsar criterion 5 – The site regularly supports waterfowl assemblages of international importance (59,133 peak mean), in winter.
- Ramsar criterion 6 – The site regularly supports 1% of the individuals in a population of one species or subspecies of waterbird, as detailed above for the SPA, and including Bewick's swan, Whooper swan, Eurasian wigeon, gadwall, Eurasian teal, northern pintail, and northern shoveler.

F.28 SIP and supplementary advice for conservation objectives:

- Natural England's SIP (2014, **[See reference** 15**]**) does not include air pollution as a pressure or threat to the site.
- The supplementary advice **[See reference** 16**]** for the SPA (not available for Ramsar sites) states that "Exceeding critical values for air pollutants may result in changes to the chemical status of its habitat substrate, accelerating or damaging plant growth, altering vegetation structure and composition and thereby affecting the quality and availability of nesting, feeding or roosting habitats." It also states that "Air quality is currently within acceptable limits for the notified features and their habitats." This is the case for all of the SPA qualifying bird species.

- The target for air quality (in the supplementary advice, and for all SPA species) is: “Maintain concentrations and deposition of air pollutants to at or below the site relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System”.

F.29 SSSI condition **[See reference** 17**]**:

- The areas of exceedance of screening thresholds occur within SSSI Units 15,18, 19, 22, and 23 within 129m of the A1123, SSSI Units 22 and 23 within 33m of the B1318, and SSSI Units 10, 11, 18, 19, 20, 21, 22, and 23 within 200m of the A142.
- The habitat types within each relevant SSSI Unit are as follows:
  - Unit 10, 11 and 15 – neutral grassland;
  - Unit 19, 21 and 23 – improved grassland; and
  - Unit 18, 20 and 22 – rivers and streams.
- Units 19, 21, 22, and 23 were in ‘favourable’ condition, however units 10, 11, 15, 18, and 20 were in ‘unfavourable – no change’ condition (assessed 2024) due to: losses in supporting habitat for SSSI birds such as wigeon, which require short grassland for foraging and have been subject to loss of foraging land due to flooding in these SSSI units; various plans not being underway such as the Water Pollution Plan impacting Spined Loach; and an investigation into the impacts of invasive species on SSSI features. Air pollution or other forms of nutrient pollution, beyond water pollution, more generally is not mentioned in the SSSI condition assessments.

F.30 Species potentially impacted:

- Priority habitat data (on MAGiC) shows that the majority of the SPA/Ramsar is mapped as coastal and floodplain grazing marsh, in the priority habitat inventory. There are also waterbodies (including the River Delph and New Bedford River) and some tracks and buildings within the boundary of the SPA/Ramsar. The qualifying bird and plant species may therefore be present throughout the majority of the site.
- Aerial imagery (MAGiC) and Google streetview shows the following in proximity to the roads being considered:
  - A1123: there is a line of trees separating the road from the floodplain habitat, which will provide some interception of pollutants.
  - B1381: 33m from the road (the maximum distance to which screening thresholds would be exceeded) is the middle of the New Bedford River

channel. Between the channel and road are mixed roadside and riparian vegetation.

- A142: the road passes over the watercourses c.10m above the river. There are tracks through the SPA/Ramsar on both sides of the road, and some homes (possibly an old farm) within the SPA/Ramsar boundary to the northeast. The area within which the exceedance of ammonia occurs (to 9m of the road northeast and 3m to southwest) is unlikely to contain the site's qualifying species.

- APIS data for the SAC shows that the site's qualifying feature, spined loach, may be affected by nutrient nitrogen impacts on its broad habitat, depending whether the habitat is nitrogen- or phosphorus- limited. There are no critical loads for nitrogen deposition or acid deposition, and the species is listed as not being sensitive to NOx or ammonia.
- APIS data for the SPA shows that Bewick's swan and Whooper swan are not sensitive to nutrient nitrogen impacts on their habitat, and their broad habitats are also not sensitive to nitrogen. Other habitats utilised by the SPA's qualifying bird species are sensitive to nitrogen, including dwarf shrub heath, littoral sediment, neutral grassland, fen, marsh, and swamp, and standing open water and canals. Only Eurasian wigeon and black-tailed godwit can be sensitive to nutrient nitrogen impacts on their broad habitat, however for wigeon this relates to saltmarsh which is not present at the SPA/Ramsar. The remaining qualifying features are not sensitive to nutrient nitrogen impacts on their broad habitats. Data relating to qualifying features' sensitivity to nutrient nitrogen impacts within standing open water and canals is site specific. Therefore, black-tailed godwit are likely to be sensitive to nutrient nitrogen impacts on habitats within the SPA and Ramsar site, and other qualifying bird species may have site-specific sensitivities to nitrogen impacts on habitats within the site, such as floodplain grazing marsh.
- There is no APIS data available for the Ramsar site. For the bird species, the sensitivities will be as for the SPA. For the plant species, it will depend on whether the plant is submerged (less sensitive to nitrogen deposition from the air as water flows carry pollutants away) or emergent (may be more sensitive to nitrogen deposition).
- Ramsar qualifying plant species that are submerged and therefore less sensitive to nitrogen deposition from the air include long-stalked pondweed, hair-like pondweed, and grass-wrack pondweed. These species are found in lakes, rivers, canals, ponds and ditches, and usually in still or slow flowing waters. Qualifying plant species that are emergent and therefore may be more sensitive to nitrogen deposition from the air include small water-pepper,

tasteless water-pepper, and marsh dock; which grow in wet or damp habitats near lakes, ponds, streams or rivers, and ditches; and river waterdropwort and fringed water-lily which grow at varying depths in meso-eutrophic small rivers, streams, lakes, ponds, canals and fenland ditches. Whorled water-milfoil which grows in meso-eutrophic lakes, streams, canals and ditches, while usually considered submerged, develops an emergent growth form when water levels drop during drier periods. Greater water parsnip, which grows on the edges of dykes, ditches and drains in fens and alluvial levels, germinates underwater producing submerged leaves and later develops into a mature emergent plant **[See reference** 18**] [See reference** 19**] [See reference** 20**]**.

- Therefore, small water-pepper, tasteless water-pepper, marsh dock, river waterdropwort, fringed water-lily, whorled water-milfoil, and greater water parsnip are likely to be more exposed to atmospheric nitrogen within the Ramsar site.
- The Botanical Society of Britain and Ireland state that threats to whorled water-milfoil include eutrophication from agricultural run-off and atmospheric nitrogen pollution and declines to the aquatic habitat of greater water parsnip are partially due to pollution, including nutrient run-off from agricultural land. Similarly, river water dropwort is sensitive to pollution, including excessive eutrophication **[See reference** 21**]**.
- In contrast to this, CIEEM guidance **[See reference** 22**]** sets out the following:
  - Freshwater habitats are generally (although not always) phosphorous-limited. This means that, in an unpolluted waterbody, phosphorus is the scarcest primary macronutrient.
  - Exception to this is for ‘poor fens’ which are acidic fens in regards to pH that are strongly nitrogen limited.
  - ‘Rich fens’ (such as Ouse Washes) are relatively alkaline fens in regards to pH and these are phosphorous-limited.
  - This is reflected in the critical loads applied to poor fens vs rich fens.
  - In a phosphorus-limited system, high nitrogen availability will not result in a deleterious effect on vegetation provided that phosphorus availability is controlled.
  - In freshwater systems, very high levels of rainfall may have a similar flushing effect since nitrogen is easily washed out of soils.
  - Water table level and precipitation have been identified as modifying factors for some habitats; bogs and heathland habitats are considered to be less sensitive to nitrogen in wetter areas than drier areas.

- Based on the knowledge that the majority of areas of the Ouse Washes are subject to significant flooding, such as the Ouse Washes Habitat Creation Project **[See reference** 23**]** **[See reference** 24**]**, which is ongoing to address the loss of foraging habitat for wigeon; it is likely that nutrient impacts through flooding are more of a threat to the qualifying plant species, than by atmospheric impacts. Flooding was reported as impacting the condition of a total of 15 SSSI units, based on recent SSSI monitoring undertaken in 2024 including Units 10, 11, and 15 which comprise lowland neutral grassland for which these plant species are likely to be present.

F.31 Area of the SAC/SPA/Ramsar affected:

- The areas in which the screening criteria are exceeded for nitrogen deposition, due to the Local Plan in combination is c.23ha (c.4ha by the A1123, c.11ha by the B1381, and c.8ha by the A142), or c.0.9% of the total SPA/Ramsar area. The area of the SAC affected by the Local Plan in combination is c.2.8ha, or c.0.9% of the SAC.

F.32 Potential effect of nitrogen deposition and ammonia, over the plan period:

- Source attribute data from APIS shows that road transport contributes 10.5% of the total nitrogen deposition at the site. The local contribution of vehicle emissions to nitrogen deposition between 2012-2018 (the years for which the data is available) has fallen, whilst local contributions of other sources such as livestock and fertiliser application have risen. In relation to local sources, 13.7% of nitrogen deposition is attributed to road transport; whereas fertiliser applications (18.1%) and livestock (21.5%) are among the highest of local contributions. These intensive agricultural sources of nitrogen are likely to be especially relevant for the aquatic species (e.g. spined loach, and submerged and emergent plants), where run off will be key in relation to water quality and nutrient enrichment.
- Eutrophic systems such as the Ouse Washes are likely to be phosphorous-limited rather than nitrogen. Therefore, impacts of nitrogen deposition from air pollution are likely to be less relevant when considering impacts to these species.
- The nitrogen deposition expected as a result of the plan (in combination), up to a maximum of 21.6 kgN/ha/yr, exceeds the minimum critical load of 10 kgN/ha/yr. Levels of ammonia concentration expected as a result of the plan (in combination), up to a maximum of 3.36 µg/m^3, also exceed the critical level of 3 µg/m^3. The maximum concentrations are predicted at the roadside; further information is provided in the air quality modelling report (Annex 1).

- APIS **[See reference 11]** states that the potential impacts associated with nitrogen deposition (including from ammonia) on neutral grasslands **[see reference 9]** are as follows:
  - "Increases in proportion of productive grasses at expense of fine leaved grasses.
  - Reduces species richness, especially among forbs.
  - Possible reductions in productivity.
  - Changes in species composition.
  - Loss of rare or endangered species.
  - Loss of annuals and forbs will have implications for sustainability, due to the short lived nature of the seed bank and the isolation of many of these small areas of grassland.
  - Loss of floral diversity, especially forbs/ herbs can reduce nutritional quality, nutrient levels, for grazing animals and increased prevalence of more common species such as perennial ryegrass *Lolium perenne*, Timothy grass *Phleum pratense*, cocks-foot *Dactylis glomerata*, broad-leaved dock *Rumex obtusifolius*."
- This has potential to influence the extent, distribution, structure and function of the neutral grassland and therefore, the ability for the site to meet its Conservation Objectives.
- APIS states that potential impacts associated with nitrogen deposition on floodplain grazing marsh **[See reference 25]** are as follows:
  - "Increase graminoid biomass, with potentially adverse effects on forbs."
- This has potential to influence the extent, distribution, structure and function of the floodplain grazing marsh.
- As stated above, for the SPA, this is most likely to impact upon black-tailed godwit.
- APIS states that the potential impacts associated with nitrogen deposition (including from ammonia) on fen, marsh and swamp are as follows **[See reference 26]**:
  - "In acidic situations:
    - Losses of *Sphagnum* species either directly via nitrogen-induced toxicity or indirectly through shading by increased vascular plants growth.

- Loss of *Sphagnum* mosses will destabilise the ecosystem through effects on acidity and knock on implications for carbon cycling and decomposition.

- In base rich situations:
  - Increases in tall graminoids such as *Molinia* spp. and decreases in diversity of subordinate species.
  - Brown moss species are likely to decline while NH4+ [ammonium] tolerant *Sphagnum contortum* increases.
  - Reduced numbers of bryophyte species and biomass, thinning of the moss carpet.
  - Increase in vascular plant biomass, especially in response to NH4+."

- APIS states that the potential impacts associated with nitrogen deposition (including from ammonia) on rivers and streams are as follows **[See reference** 27**]**:
  - "Deposition of ammonia, nitrate and other forms of nitrogen from the atmosphere could be an important source of nitrogen in some upland catchments where intensive agricultural activity is absent. Detailed nitrogen budgets, however, do not exist, so the relative inputs from atmospheric deposition are unknown. In such cases, increasing nitrogen inputs from atmospheric sources are likely to have ecological impacts. In most lowland rivers and burns, nitrogen inputs from catchment land-use, not deposition from the atmosphere, are likely to be much more significant."

- APIS states that the potential impacts associated with nitrogen deposition (including from ammonia) on standing open water and canals are as follows **[See reference** 28**]**:
  - "In eutrophic standing waters:
    - Deposition of ammonia, nitrate and other forms of nitrogen from the atmosphere is unlikely to be the largest source of this nutrient to eutrophic standing waters and, therefore, in general, N deposition is unlikely to be very harmful to eutrophic standing waters, even when close to sources.
  - In mesotrophic standing waters:
    - Deposition of ammonia, nitrate and other forms of nitrogen from the atmosphere could be an important source of this nutrient in mesotrophic standing waters. Detailed nitrogen budgets of mesotrophic lakes, however, do not exist, so the relative inputs from atmospheric deposition are unknown."

- As stated above, given that the Ouse is a eutrophic system which is also subject to significant flooding, the emergent plants of the Ramsar site including small water-pepper, tasteless water-pepper, marsh dock, river water dropwort, fringed water-lily, whorled water-milfoil, and greater water parsnip, are not likely to be impacted significantly by air pollution, and are more likely to be impacted by nutrient enrichment and eutrophication from other sources including water pollution.
- Nitrogen deposition from air traffic emissions therefore has limited potential to influence the extent, distribution, structure, and function of the habitats of the qualifying features and the supporting processes on which the habitats of the qualifying features rely.

Devil's Dyke SAC

F.33 The air quality data shows that nitrogen deposition and ammonia will exceed 1% of the critical load screening threshold, as follows:

- A1304 ('Devil's Dyke South'): up to 129m from the road due to the Local Plan in combination, for both ammonia and nitrogen deposition. Due to the Local Plan alone, the distances are up to 17m from the road for nitrogen deposition and up to 33m for ammonia. The SAC is c.5m from the A1304, at its nearest point; therefore, habitats within 5-129m of this road have been studied. The areas in which the 1% screening threshold are exceeded due to the Local Plan alone and in-combination are shown in Figures 11, 13, 18 and 20 in the air quality assessment and are reproduced below (Figures 2.8, 2.9, 2.10 and 2.11).
- A14 ('Devil's Dyke North'): all of the 200m transect from the road, due to the Local Plan in combination, for both ammonia and nitrogen deposition. There is no exceedance due to the Local Plan alone. The SAC is c.150m from the A14 at its nearest point (c.180m to the furthest edge of the road); therefore, habitats within 150-200m of this road have been studied. The areas in which the 1% screening threshold are exceeded due to the Local Plan alone and in-combination are shown in Figures 12 and 19 in the air quality assessment and are reproduced below (Figures 2.12 and 2.13). Note that, the 1% screening threshold (in combination) is exceeded beyond 200m from the A14, therefore Figure 2.12 shows additional contours (2%, 3%, 4% critical load), for information.

Figure F.8: Area of Devil's Dyke SAC (south) in which ammonia exceeds the screening threshold due to the Local Plan alone

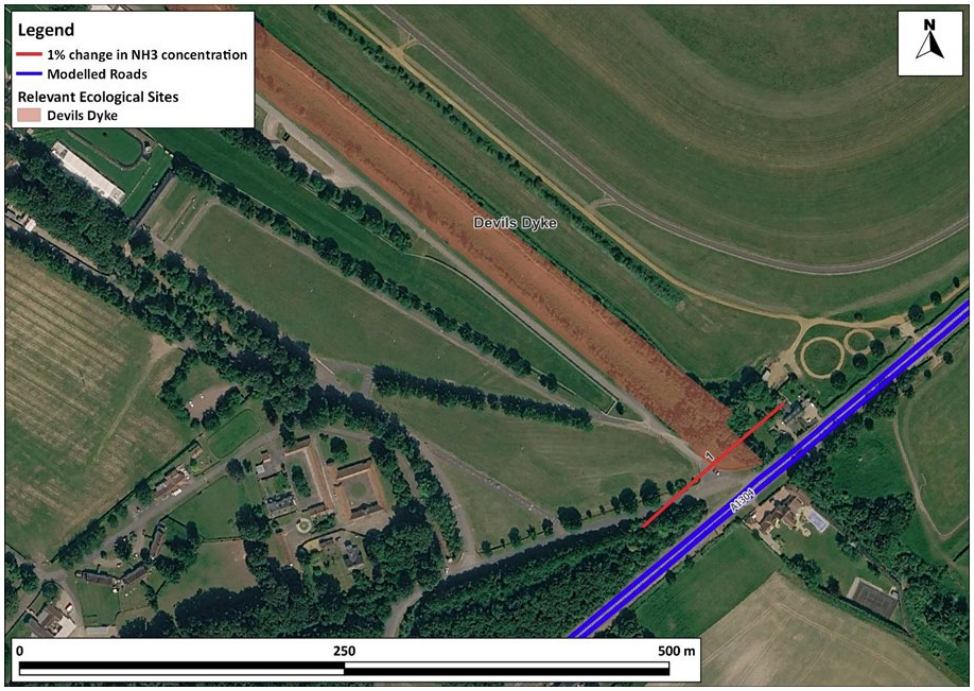


Figure F.9: Area of Devil's Dyke SAC (south) in which ammonia exceeds the screening threshold due to the Local Plan in combination

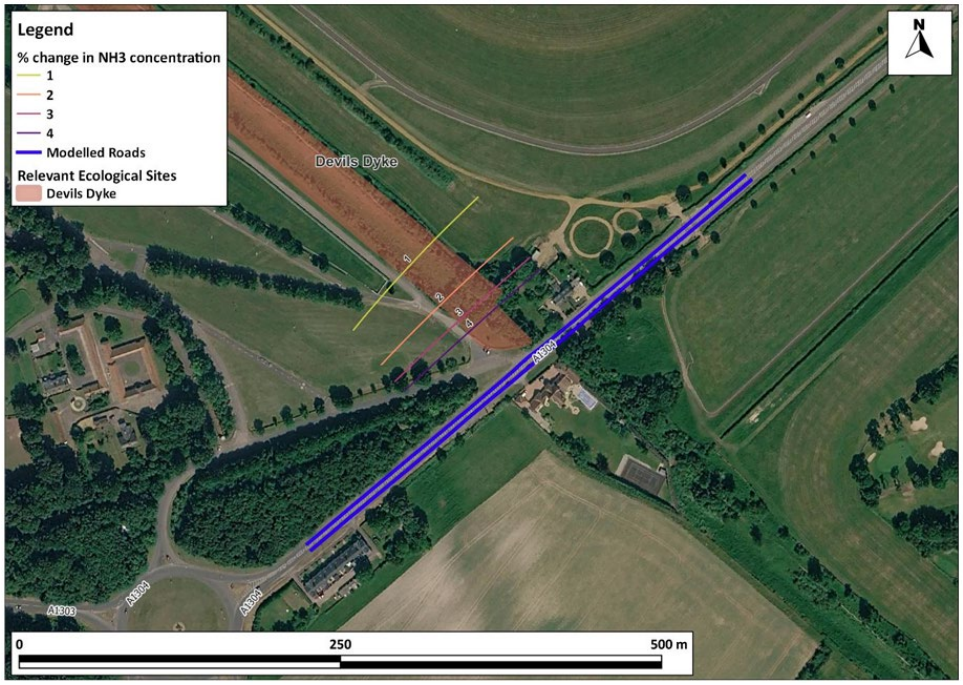


Figure F.10: Area of Devil's Dyke SAC (south) in which nitrogen deposition exceeds the screening threshold due to the Local Plan alone

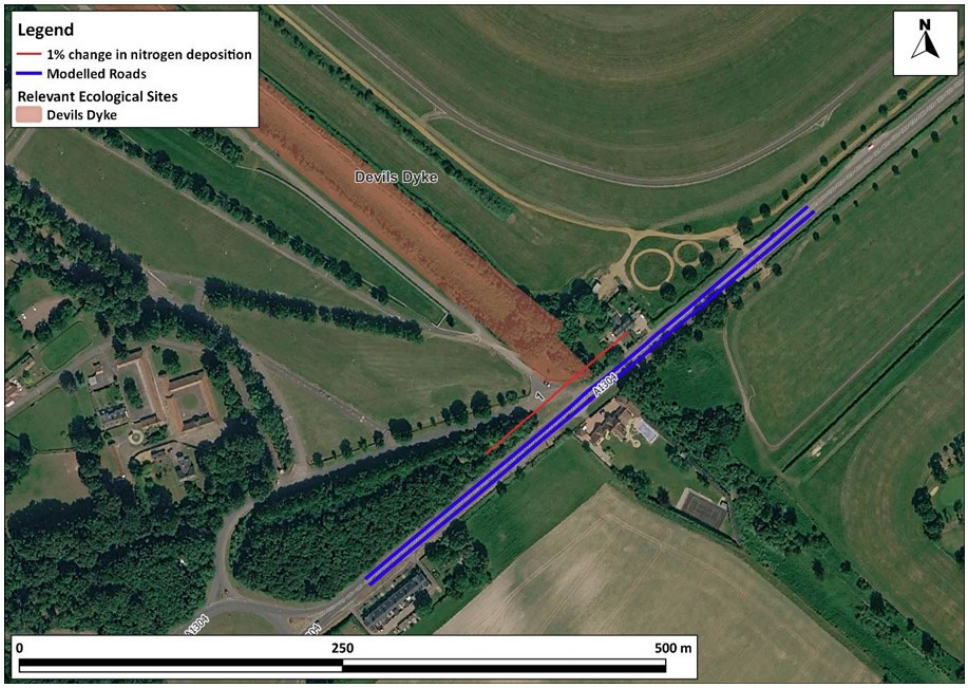


Figure F.11: Area of Devil's Dyke SAC (south) in which nitrogen deposition exceeds the screening threshold due to the Local Plan in combination

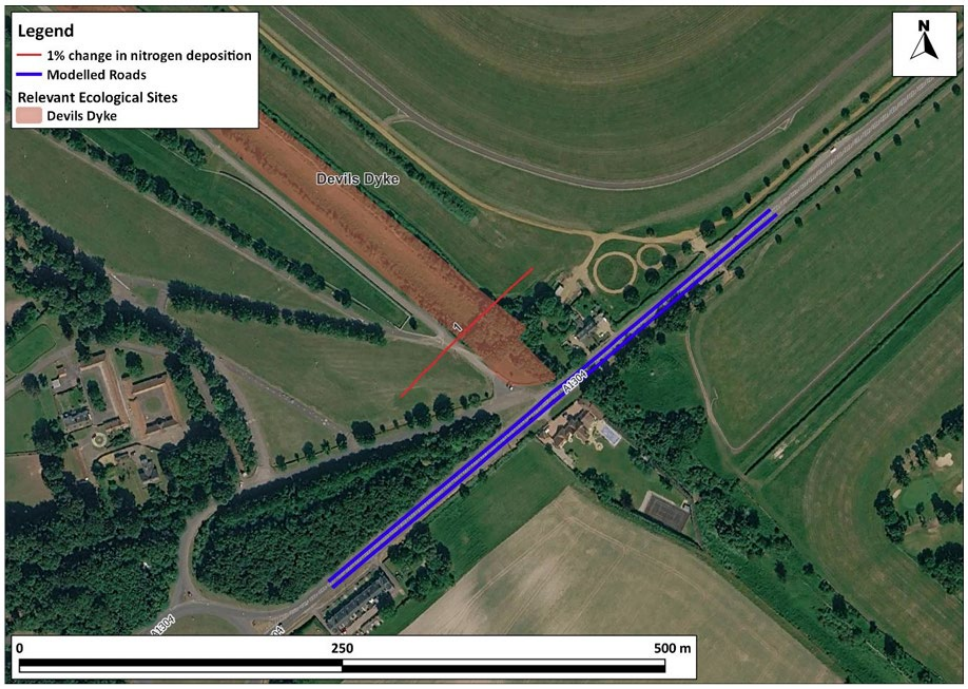


Figure F.12: Area of Devil's Dyke SAC (north) in which ammonia exceeds the screening threshold due to the Local Plan in combination

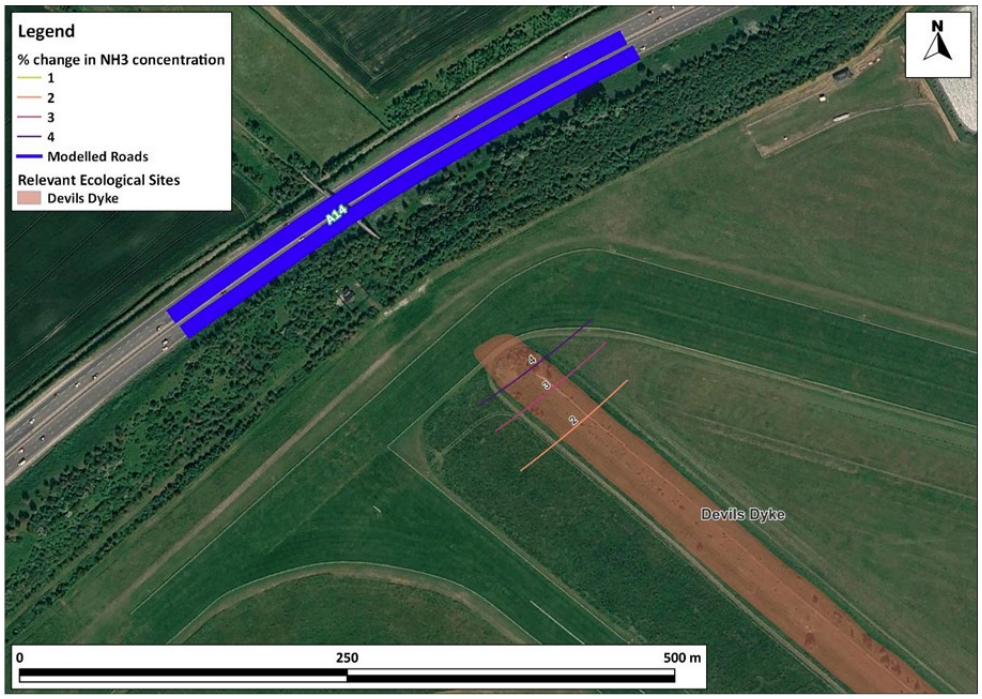
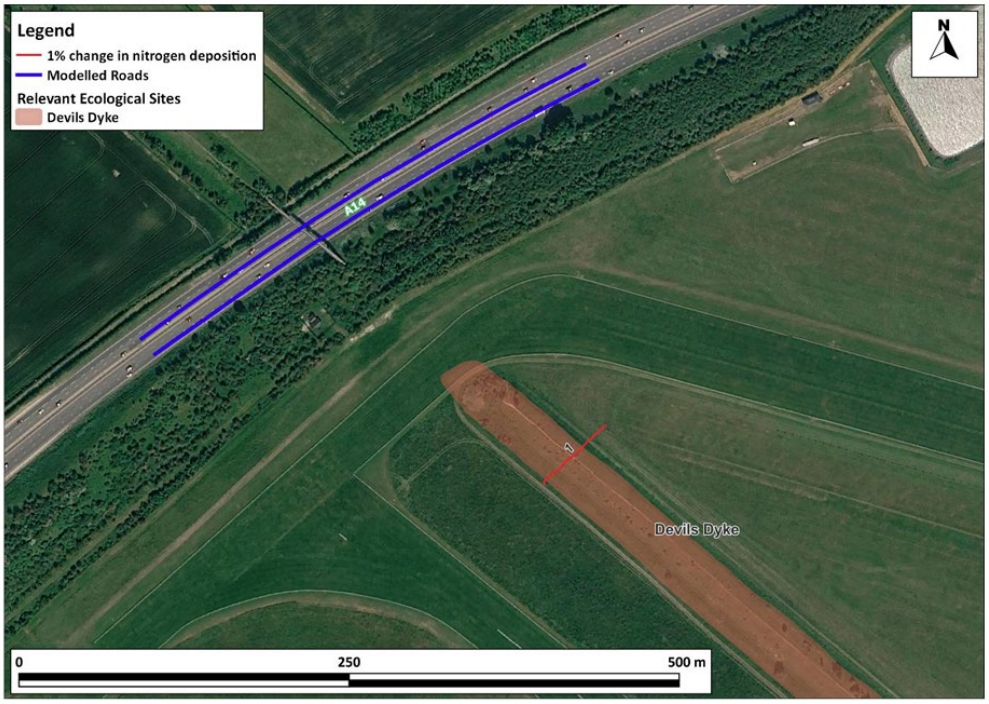


Figure F.13: Area of Devil's Dyke SAC (north) in which nitrogen deposition exceeds the screening threshold due to the Local Plan in combination



F.34 Qualifying features of the SAC **[See reference** 29**]**:

- H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*).

F.35 SIP and supplementary advice for conservation objectives:

- Natural England's SIP (2014, **[See reference** 30**]**) says that the site is at risk of 'air pollution risks as a result of atmospheric nitrogen deposition, which could affect the calcareous grassland'.
- The supplementary advice **[See reference** 31**]** sets out more detail on the potential air quality impacts on the SAC, stating: "This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it."
- The target for air quality (in the supplementary advice) is to "Maintain as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk)".

F.36 SSSI condition **[See reference** 32**]**:

- The potential for exceedance of screening thresholds occurs within Unit 3 of the underlying SSSI. This unit is in 'unfavourable-declining' condition (assessed 2025) due to sward appearing grass-dominated, not having an open sward structure, and having a low proportion of herbs in some areas. Warmer, wetter winters and nitrogen deposition are noted as possible factors contributing to the condition, indicating potential issues in relation to air pollution. However, the SSSI survey also states: "Dog fouling was noted at 700m distant from small carpark (located at the southern end of the unit). Dog faeces and urine are capable of adding nitrogen and phosphorus to habitats at estimated rates substantial in comparison to atmospheric inputs of nitrogen."

F.37 Habitat potentially impacted:

- Priority habitat data (on MAGiC) shows that, with the exception of small areas of track, all of the SAC is mapped as lowland calcareous grassland, in the priority habitat inventory. The qualifying habitat ('semi-natural dry grasslands and scrubland facies on calcareous substrates', a type of calcareous grassland) may therefore be present throughout the site – or was at the time of the survey.
- However, adjacent to the A1304 (southern transect) and extending into the SAC is an area of mixed deciduous woodland, scrub, and footpaths through the site. These habitats have been confirmed from photographs taken in November 2026

(see Figures F.14-F.19). Measured from aerial imagery (MAGiC) and Google maps, the first c.75m of the SAC is woodland (Figures F.14-F.16), and the photographs confirm that up to c.160m from the road is currently scrub; these areas do not contain the site's qualifying habitat. Deciduous woodland in this location also provides screening that will limit the dispersion of air pollutants from the road to the area beyond the woodland.

- Screening from deciduous woodland is also present at the northern end of the SAC, where there is c.60m of woodland between the A14 and the grassland (the SAC is c.150m from the road). The A14 in this location also lies within a cutting (Figure F.19). At the northern edge of the SAC, there is c.30m of scrub habitat and paths (Figures F.17-F.18), where the qualifying habitats of the site are unlikely to be present. The qualifying habitats are therefore c.175m from the A14 at the nearest point (c.205m to the furthest edge of the road).
- Air quality assessments assume that roads are level with the ecological features being assessed and do not include screening features, in order to be precautionary. Devil's Dyke SAC is higher than the A14, there is screening woodland at both ends of the SAC, and the A14 is in a cutting, which will reduce the dispersion of nitrogen and ammonia into the SAC. The air quality modelling report (Annex 1) states:

  "The stretch of the A14 alongside Devil's Dyke SAC is within a cutting. Dispersion processes within cuttings can be complex. The sides of the cutting present a barrier to pollutant dispersal. In many wind conditions, the topography may increase mixing and therefore pollutant dilution. In other wind conditions, the direction of flow may be diverted along the cutting. Cuttings cannot be included explicitly within the dispersion model. Because the barrier is not present in the dispersion model, the model assumes a straight-line distance from source to receptor which is shorter than reality. This will most likely lead to average concentrations being over-predicted beyond the cutting edge." And:

  "There are also areas of woodland separating the qualifying SAC features from both the A14 and A1304. Trees create barriers to pollutant dispersal which cannot be accurately accounted for in dispersion models. This issue was considered in the HRA Addendum for the now adopted Greater Manchester Local Plan (GMEU, 2022). This assessed a "tree barrier scenario" which sought to account for some of the effects. While unable to fully account for all the expected benefits, this showed that the barriers reduced concentrations and deposition beyond the trees. The benefits of tree shelter belts for ammonia mitigation have also been investigated extensively in the context of agricultural emissions sources (e.g. (Bealey et al., 2016)). This has shown substantial benefits from trees close to the emissions sources. While there are differences

between how emissions are released from traffic and agriculture, the subsequent behaviour of ammonia in the atmosphere, including how it interacts with trees, is the same. Taking account of both the A14 cutting, and the screening effect of woodland along both roads, the dispersion modelling presented here is likely to be worst-case. Impacts are therefore likely to not occur as far into the SAC as has been predicted by the model."

- The NVC community that corresponds with the qualifying habitats the SAC are a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands, widely distributed on chalk and limestone in the English lowlands. Where grazing levels are reduced, *Festuco-Brometalia* swards typically become dominated by coarse grasses, in particular, downy oat-grass *Avenula pubescens*, tor-grass *Brachypodium pinnatum* and upright brome *Bromus erectus*, and plants of smaller stature become correspondingly scarcer **[See reference** 33**] [See reference** 34**]**.

Figure F.14: Devil's Dyke South - looking along the transect towards the SAC from the A1304



Figure F.15: Devil's Dyke South - looking along the transect towards the SAC from the A1304



Figure F.16: Devil's Dyke South - (left) on the dyke c. 200m from the A1304 looking south towards the road; and (right) on the dyke c. 200m from the A1304 looking north away from the road



Figure F.17: Devil's Dyke north - looking along the transect at: (left) c.60m from the A14 towards the SAC; and (right) on the dyke c.175m from the A14 looking towards the road



Figure F.18: Devil's Dyke north - side view of the northern end of the SAC, from the southwest



Figure F.19: Devil's Dyke north - A14 road cutting, embankment and woodland



F.38 Area of the SAC affected:

- The area in which the screening criteria are exceeded in proximity to the A1304 (within 200m) is c.0.6ha, or c.7.7% of the total SAC area. The area of the SAC in which the screening criteria are exceeded in proximity to the A14 (within 200m), is c.0.2ha or c.2.4% of the SAC. Therefore, the total area which may be subject to exceedance is c.0.8ha, or c.10.0% of the SAC.

F.39 Potential effect of nitrogen deposition and ammonia, over the plan period:

- Source attribute data from APIS shows that road transport accounts for a total of 12% of the nitrogen deposition at the SAC. The local contribution of vehicle emissions to nitrogen deposition between 2012-2018 (the years for which the data is available) has fallen, whilst local contributions of other sources such as livestock, fertiliser application, and non-agricultural waste have risen. There is no background source information available for ammonia.
- The critical load for nitrogen deposition for calcareous grassland is 10-20 kgN/ha/yr. The nitrogen deposition at the site with the plan and other plans/projects is predicted to be up to a maximum of 16.5 kgN/ha/yr, which exceeds the minimum critical load of 10 kgN/ha/yr but not the maximum critical load (20 kgN/ha/yr). The level of ammonia concentration expected as a result of the plan (2 µg/m^3) also exceeds the critical load of 1 µg/m^3. The maximum concentrations are predicted at the roadside; further information is provided in the air quality modelling report (Annex 1).

- APIS **[See reference** 35**]** states that the potential impacts associated with nitrogen deposition (including from ammonia) on calcareous grasslands **[See reference** 36**]** are as follows:
  - "Reduces species richness and/or species diversity/changes species composition.
  - Loss of subordinate vascular plants e.g *Thymus*.
  - Loss of rare or endangered species.
  - Loss of characteristic calcicolous mosses and lichens at risk from shading and N accumulation.
  - Increase in non-native calcifuge species.
  - Increase in *Hypochaeris radicata*. Negative effects on nitrogen fixing legumes.
  - Increased risk of drought effects.
  - Loss of annuals and forbs will have implications for recovery, due to the short-lived nature of the seed bank.
  - Decreased prevalence of species such as autumn lady's-tresses *Spiranthes spiralis*, upright brome *Bromopsis erecta*, wild onion *Allium vineale,* long-stalked crane's-bill *Geranium columbinum*, greater knapweed *Centaurea scabiosa*, wild carrot *Daucus carota*, spiked sedge *Carex spicata*, common restharrow *Ononis repens,* and carline thistle *Carlina vulgaris*.
- This has potential to influence the extent, distribution, structure and function of the semi-natural dry grasslands and scrubland facies on calcareous substrates.

Adverse effects on integrity

Portholme SAC

F.40 We conclude that adverse effects on the integrity of Portholme SAC, due to air pollution from nitrogen deposition, can be ruled out.

F.41 The Local Plan alone exceeds the screening threshold up to 65m and the SAC is c.40m from the A1307 road at its nearest. This small corner of the SAC (~0.04ha) affected includes a footpath and riparian vegetation; and localised increases in nitrogen deposition will not have an adverse effect on the site's integrity.

F.42 The Local Plan in combination exceeds the screening threshold 40-200m from the A1307 road. This affects a larger area (c.5ha) of the SAC, in which the qualifying

habitats are present. Although lowland hay meadows can be sensitive to nitrogen deposition, the management of the site (grazing, hay cutting) and seasonal flooding mean that nutrients will be removed from the site and that nitrogen from floodwaters is likely to be a greater influence on the site than from the A1307.

F.43 The 'retardation' data in Appendix A - which illustrates falling background levels of nitrogen deposition with and without the Local Plan - shows that the Local Plan alone theoretically results in a delay in achieving the conservation objective to 'restore the integrity of the site' due to nitrogen deposition at A1307 by just 1 year at 44m from the road, to less than 1 year between 65-200m from the road; these delays are minor. The Local Plan in-combination will theoretically result in a delay in achieving the 'restore' conservation objective due to nitrogen deposition at A1307 by five years at 44m from the road, reducing to two years at 200m from the road. However, principally due to the management of the site described above (paragraph F.21, above), in practice this delay due to the effects of the Local Plan or Local Plan in combination will not result in adverse effect on the site's integrity.

Ouse Washes SAC, SPA and Ramsar site

F.44 We conclude that adverse effects on the integrity of Ouse Washes SAC, SPA and Ramsar site, due to air pollution from nitrogen deposition and ammonia, can be ruled out.

F.45 Ammonia only exceeds the 1% critical load screening threshold to 9m from the A142 to the northeast of the road and 3m to the southwest. The road is slightly raised above the SAC/SPA/Ramsar (c.10m) and the road edge habitats are likely to be degraded by salt and run-off from the road. It is unlikely that the sites' qualifying bird and plant species will be present in these areas.

F.46 The exceedance of the nitrogen deposition screening threshold for the Local Plan alone is to 9m from the A1123, a distance which mostly comprises trees and road edge habitats. There are no exceedances due to the Local Plan alone along the other roads (B1381 or A142). The retardation data for nitrogen deposition also shows that the Local Plan alone does not result in a delay to achieving the conservation objectives by more than one year along the A1123.

F.47 For the Local Plan in combination, there are exceedances of the screening threshold to 129m from the A1123 (nitrogen deposition), 33m from the B1381 (nitrogen deposition), and 129m from both sides the A142 (for nitrogen deposition. Ammonia only exceeds the screening threshold to 3m to the southwest and 9m to the northeast). These could affect black-tailed godwit (SPA) or spined loach (SAC) indirectly via their supporting habitats, and emergent plant species (Ramsar). The

washes are designed to hold flood water in winter and are grazed by livestock. The washes are subject to regular flooding, and the wet grasslands form part of a eutrophic freshwater system which is more strongly influenced by eutrophication from water pollution from other (non-airborne) sources. The habitats are phosphorous-limited rather than nitrogen limited and are not considered highly sensitive to nitrogen or acid deposition from air pollution.

F.48 The combination of lower sensitivity to nitrogen and acid deposition and the regular flooding that removes deposited pollutants mean that there will not be an adverse effect on the integrity of the SAC, SPA or Ramsar site as a result of the Local Plan alone or in combination.

F.49 Whilst the Local Plan in-combination results in theoretical a delay in achieving the conservation objective 'to restore the integrity of the site' due to nitrogen deposition at the A1123 (by 19 years at the roadside (2m), to six years at 200m from the road), in practice this delay due to the Local Plan (alone or in combination) will not result in an adverse effect on integrity of the site, due to the regular flooding and the overall sensitivity of the habitats to air pollution, as above.

Devil's Dyke SAC

F.50 We conclude on the basis of all available evidence that there will not be adverse effects on the integrity of Devil's Dyke SAC, due to air pollution from nitrogen deposition and ammonia.

F.51 Only a small area of the SAC's qualifying habitat at the northern end of the SAC (near the A14) is within the area of (screening threshold) exceedance. At the southern end (A1304), there is no qualifying habitat within the area of exceedance. At the northern end, screening from woodland near the road and the barrier caused by the A14 road cutting will reduce the distance into the site that air pollution from vehicle emissions will extend. It is noted that the SAC is small and there is evidence in the 2025 SSSI condition survey that nitrogen deposition may be contributing to habitat changes, and the critical load is currently being exceeded at the site, for nitrogen deposition and ammonia. However, the 2025 SSSI condition survey also notes there is evidence that dog fouling contributes significantly more to nitrogen input at the site than air pollution.

F.52 The effects of the Local Plan alone will not have an adverse effect on integrity. There is no exceedance of the screening thresholds due to the Local Plan, in proximity to the A14. In proximity to the A1304, the exceedance is to 17m for nitrogen deposition and up to 33m for ammonia. The evidence demonstrates this area near

the road does not contain the qualifying habitat ‘semi-natural dry grasslands and scrubland facies on calcareous substrates’.

F.53 The Local Plan alone results in a delay in achieving the conservation objective ‘to restore the integrity of the site’ due to nitrogen deposition at A1304 by two years at the roadside (7m; not within the SAC), to less than one year between 65-200m from the road (only a small areas of qualifying habitat present in this location). This delay is not significant and is also based on worst case modelling (i.e. does not take into account screening from the woodland).

F.54 The effects of the Local Plan in combination are predicted to exceed the screening thresholds for both nitrogen deposition and ammonia up to 200m from the A14 and up to 129m from the A1304. Although these are the distances predicted by the air quality modelling, the presence of screening blocks of woodland/scrub alongside both roads and the A14 being in a cutting, will significantly reduce the actual distance along which pollutants will disperse. There is no SAC qualifying habitats within the area of exceedance at the south end of the SAC (A1304), due to the presence of scrub and woodland. Taking into account the area of scrub at the northern end of the SAC, only c.0.08ha (c.0.01% of the SAC area) is within the area of exceedance, based on the air quality modelling and not taking into account woodland screening or the A14 road cutting.

F.55 Based on the air quality data, the Local Plan in combination will result in a theoretical delay in achieving the conservation objective due to nitrogen deposition at A1304 by 13 years at the roadside (not within the SAC), reducing to one year at 200m from the road (only a small area of qualifying habitat present in this location), not taking into account woodland screening. This delay is based on worst case modelling (i.e. does not take into account screening from the woodland).

F.56 In conclusion, the air quality modelling does not take account of the screening from woodland at both ends of the SAC, or the barrier caused by the A14 road cutting. However, even without account being taken of these features, only a very small area at the northern end of the SAC would be affected by modelled changes in nitrogen deposition or ammonia (due to the Local Plan in combination), in locations where the habitat transitions from scrub to grassland. There is no SAC qualifying habitat within the area in which the screening thresholds are exceeded, in the south of the SAC (A1304). At the northern end of the SAC (A14), the presence of screening woodland along the roads and the A14 road cutting will reduce significantly the distance into the SAC that the air pollution would disperse. When the evidence is considered as a whole, we conclude that there will not be an adverse effect on the integrity of Devil’s Dyke SAC due to air pollution.

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Annex 1: Air quality modelling report

F.57 Air Quality Consultants (Logika) Report for the Greater Cambridge Local Plan Air Quality Modelling for Ecological Assessment (14 October 2026)