

A1 in Northumberland: Morpeth to Ellingham

Scheme Number: TR010059

6.33 Updated Biodiversity Air Quality Assessment

Rule 8(1)(c)

Planning Act 2008

Infrastructure Planning (Examination Procedure) Rules 2010

March 2024

Infrastructure Planning

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**The Infrastructure Planning
(Examination Procedure) Rules
2010**

**The A1 in Northumberland: Morpeth to
Ellingham**

Development Consent Order 20[xx]

Updated Biodiversity Air Quality Assessment

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1 INTRODUCTION

- 1.1.1. An application for a Development Consent Order (DCO) was made by Highways England (the 'Applicant') on 07 July 2020 to the Secretary of State for Transport via the Planning Inspectorate (the 'Inspectorate') under the Planning Act 2008 (the '2008 Act'). If made, the DCO would grant consent for the A1 in Northumberland: Morpeth to Ellingham (the 'Scheme'). The Scheme comprises:
- a. Part A: Morpeth to Felton ('Part A') is located along the A1 carriageway between Warrener's House Interchange at Morpeth and the existing dual carriageway at Felton. Part A is approximately 12.6 km in length.
 - b. Part B: Alnwick to Ellingham ('Part B') starts approximately 15 km north of the northern extent of Part A and is located along the A1 carriageway between Alnwick and Ellingham and is approximately 8 km in length.
- 1.1.2. A detailed description of the Scheme can be found in **Chapter 2: The Scheme** of the Environmental Statement ('ES') [APP-037].
- 1.1.3. An assessment of the impacts and likely significant effects of the Scheme on ecological receptors as a result of air quality in compliance with updated Design Manual for Roads and Bridges (DMRB) guidance was completed and submitted with the DCO application (**Appendix 16.7: Biodiversity DMRB Sensitivity Test: The Scheme** of the ES [APP-333]). This assessment is hereafter referred to as the 'original 2021 assessment'.
- 1.1.4. The DCO Examination closed on 05 July 2021, with a decision to be made by the Secretary of State within approximately six months. Under section 107(3) of the Planning Act 2008, the Secretary of State exercised their power to extend the deadline and following extensions, on 05 September 2023, a new deadline of 05 June 2024 was set to make a decision on the DCO application. Given the length of time since the close of the Examination in 2021, the Secretary of State issued a letter to the Applicant on 11 October 2023 to set out if any updates are necessary to any of the application documentation or other documentation provided during the Examination.
- 1.1.5. The Applicant confirmed that a qualitative assessment would be undertaken to assess the likely impact on traffic flows due to changes in growth using the updated annual forecast traffic growth for the north-east region. The Applicant also confirmed that an updated assessment of air quality impacts on designated ecological sites would be completed, informed by an update to the original air quality modelling with the addition of predicted ammonia emissions from vehicles.
- 1.1.6. The following notable changes with respect to the air quality assessment have emerged in the interim period since submission of the previous assessment and have been accounted for within the assessment detailed in this document:
- **Ammonia** - Air quality assessments now consider the effect of ammonia emissions from vehicles on designated ecological sites. Ammonia can have "direct" (i.e. relating

to concentrations of ammonia in air) and “indirect” (i.e. contributing to levels of nitrogen deposition) adverse impacts on ecology. Neither ambient concentrations of ammonia, nor the contribution of ammonia to nitrogen deposition were considered within the air quality modelling completed for the original 2021 assessment, but the nitrogen deposition from NO_x/NO₂ emissions was included.

- In support of this updated requirement for the assessment of the effects of ammonia emissions from vehicles, National Highways have produced a tool for the assessment of ammonia in the absence of government issued emissions factors for NH₃.
- **Updated representation of complex airflow around bridges/flyovers** – National Highways have worked with Cambridge Environmental Research Consultants (CERC) to produce a tool which improves the performance of dispersion models in the vicinity of elevated roads. This allows for better modelled representation of the impact of the Scheme on pollutant concentrations at sensitive receptors within these areas.
 - For this Scheme, this was of particular relevance to impacts at the River Coquet and Coquet Valley Woodlands SSSI/Duke’s Bank Ancient Woodland.

1.1.7. This document presents the methodology and results of an updated assessment of potential impacts of the Scheme on ecological receptors from air quality (the ‘updated 2024 assessment’). This was in response to the consideration of ammonia emissions and their contribution to nitrogen deposition as a result of the Scheme.

1.1.8. This updated assessment supersedes the DMRB sensitivity air quality assessments presented in Appendix 16.7: Biodiversity DMRB Sensitivity Test: The Scheme of the ES [APP-333], Appendix 9.27: Biodiversity DMRB Sensitivity Test Part A [APP-253] and Appendix 9.12: Biodiversity DMRB Sensitivity Test Part B [APP-310]. This updated assessment also supersedes the Updated Biodiversity Air Quality DMRB Sensitivity Assessments submitted during the DCO Examination at Deadline 3 [REP3-010] and finally at Deadline 10 [REP10-023] (the original 2021 assessment).

2 ASSESSMENT METHODOLOGY

QUALITATIVE ASSESSMENT OF CHANGES IN TRAFFIC FLOWS

- 2.1.1. A review of the likely changes in traffic flow resulting from changes to guidance and the Scheme opening year (set out in **Annex B** to this report) showed that there may be a marginal (2-3%) increase in traffic flows in the Scheme opening year in comparison to the flows assessed in the **Air Quality Updated Assessment (Scheme Opening Year 2024) [REP3-012]**. The air quality impacts of this increase in traffic flows will likely be more than offset by a decrease in emissions per vehicle. The results presented to date and presented below are therefore robust and a likely conservative representation of the impacts of the Scheme in 2029.

SCOPE OF ASSESSMENT

- 2.1.2. The updated 2024 assessment included all ecological receptors ('designated habitats') previously assessed within the original 2021 assessment. The updated 2024 assessment did not identify any new designated habitats to those considered in the previous assessments. In accordance with LA 105 Air Quality (**Ref. 1**), the air quality assessment should include an assessment of the impacts on 'designated habitats' of international, national and local ecological conservation interest for protected / notable species and habitats within 200 m of the Affected Road Network (ARN) (the 'Study Area') as determined by the air quality modelling presented in **Air Quality Updated Assessment (Scheme Opening Year 2024) [REP3-012]**. In accordance with LA 105 Air Quality, designated habitats include Ramsar sites, Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), Local Nature Reserves (LNRs), Local Wildlife Sites (LWSs), Nature Improvement Areas, ancient woodland and veteran trees.
- 2.1.3. Whilst LA 105 Air Quality makes reference to veteran trees only, standing advice published by the Forestry Commission and Natural England (**Ref. 2**) states that "*all ancient trees are veteran trees.*" Ancient and veteran trees are of similar and high ecological importance and are considered irreplaceable (much the same as ancient woodland). As such, both ancient and veteran trees were scoped into the assessment.
- 2.1.4. This updated assessment considers the additional impact of ammonia emissions from vehicular sources on ammonia concentrations and nitrogen deposition.

METHODOLOGY

Guidance

- 2.1.5. The ecological assessment detailed within this document has been undertaken in accordance with LA 105 Air Quality (**Ref. 1**), LA 108 Biodiversity (**Ref. 5**) and with the wider requirements and advice provided in LA 104 Environmental Assessment and Monitoring (**Ref. 4**).

2.1.6. However, no official guidance currently exists for the assessment of ammonia emissions under the LA105 Air Quality documents. A draft methodology has been developed by National Highways and is used in this update. This draft methodology includes a tool for the assessment of ammonia produced by National Highways in the absence of government issued emissions factors for ammonia.

Dispersion Modelling

2.1.7. The dispersion modelling methodology used for the updated modelling has been undertaken in accordance with LA 105 Air Quality (**Ref. 1**) and the draft ammonia methodology issued by National Highways.

2.1.8. It was not necessary to significantly update either the dispersion model used for, nor the methodology set out in the DMRB sensitivity air quality assessments presented in Appendix 16.7: Biodiversity DMRB Sensitivity Test: The Scheme of the ES **[APP-333]**, Appendix 9.27: Biodiversity DMRB Sensitivity Test Part A and Appendix 9.12: Biodiversity DMRB Sensitivity Test Part B **[APP-310]**. The exceptions to this are minor amendments where appropriate to account for the provision of ammonia concentrations, and more detailed information surrounding the River Coquet SSSI.

2.1.9. The details of these minor amendments to the methodology and dispersion model are set out below:

- **Adjustments to the existing dispersion model:**

- The locations of selected sensitive ecological receptors used within the dispersion model were consistent with those modelled previously for all sites except the River Coquet. Further detailed receptors were placed within the SSSI boundary with a 5m grid resolution to provide more detailed coverage of the area of the sites and to reflect the height differences between the road and the ground level and sensitive habitat. Two datasets are provided, representing:
 - Impacts at grade with the road – modelled receptors were placed at grade with the road (both modelled at 0m) to represent sensitive ecological receptors at grade with the road. This represents the base of the tree, where the road is at grade and the tree canopy where the valley falls below the road.
 - Impacts at ground level – modelled receptors were placed at a height set to reflect the height difference between ground level and the flyover above the River Coquet (river modelled at 0m, road and other receptors modelled at their relative height above the river). The receptor heights were determined using LIDAR data for the site and are presented alongside the receptor coordinates within an annex to this report.
 - For the assessment of impacts at ground level the dispersion model was run using the ADMS Flyover module.
 - Plume depletion was not explicitly modelled within the dispersion model for the production of ammonia concentrations. This is a conservative approach to the

appraisal of Scheme impacts since concentrations will potentially be increasingly over-represented with distance from the road. This is consistent with the approach undertaken previously for NO_x/NO₂.

Relating to Provision of Ammonia concentrations:

- 2.1.10. The dispersion model was run using the same emissions calculations used previously, with the model adjusted to provide NO_x concentrations outputs for the contribution from Light Duty Vehicles (LDVs) and Heavy Duty Vehicles (HDVs), as required for the calculation of ammonia concentrations:
- Verified NO_x concentrations (from LDVs and HDVs) are converted to road contributions to both ammonia concentration and nitrogen deposition at each receptor using the factors set out in the National Highways Ammonia tool. The contribution from ammonia to nitrogen deposition was added to the existing value for nitrogen deposition from NO₂ to represent the total nitrogen deposition impact for the Scheme.
 - For the River Coquet only, ammonia concentrations and nitrogen deposition levels are provided representing the impacts at grade with the road (i.e. the tree canopy) and at ground level.
- 2.1.11. The raw results of the updated air quality assessment for ammonia concentrations and nitrogen deposition (from both NO₂ and NH₃) are set out in Annex A of this report. For ease of visualisation, the impacts of the Scheme on ammonia concentrations and nitrogen deposition (from both NO₂ and NH₃) at the River Coquet SSSI at ground and canopy level are also presented as figures within Annex A of this report.

DESK STUDY

- 2.1.12. With the exception of Nature Improvement Areas and ancient / veteran trees, all other designated habitats were identified as part of the ecological impact assessments for Part A **Chapter 9: Biodiversity Part A [APP-048]** and Part B **Chapter 9: Biodiversity Part B** of the ES **[APP-049]**.
- 2.1.13. A desk study exercise was undertaken in March 2020 to identify Nature Improvement Areas and ancient / veteran trees in the Study Area. Nature Improvement Areas were identified from the Natural England website (**Ref. 6**). Ancient / veteran trees were identified from the Woodland Trust Ancient Tree Inventory (**Ref. 7**) and baseline information collected for Part A (refer to **Appendix 7.5: Arboricultural Report Part A [APP-220]** of the ES) and Part B (refer to **Appendix 7.1: Arboricultural Report Part B** of the ES **[APP-286]**). No additional Nature Improvement Areas or ancient / veteran trees were identified following a review of these sources in 2024.

NATURE CONSERVATION EVALUATION

- 2.1.14. The importance of an ecological receptor (designated habitat) has been established using the guidance presented in Table 3.9 in LA 108 Biodiversity (Ref. 5). **Table 2-1** below presents the applicable importance classifications for those designated habitats assessed.

Table 2-1 – Biodiversity resource importance

Importance Classification	Designated Habitat
National importance	SSSI, ancient woodland, ancient / veteran trees
County importance	LNR
Local importance	LWS

CHARACTERISATION OF POTENTIAL IMPACTS

- 2.1.15. It was determined that the potential local air quality impacts from construction traffic emissions would be unlikely to give rise to significant effects and therefore no further assessment was required in relation to construction. This is evidenced in **Appendix 16.4: Air Quality Likely Significant Effects of the Scheme** of the ES [APP-330] and in paragraph 5.5.1 of **Air Quality Updated Assessment (Scheme Opening Year 2024)** [REP3-012]. As such, only operational impacts on air quality are considered.
- 2.1.16. Within the updated 2024 assessment, impacts have been characterised in relation to nitrogen deposition and atmospheric ammonia concentrations.
- ### Nitrogen Deposition
- 2.1.17. The assessment in this appendix had due regard to Figure 2.98 of LA 105 Air Quality (Ref. 1).
- 2.1.18. At the time of the original 2021 assessment, nitrogen deposition was only considered from nitrogen dioxide emitted from vehicular sources. Whilst the evidence relating to the effects of ammonia on ecological sites was well established, there was little evidence available regarding the level of ammonia emissions from vehicles. In the intervening years, ammonia has become a more prominent element of air quality assessments, specifically in relation to ecology. As a result of representations from Stakeholders that required the assessment of ammonia, National Highways has developed draft guidance for the assessment of ammonia which has been made available for use within this assessment. However, this draft guidance has not been formally published.
- 2.1.19. For nitrogen deposition, significance of effects was considered where the change in total nitrogen deposition (kg N/ha/yr) with the Scheme ('Do Something' scenario; including both Part A and Part B) in comparison to the future baseline ('Do Minimum' (without the Scheme)

scenario) was greater than 1% (as an absolute number) of the critical load¹ for the site / habitat and the critical load is exceeded. In all instances, the critical load of the designated habitat was exceeded with or without the Scheme. Critical loads for sites / habitats were ascertained from the Air Pollution Information System (APIS) database (**Ref. 8**). Where a range in the critical load was provided for a particular designated habitat, the lowest value in the range was used to give a worst-case assessment (known as the lower critical load). Where the lower critical load of a site or habitat is exceeded with the Scheme but an increase in deposition of less than 1% of the critical load occurs, the impact is considered imperceptible and unlikely to be significant (**Ref. 1**).

- 2.1.20. For each designated site, the air quality assessment modelled predicted changes in air quality along 200 m length linear transects perpendicular to the affected road starting from the nearest point of the designated habitat. The modelling was undertaken at 5 m intervals between 0 m and 50 m and at 10 m intervals between 50 m and 200 m. For ancient / veteran trees, nitrogen deposition at the location of the tree was modelled. Findings of the 2024 air quality modelling are presented within **Annex A** of this report.
- 2.1.21. Where the change in nitrogen deposition is greater than 1% of the critical load, LA 105 Air Quality prescribes a need to identify whether the designated habitat air quality attribute is either 'Restore' or 'Maintain'. Air quality attributes are publicly specified for European designated sites (those protected at an international level) but not for locally or nationally designated sites for nature conservation or for ancient woodland. As such, air quality attributes are not available for the designated habitats considered within this assessment. Where information is available, this has been used to inform a professional judgement to determine the air quality attribute for the designated habitat. The justification for the attribution has been presented within this document. Where insufficient information is available, the air quality attribute has been set to 'Restore', as acknowledged in LA 105 Air Quality (**Ref. 1**).
- 2.1.22. LA 105 Air Quality (**Ref. 1**) requires an assessment to determine if the change in nitrogen deposition would lead to the theoretical loss of one plant species, using Table 21 of the nitrogen deposition dose response report published by Natural England (**Ref. 10**). The study within the Natural England report only considered certain habitats: upland and lowland heath, sand dune grassland, bog (raised and blanket) and acid grassland. With the exception of Longhorsley Moor SSSI / LWS, the designated habitats considered within this assessment are designated for their woodland habitat. The Natural England study does not provide comparable data to inform the dose of nitrogen deposition that would theoretically

¹ APIS (**Ref. 9**) cites the definition of the critical load as "a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge".

lead to the loss of one species². Therefore, in accordance with LA 105 Air Quality, using the Natural England dose response report, “*the habitat with the lowest change in nitrogen deposition likely to lead to the loss of one species, excluding nutrient impoverished sand dunes, shall be used to inform the judgement of significant air quality effects.*” Habitats used as a proxy include upland and lowland heath.

- 2.1.23. **Table 2-2**, based on Table 21 of the Natural England dose response report, summarises the criteria used to determine if the change in nitrogen deposition would lead to the theoretical loss of one plant species. It should be noted that Table 21 provides the lowest change in nitrogen deposition likely to lead to a reduction of species-richness of one at different background nitrogen levels, to be used for those designated habitats covered by the Natural England dose response report. This is not the same as causing the loss of one species. Longhorsley Moor SSSI / LWS is designated for lowland heath, for which the criteria summarised in **Table 2-2** remains applicable.
- 2.1.24. Using the ‘Restore’ approach, as prescribed in LA 105 Air Quality (**Ref. 1**), represents a reasonable worst-case assessment. This is because using the most sensitive habitat to nitrogen deposition as a proxy for the designated habitat being considered, is already a reasonable worst-case approach. In contrast, using the actual background deposition levels³ (as for the ‘Maintain’ approach) rather than a theoretical deposition level of 5 kg N/ha/yr. (as for the ‘Restore’ approach) is likely to better reflect the conditions at the designated habitats considered within this assessment.
- 2.1.25. In accordance with LA 105 Air Quality (**Ref. 1**), for the ‘Restore’ scenario the lowest change in nitrogen deposition that would bring about a change theoretically equivalent to the loss of one plant species (0.4 kg N/ha/yr.) is used regardless of background nitrogen deposition. Therefore, an increase of 0.4 kg N/ha/yr. is used as the threshold for the theoretical loss of one plant species and to identify when a significant effect may occur.
- 2.1.26. In accordance with LA 105 Air Quality (**Ref. 1**), for the ‘Maintain’ scenario the lowest change in nitrogen deposition that would bring about a change theoretically equivalent to the loss of one plant species corresponding to the background nitrogen deposition is used as the threshold (refer to **Table 2-2**). Where the background nitrogen deposition falls between two categories, the lower category has been used, as a precautionary approach.

² It should be noted that the information presented in Table 21 of NECR210 (**Ref. 10**) does not actually refer to doses of nitrogen that would theoretically lead to the loss of one species. The data presented refers to doses of nitrogen, based on a combination of experimental data reviewed in the report, that would reduce species richness in each habitat by one. This is an important distinction which should not be lost sight of when interpreting Table 21 of NECR 210.

³ Which represents 5 km average deposition data taken from APIS.

Table 2-2 - Nitrogen Deposition Changes that may Result in the Theoretical Loss of Species Richness⁴

Increase in Nitrogen (N) Deposition (kg N/ha/yr.) Required to Reduce Measured Species Richness by one at Different Background N Deposition Levels					
5 kg N	10 kg N	15 kg N	20 kg N	25 kg N	30 kg N
0.4	0.8	1.3	1.7	2.0	2.4

Ammonia Concentrations

- 2.1.27. Concentrations of ammonia in the atmosphere can also have a significant effect on designated nature conservation sites. The air quality assessment modelled ammonia concentrations along the same 200 m length linear transects as detailed above (**paragraph 2.1.20**).
- 2.1.28. Similar to the assessment for nitrogen deposition, a 1% threshold is used to determine the potential for significant effects. Significance of effects was considered where the change in predicted atmospheric ammonia concentration ($\mu\text{g}/\text{m}^3$) with the Scheme ('Do Something' scenario; including both Part A and Part B) in comparison to the future baseline ('Do Minimum' (without the Scheme) scenario) was greater than 1% (as an absolute number) of the critical level⁵ for the site / habitat and the critical level is exceeded.
- 2.1.29. The critical level for a designated habitat was attributed based on those detailed within published guidance [**Ref. 27**]. An ammonia concentration critical level of $1 \mu\text{g}/\text{m}^3$ was set for designated habitats where highly sensitive plant species (i.e. lower plants such as bryophytes and lichen) are a component or qualifying feature. A critical level of $3 \mu\text{g}/\text{m}^3$ ammonia was used for designated habitats where only higher plants (vascular plants and trees) are a component or qualifying feature [**Ref. 31**]. The majority of designated habitats comprised ancient woodland habitat or ancient/veteran trees. Lower plants are often a key characteristic of these habitats and therefore the $1 \mu\text{g}/\text{m}^3$ ammonia critical level was applied. A critical level of $3 \mu\text{g}/\text{m}^3$ ammonia was used for Longhorsley Moor SSSI, Ulgham Meadows LNR, Cocklaw Dene LWS, Cawledge Burn LWS and Coney Garth Pond (as lower plants do not form part of the designation nor are they considered to be a key component of these designated habitats). The critical level used in the assessment of each designated habitat is detailed in **Table 9-2**.

⁴ Based on Table 21 of the Natural England dose response report (**Ref. 10**).

⁵ APIS (**Ref. 9**) cites the definition of the critical level as "*concentrations of pollutants in the atmosphere above which direct adverse effects on receptors, such as human beings, plants, ecosystems or materials, may occur according to present knowledge*".

- 2.1.30. LA105 does not contain any comparable advice (with reference to nitrogen deposition) in relation to ammonia concentrations and thresholds for supporting determination of significant effects. Exceedance of the 1% of critical level threshold is used as the test for the potential for significant effects for the purpose of this assessment (as detailed within the advice note published by the Chartered Institute of Ecology and Environmental Management (CIEEM) (**Ref. 27**)).

Potential for Significant Effect

- 2.1.31. Where the predicted change in nitrogen deposition or ammonia concentration does not exceed the associated threshold (as detailed above), no significant effect is identified. Where the Scheme would result in a change in nitrogen deposition or ammonia concentration in excess of the associated threshold, professional judgement has been used to provide a qualified statement regarding the potential level of significance of the effects. These have been identified in accordance with the categories presented in LA 104 Environmental Assessment and Monitoring (**Ref. 4**) (Neutral, Slight, Moderate, Large or Very Large). This has been underpinned through use of the impact and effect significance descriptors in LA 108 Biodiversity (**Ref. 5**), as described below.

CHARACTERISATION OF NITROGEN DEPOSITION AND AMMONIA CONCENTRATION IMPACTS

- 2.1.32. Nitrogen deposition impacts and their effects that may be significant following application of LA 105 as described above, and effects that may be significant in relation to ammonia concentration, have then been characterised against the impact and effect descriptors used in paragraph 3.10 and Table 3.11 of LA 108 Biodiversity (**Ref. 5**), and applicable CIEEM guidance (**Ref. 3**). The approach to describing each impact characteristic that informs overall Level of Impact under LA 108, is set out below. These headings are subsequently used to summarise the predicted impacts and effects of nitrogen deposition and ammonia concentration from the Scheme on each designated habitat in **Table 9-3**.

Resource Importance

- 2.1.33. The same method of determining the importance of an ecological receptor (designated habitat) has been followed, as detailed in **Section 9.4** and **Table 9-4** of **Chapter 9: Biodiversity Part A [APP-048]**. The methodology for assigning importance complies with the approach in the updated DMRB guidance presented in LA 108 Biodiversity (**Ref. 5**).

Duration and Reversibility

- 2.1.34. Duration is categorised as either 'permanent' or 'temporary'. The impacts of the Scheme would continue for the duration of operation from the opening year (2024), although they would decline year on year due to forecast reductions in 'per vehicle' emissions as the UK vehicle fleet decarbonises. There have been considerable declines in total NO_x emissions from road transport over the last two decades, with the National Atmospheric Emission Inventory (NAEI) identifying that total NO_x emissions from road transport in 2018 were approximately a third of the level experienced in 1999 and have approximately halved since

2005 (**Ref. 15**). The Scheme delays rather than reverses future predicted decreases in the road contribution to nitrogen deposition and would not lead to a long-term increase in nitrogen deposition over current levels. However, as the point in time at which the Scheme would generate no additional emissions relative to the do-minimum scenario cannot be forecast with any degree of certainty, the Scheme's impact on nitrogen deposition and ammonia concentration is considered '**permanent**' on a precautionary basis for all designated habitats.

- 2.1.35. As a **permanent** impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact of nitrogen deposition and ammonia concentration because of the Scheme is classified as '**irreversible**' for all designated habitats.

Extent

- 2.1.36. In the case of designated sites (ancient woodland, SSSI, LNR, LWS), the extent is categorised as the area of the designations' interest feature(s) that experience a change in nitrogen deposition and ammonia concentration that exceeds the associated threshold, after applying the methodology detailed above. The air quality modelling is assessed at fixed 10 m intervals along a transect perpendicular to the affected road (see **paragraph 2.1.20**). Therefore, the point at which predicted nitrogen deposition or ammonia concentration falls below the threshold may be located between two intervals of the transect. To ensure a worst-case value of extent is assessed, the area of the designated habitat has been measured up to the first interval along the transect where the change in nitrogen deposition is below the threshold.
- 2.1.37. In the case of ancient or veteran trees, where the change in nitrogen deposition and ammonia concentration may exceed the associated threshold identified at the location of a tree's central grid reference, this is considered to occur across the whole tree.

Magnitude

- 2.1.38. Magnitude is categorised as the maximum predicted dose of nitrogen onto a designated habitat or ammonia concentration present in the air that would result from operation of the Scheme. Nitrogen deposition is expressed in kg N/ha/yr and is presented alongside the habitats threshold as determined through Table 2.98 of LA 105 Air Quality (**Ref. 1**). Ammonia concentration is expressed in $\mu\text{g}/\text{m}^3$ and as a % change of the selected critical level. The maximum predicted dose occurs at the nearest point of the designated habitat to the affected road, decreasing with distance from the road. The predicted maximum dose from the Scheme occurs in the opening year (2024) and is taken from the 2024 air quality modelling (raw data presented in **Annex A** of this report).

Frequency

- 2.1.39. Frequency is described as '*the number of times an activity occurs*' in the CIEEM Guidelines (**Ref. 3**). The impact arises from increased traffic flows during operation of the Scheme, which would occur on an ongoing basis from the opening year. As the impact would be continuous and is assessed against an annual metric (kg N/Ha/yr), the frequency is

categorised as ‘**annual**’ for all habitats sites, notwithstanding that impacts from the Scheme and overall nitrogen deposition rates/ammonia concentrations are predicted to reduce during the operational period.

Timing

- 2.1.40. As described above under ‘frequency’, the impact would occur continuously from the opening year. Timing is therefore categorised as ongoing during the operational period.

Integrity and key characteristics of the resource

- 2.1.41. Potential effects on the integrity and key characteristics of each designated habitat are assessed with consideration of:
- a. The type and condition of the habitats for which the designated habitats have been designated;
 - b. The characterisation of the impact as described above; and
 - c. The likely biophysical responses of the designated habitats subject to nitrogen deposition and ammonia concentration levels that exceed the identified thresholds, and whether these responses could undermine the ecological coherence, functioning, and conservation status of the features for which the habitat is designated, and hence its integrity.

Level of Impact

- 2.1.42. Level of impact is categorised against the criteria set out in Table 3.11 of LA 108 (**Ref. 5**), which includes determining whether an impact would be beneficial or adverse, and whether the integrity or key characteristics of the designated habitat would be affected.

Effect Significance

- 2.1.43. Table 3.13 of LA 108 (**Ref. 5**) was used to determine the significance of effect. Table 3.13 includes two possible significance categories (for example ‘*Slight or moderate*’) for some combinations of Resource Importance and Levels of Impact. LA 108 states at paragraph 3.13.1 that ‘*where Table 3.13 includes two significance categories, evidence should be provided to support the reporting of a single significance category*’. The evidence that has been considered when choosing the significance categories includes secured mitigation.
- 2.1.44. Where mitigation measures have been secured that would reduce the impacts of nitrogen deposition or ammonia concentration from the Scheme, the significance of effect has been reduced and this justified appropriately.
- 2.1.45. Where significant effects are predicted with or without secured mitigation, compensation has been explored (as detailed in **paragraph 2.1.46** below). Where compensation has been secured, the level of significance remains the same as the level reported without compensation, as the impact to the designated habitat would still occur but is being “offset” by the proposed compensation measures.

MITIGATION

- 2.1.46. The same approach to mitigation has been followed, as detailed in **Section 9.4, Chapter 9: Biodiversity Part A [APP-048]** and **Chapter 9: Biodiversity Part B [APP-049]**. This involves the application of the principles of the mitigation hierarchy when considering potential impacts and subsequent effects, through the following sequential actions:
- a. Avoidance
 - b. Mitigation
 - c. Compensation
 - d. Enhancement

3 ASSESSMENT ASSUMPTIONS AND LIMITATIONS

- 3.1.1. Assessment assumptions in relation to the air quality modelling is provided within **Air Quality Updated Assessment (Scheme Opening Year 2024) [REP3-012]**. These remain applicable to the updated 2024 assessment.
- 3.1.2. A critical load cannot be given for nitrogen with respect to rivers and streams, as quantitative relationships between biology and nitrogen concentrations are largely dependent on the status of the concentrations of other nutrients. The River Coquet and Coquet Valley Woodlands SSSI includes the River Coquet, and Wansbeck and Hartburn Woods LWS includes the River Wansbeck. Both rivers are surrounded by arable farmland and therefore will be subject to water-run off and consequent introduction of nutrients. As such, nitrogen is unlikely to be the limiting nutrient and increased aerial nitrogen deposition would be dwarfed by agricultural inputs. Furthermore, in accordance with Section 2.26.1 of LA 105 Air Quality (**Ref. 1**), it is not necessary to include sites designated as a watercourse in the assessment. As such, effects to the river component of the designated habitats have not been explored.
- 3.1.3. Due to the size of the Study Area, the identification of ancient/veteran trees was informed by the Woodland Trust's Ancient Tree Inventory (**Ref. 7**) and baseline data gathered for Part A (refer to **Appendix 7.5: Arboricultural Report Part A [APP-220]**) and Part B (refer to **Appendix 7.1: Arboricultural Report Part B [APP-286]**). This is considered proportionate and appropriate for this assessment.
- 3.1.4. The majority of designated habitats considered within this assessment are designated for their woodland habitat. As such, the Natural England study (**Ref. 10**) does not provide directly comparable data to inform the dose of nitrogen deposition that would theoretically lead to a reduction in species richness equivalent to the loss of one species. In accordance with LA 105 Air Quality, the lowest change in nitrogen deposition likely to trigger this criterion from Table 21 of the Natural England dose response report was used as a proxy threshold (refer to **Table 2-1**).
- 3.1.5. When considering ancient woodland and ancient/veteran trees as a habitat, it is both the lower plant and higher plant communities that are of interest. As detailed above in **paragraph 2.1.23**, in relation to ammonia concentration, different critical level thresholds are used for lower and higher plants to screen in the potential for significant effects. When considering future predicted background ammonia concentration levels (as informed by current background levels from APIS (**Ref. 16**) and the 2024 air quality modelling), the predicted increases in ammonia concentration are not expected to result in exceedances of the 3 µg/m³ critical level threshold for higher plants at all ancient woodlands and veteran trees assessed. Therefore, it is potential impacts to the lower plant community that are of importance when assessing for significant effects.
- 3.1.6. For the ancient woodlands and veteran trees assessed, no source material available in the public domain has been identified that provides information on the lower plant communities

present. As such, there is no evidence to confirm the presence of lower plant species that could be adversely impacted by the increases in ammonia concentration predicted by the air quality modelling. In addition, site-specific information is unavailable regarding the location of any such lower plants (if present) within the designated habitat, with reference to spatial distribution and height. Height is of relevance to lower plants growing on trees, which may be present at the base of the tree, at the tips of branches in the canopy or somewhere in between depending on the species and their ecological niche an/or environmental requirements. Spatial and height distribution may change the magnitude of predicted impacts and/or the extent to which a significant effect may occur (with reference to the methodology presented within this document).

- 3.1.7. CIEEM Guidelines (**Ref. 3**) define the “precautionary principle” and states that “the evaluation of significant effects should always be based on the best available scientific evidence ... In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed.” The assessment of ammonia concentration impacts and significance of effect detailed within this report has therefore applied the precautionary principle and assumes the presence of a lower plant community that would be adversely impacted by the predicted increases in ammonia concentration. The assessment presented is therefore considered a worst-case scenario.

4 STUDY AREA

- 4.1.1. The Study Area is defined as 200 m from the ARN as required under LA 105 Air Quality (Ref. 1), which is shown on **Figure 1: 2024 Affected Road Network, Air Quality Updated Assessment (Scheme Opening Year 2024) [REP3-012]**.

5 BASELINE CONDITIONS

- 5.1.1. A summary of designated habitats scoped into the assessment is detailed in **Table 5-1** (statutory and non-statutory designated sites for nature conservation), **Table 5-2** (ancient woodland) and **Table 5-3** (ancient / veteran trees) below.
- 5.1.2. The relative nature conservation importance of statutory and non-statutory designated sites is detailed in **Table 5-1**. Ancient woodland and ancient / veteran trees are irreplaceable habitat and considered of **National (High) importance**.
- 5.1.3. At present, there are no Nature Improvement Areas located within the Study Area.

Table 5-1 - Statutory and Non-Statutory Designated Sites within the Study Area

Site Name	Reason for Designation	Nature Conservation Importance	Distance from ARN (m)
Statutory Designated Sites			
River Coquet and Coquet Valley Woodlands (SSSI) and Duke's Bank Wood ancient woodland (contained within the boundaries of the SSSI)	River Coquet is an unmodified, fast-flowing upland river of importance to migratory and spawning salmon. Woodlands near to the river include semi-natural and ancient woodland sites. SSSI Units 5 (Swarland Burn to Coquet Mouth) and 13 (Duke's Bank Wood) of the SSSI are within the Order Limits. Unit 13 is classified as 'broadleaved, mixed and yew woodland – upland' habitat in a favourable condition. The woodland is also designated as ancient woodland. Unit 5, 'rivers and stream' habitat is in an unfavourable recovering condition due to sources of diffuse pollution affecting water quality, woodland management practices and deer grazing.	National (High) importance	0
Longhorsley Moor (SSSI)	A site of sub-Atlantic heath dominated by dry heath surrounded by a mosaic of habitats (scrub, woodland, bracken and grassland).	National (High) importance	0

Site Name	Reason for Designation	Nature Conservation Importance	Distance from ARN (m)
Ulgham Meadow (LNR)	Deciduous woodland and riparian habitat (River Lyne)	County (Medium) importance	0
Borough Wood (LNR)	Area of ancient semi-natural woodland.	County (Medium) importance	0
Davies Wood (LNR)	Mature broadleaved woodland (ancient semi-natural) of value to nesting birds and small mammals.	County (Medium) importance	35
Carlisle Park (LNR)	Deciduous woodland, including an area of ancient semi-natural woodland (Castle Wood), in addition to formal gardens and amenity space (bowling greens and tennis courts).	County (Medium) importance	195
Non-Statutory Designated Sites			
Coquet River Felton Park (LWS)	Parkland site contiguous with the River Coquet.	Local (Low) importance	0
Longhorsley Moor (LWS)	Mix of heathlands, scrub and woodland that adjoin Longhorsley Moor SSSI.	Local (Low) importance	0
Wansbeck and Hartburn Woods (LWS)	Semi-natural and ancient woodland. White-clawed crayfish in the River Wansbeck and tributaries.	Local (Low) importance	0
Cocklaw Dene (LWS)	Ancient and broadleaved woodland with marshy patches by the stream and lakeside.	Local (Low) importance	0
Cawledge Burn (LWS)	Primarily designated for its geology, with some ornithological interest.	Local (Low) importance	0

Site Name	Reason for Designation	Nature Conservation Importance	Distance from ARN (m)
Coney Garth Pond (LWS)	Open water habitat supporting large numbers of wildfowl and wading birds.	Local (Low) importance	10
Bothal Burn and River Wansbeck (LWS)	Ancient woodland along the River Wansbeck, known to support white-clawed crayfish.	Local (Low) importance	35
Cotting Woods (LWS)	Woodland (broadleaved and coniferous), including an area of ancient semi-natural woodland.	Local (Low) importance	65

Table 5-2 - Ancient Woodland Sites within the Study Area

Ancient Woodland Site Name	Associated Statutory or Non-Statutory Designation	Distance from ARN (m)
Duke's Bank Wood	River Coquet and Coquet Valley Woodlands SSSI	0
Borough Wood	Borough Wood LNR and Wansbeck & Hartburn Woods LWS	0
Unnamed (Stobswood)	N/A	0
Well Wood	N/A	0
Davies Wood	N/A	10
Weldon Wood	N/A	20
Park Wood/Bothal Banks	Bothal Burn & River Wansbeck LWS	35
Cotting Wood	Cotting Wood LWS	65
Unnamed (Scotch Gill Wood)	N/A	180
Burnie House Dean Wood	N/A	190

Table 5-3 - Ancient and Veteran Trees within the Study Area

Tree Reference	Tree Type	Grid Reference	Distance from ARN (m)
156339	Veteran common sycamore <i>Acer pseudoplatanus</i>	NZ1464194563	31
153195	Veteran beech <i>Fagus sylvatica</i>	NU1058113660	50
133417	Ancient alder <i>Alnus glutinosa</i>	NU1198805338	136
68541	Veteran hybrid sessile and English oak <i>Quercus petraea x Q. robur</i>	NZ1755199810	97
132902	Veteran sweet chestnut <i>Castanea sativa</i>	NU1812300006	191
133031	Veteran sweet chestnut	NZ1808799959	195
98458	Veteran beech	NZ1543694324	142
153192	Veteran lime <i>Tilia x europaea</i>	NU1059113680	58
153524	Veteran oak <i>Quercus sp.</i>	NU1198112370	126
156556	Veteran lime	NZ1464594604	5
156557	Veteran poplar <i>Populus sp.</i>	NZ1465594592	11
68872	Veteran common sycamore	NZ1752199790	68
153193	Veteran lime	NU1059113690	66
68555	Veteran alder	NU1231102630	124
68534	Veteran ash <i>Fraxinus excelsior</i>	NZ1446196440	91
153191	Veteran common horse chestnut <i>Aesculus hippocastanum</i>	NU1058113690	72
T91	Potential veteran ash	NZ1824589720	10
T457	Potential veteran sycamore	NZ1888694696	101
T681	Veteran oak	NU1763500387	169
T682	Veteran ash	NU1756400406	99

Tree Reference	Tree Type	Grid Reference	Distance from ARN (m)
T684	Veteran sycamore	NU1766300454	196
T690	Potential veteran oak	NU1765200668	80
T701	Potential veteran oak	NU1754400863	52
93294	Veteran common sycamore	NU1882118160	185
93296	Veteran common horse chestnut	NU1881118140	168
T195	Ancient beech	NU1725721405	98
T196	Veteran sycamore	NU1729721417	58

6 POTENTIAL WITHIN TOPIC COMBINED IMPACTS

- 6.1.1. The updated assessment considered increased nitrogen deposition, in addition to potential effects of ammonia (toxicity) concentrations in air. Nitrogen is a major growth nutrient and changes in nitrogen deposition can result in negative impacts on biodiversity, including: loss of sensitive species, changes to habitat structure and function, the homogenisation of vegetation types, changes in soil chemistry and an increased sensitivity to abiotic and biotic stresses (such as pests and climate) (**Ref. 11**).
- 6.1.2. A summary of pertinent literature reviewed during production of the original 2021 assessment in relation to nitrogen deposition is set out below ('nitrogen deposition literature review'). A summary of pertinent literature reviewed during the production of this updated 2024 assessment in relation to ammonia is also detailed below ('ammonia literature review'). This is followed by a characterisation of the nitrogen deposition and ammonia concentration impacts from the Scheme, that are applicable to all receptors. This characterisation has been completed with due regard to the impact assessment descriptions in LA 108 Biodiversity (**Ref. 5**) and the CIEEM Guidelines (**Ref. 3**).

NITROGEN DEPOSITION LITERATURE REVIEW

- 6.1.3. Exceedance of critical loads for nitrogen deposition can lead to effects on individual trees. For example, Waldner *et al* (**Ref. 17**) found that nutritional imbalances in soils and tree foliage and signs of reduced tree health were more likely to be reported in forest plots where the critical loads for woodland habitats were exceeded for several decades, than where they were not.
- 6.1.4. Thimonier *et al* (**Ref. 18**) reported correlations between nitrogen deposition rates and leaf nitrogen concentrations in pedunculate oak *Quercus robur* and beech *Fagus sylvatica*, but found that foliage of these species was within the optimum nitrogen nutrient range for seven out of eight sites studied, including some sites where critical loads were exceeded. The one site where foliar nitrogen concentrations exceeded the optimum nutritional range experienced nitrogen deposition rates in excess of 25 kg N/ha/yr. This study also found no correlation between crown defoliation of oak or beech and foliar concentrations of nitrogen.
- 6.1.5. Increased nitrogen deposition across a large range (from 30 kg N/ha/yr to 50 kg N/ha/yr) has been found to positively correlate with increased stem growth in mature beech trees of 43% (hypothesized to be a consequence of resultant increased soil nitrogen) (**Ref. 19**). Conversely, increased soil nitrogen availability may promote reduced root growth, predisposing affected trees to increased drought stress and risk of damage during storm events (**Ref. 20**).
- 6.1.6. Increased nitrogen content in foliage of trees can also lead to alterations in the communities of invertebrates feeding on tree foliage and increase abundance of some herbivore invertebrates. A study of oak trees in high versus low-nitrogen environments found evidence that these were relatively resistant to increased pressure from 'pest' species, possibly due to the relatively high tannin content of the leaves (**Ref. 21**). The authors of the study also

hypothesized that longer term exposure to elevated nitrogen levels was required before foliar nitrogen content increased sufficiently to attract altered communities of invertebrate herbivores.

- 6.1.7. The effects of increased nitrogen availability on individual trees may take several decades to manifest, and be exacerbated, negated, or subsumed by a range of other factors such as availability of other nutrients, soil pH, grazing by wild animals and livestock, and land management practices (**Ref. 22**).
- 6.1.8. The studies reported above have reported statistically significant changes to tree structure and functioning in relation to increased nitrogen deposition rates that exceed those that would be generated by the Scheme.
- 6.1.9. Woodland ground flora may also be affected by nitrogen deposition. Long-term studies of Wytham Wood in Oxfordshire (which has been subject to a suite of ecological monitoring since 1974) reported evidence that historical nitrogen deposition and acidification may have contributed to changes in the composition of woodland ground flora, with a shift towards increased grass cover and reduced woodland herb cover in the field layer (**Ref. 23**). The effects were compounded by other factors, including increased herbivore (deer) grazing and changes in the canopy structure over time. Effects on vegetation structure were more clearly attributable to grazing by deer than to historic or current levels of nitrogen deposition. The same study also reported recoveries of soil pH and nutrient nitrogen levels, although it was unclear whether these trends reflected recovery from historic agricultural inputs, reduced atmospheric deposition following peak emissions in the early 1990's, or a combination of both.
- 6.1.10. Natural England has also published research assessing the effects of small changes in nitrogen deposition onto a variety of habitats (**Ref. 10**). Although woodland habitats were excluded from the study, the authors considered their findings against other research on deciduous broadleaf woodlands. The Natural England study identified some synergies with other research, for example the potential for wavy hair grass *Deschampia flexuosa* and ruderal woodland species to increase under higher nitrogen deposition loadings, whilst other species including woodland forbs⁶ declined. Changes to the communities of epiphytic lower plants (mosses and lichens) have also been linked to altered nitrogen deposition regimes, with a shift to nitrophytes (nitrogen-loving) types that correlates with increased nitrogen deposition rates. Other studies, including a study of data from 1,200 woodland plots (**Ref. 24**), have been unable to correlate changes in woodland vegetation communities over time with changes in nitrogen deposition rates.

⁶ A herbaceous flowering plant that is not a grass, sedge or rush.

6.1.11. The research examined demonstrates that while adverse effects to woodland and tree habitats can occur as a result of increased nitrogen deposition, these effects are difficult to detect even with comparatively large doses of nitrogen. Some species/groups of plants may also benefit rather than being adversely affected by increased deposition rates, including when habitat-specific critical loads are already exceeded. Responses to increases in nitrogen deposition such as would be generated by the Scheme are likely to be subtle, leading to imperceptible levels of change within the affected habitats or to individual trees.

AMMONIA LITERATURE REVIEW

- 6.1.12. Ammonia is a highly reactive and soluble alkaline gas and can lead to excess nitrogen, causing eutrophication and acidification effects that can lead to species composition changes and other deleterious effects [Ref. 25].
- 6.1.13. “Ammonia can be taken up through the leaves via stomata, increasing the potential for nutrient nitrogen uptake. The consequences of foliar uptake and processing of an alkaline gas for cellular functions, appear to drive the deleterious effects of ammonia on terrestrial plants” [Ref. 25]. Adverse effects of ammonia on vegetation can occur via direct toxicity, including impacts such as necrosis, growth reduction, growth stimulation and increased frost sensitivity [Ref. 26]. Ammonia toxicity can also cause leaf yellowing and dieback in vegetation [Ref. 27]. Ammonia can also enrich an environment with nitrogen putting under-storey species at risk as they become shaded by the expansion of nitrogen-loving species. Nitrogen enrichment affects competition for resources, favouring fast growing, tall species with rapid nitrogen assimilation rates [Ref. 25]. Mosses and lichens, both notable components of ancient woodlands, are most at risk due to their limited detoxification capacity relative to their uptake potential and a large surface area relative to mass [Ref. 28].
- 6.1.14. Alkalinity is also thought to be a key driver for ammonia effects on epiphytic lichens [Ref. 29], a notable characteristic and feature of ancient woodlands. Ammonia can act to neutralise the bark pH [Ref. 29], thereby reducing the suitability of environmental conditions for acidophytic lichens (those who prefer acid conditions).
- 6.1.15. Similar adverse effects can be seen when considering mosses. Overall dry deposited ammonia-nitrogen drives species composition change and reduces species cover and diversity, much faster than the same unit of nitrogen in wet deposition [Ref. 30].
- 6.1.16. APIS comments that attributing specific effects associated with species composition change and reduction in species cover and diversity in the field can be challenging. This is because “ammonia is a form of nitrogen which is an essential plant growth nutrient. In addition, some of the effects are difficult to separate from those caused by management, or lack of shading of the under-storey” [Ref. 25].

7 DESIGN, MITIGATION, COMPENSATION AND ENHANCEMENT MEASURES

OVERVIEW

7.1.1. In accordance with the ES (see **paragraph 9.9.2, Chapter 9: Biodiversity Part A [APP-048] and Part B [APP-049]**), the terms ‘mitigation’ and ‘compensation’ are defined as follows:

- a.** Mitigation – the methods, processes and actions put in place to avoid or reduce the potential adverse impacts of the Scheme on designated habitats.
- b.** Compensation – the measures taken to offset the effects as a result of the loss of, or permanent damage to, designated habitats despite mitigation.

DESIGN AND MITIGATION

7.1.2. LA 105 Air Quality (**Ref. 1**) states in paragraph 2.110.1 that “*the following mitigation measures should be assessed for suitability, alongside any other proposed viable mitigation measure for the project:*”

- a.** Vertical barrier of at least 9 m in height;
- b.** Speed limits adjusted for air quality.”

7.1.3. The Applicant has considered the above design and mitigation measures in consultation with Natural England and Northumberland County Council. Vertical barriers of at least 9 m in height are not considered viable due to landscape constraints and visual obstruction issues. The adjustment of speed limits is also not considered viable as this action would compromise the objectives of the Scheme to improve journey times and improve network resilience and journey time reliability (as detailed in **paragraph 2.2.1, Chapter 2: The Scheme [APP-037]**).

7.1.4. In consultation with Natural England and Northumberland County Council in 2021, the Applicant investigated opportunities for other viable mitigation measures, in accordance with LA 105 Air Quality (**Ref. 1**), although none have been identified. A re-evaluation of mitigation options has been undertaken by the Applicant in 2024, although the position remains the same.

7.1.5. As such, there are no design or mitigation measures relevant to this assessment.

COMPENSATION

7.1.6. The updated 2024 assessment predicts significant effects at the following LNR and ancient woodland sites:

- a.** River Coquet and Coquet Valley Woodlands SSSI/Duke’s Bank Ancient Woodland
- b.** Park Wood/Bothal Bank Ancient Woodland
- c.** Cotting Wood Ancient Woodland
- d.** Davies Wood LNR/Ancient Woodland

- e. Borough Wood LNR/Ancient Woodland
- f. Well Wood Ancient Woodland
- g. Ten veteran trees (T682, T701, T457, T681, T684, T690, 68872, 68541, 133031 and 132902)

7.1.7. The measures that are intended to compensate for these impacts are detailed below.

River Coquet and Coquet Valley Woodlands SSSI / Duke's Bank Ancient Woodland

- 7.1.8. The **Ancient Woodland Strategy [REP9-012]** provides for woodland planting within an area of 11.54 ha adjacent to the SSSI. This land currently represents arable farmland, which would be taken out of production as a result of the Ancient Woodland Strategy. Therefore, there is expected to be a reduction from the current baseline regarding nitrogen (including ammonia) inputs to the SSSI woodland, from aerial and surface/sub-surface water flows. The benefits of this reduction were not considered within the original assessment as ammonia was not a factor under assessment but this would be a beneficial result of the change from arable farmland.
- 7.1.9. Whilst the benefits to the River Coquet and Coquet Valley Woodlands SSSI/Duke's Bank Ancient Woodland of removing the adjacent 11.54 ha of land from agricultural practices and replacing with woodland planting have not been quantified as part of the assessment undertaken, the Applicant has considered this qualitatively within the assessment and proposals for compensation.
- 7.1.10. The Woodland Creation Area as part of the **Ancient Woodland Strategy [REP9-012]** would also provide new habitat for lower plants, the component of the SSSI/ancient woodland that may be impacted by the predicted increases in ammonia concentration. The **Ancient Woodland Strategy [REP9-012]** details the proposals to create rides and glades (open areas) within the structure of the Woodland Creation Area. This would provide a benefit to the lower plant community (notably lichens and other epiphytes), which are known to benefit from higher light conditions. A mosaic of lightly shaded and well-lit habitat would encourage the greatest diversity (as detailed in a study undertaken by the UK Centre for Ecology & Hydrology (**Ref. 32**)). The Applicant considers that the ecological function of the secured Woodland Creation Area to also offer suitable compensation for the potential impacts to the lower plant community of the River Coquet and Coquet Valley Woodlands SSSI/Duke's Bank Ancient Woodland as a result of predicted increases in ammonia concentration.

Other Ancient Woodlands and LNRs

- 7.1.11. Within the 2021 assessment, the Applicant agreed with Northumberland County Council to fund habitat improvements outside of the Order Limits, to be undertaken by Northumberland County Council, as compensation for the predicted impacts and effects of nitrogen deposition from the Scheme on Borough Wood LNR/Ancient Woodland and Well Wood Ancient Woodland. The habitat improvements were to be secured by a legal agreement to be signed by both the Applicant and Northumberland County Council.

- 7.1.12. The Applicant has proposed to Northumberland County Council that they should enter into a similar arrangement to that agreed in 2021 in response to the impacts predicted from the updated 2024 assessment. The Applicant understands this to be acceptable.
- 7.1.13. The Applicant would fund habitat improvements at Davies Wood, Borough Wood and Well Wood (Plessey Wood), which are under the ownership of Northumberland County Council, within an area equivalent to the extent of impact detailed within Section 8 of this report. For the five sites listed above (b to f), this equates to 11.9 ha. The Applicant has confirmed with Northumberland County Council that they have sufficient land within their ownership at Davies Wood, Borough Wood and Well Wood (Plessey Wood) to accommodate the proposed compensatory habitat improvement works.
- 7.1.14. Park Wood/Bothal Bank Ancient Woodland and Cotting Wood Ancient Woodland are understood to be in private ownership and therefore not under the control of either the Applicant or Northumberland County Council. However, all five ancient woodland sites listed above are localised around Morpeth and functionally connected to one another by linear habitats (hedgerows and tree lines). The five ancient woodland sites have been considered as a resource, rather than considering each parcel separately. Therefore, the Applicant considers that the habitat improvements within Davies Wood, Borough Wood and Well Wood (Plessey Wood) are appropriate and adequate to compensate for the predicted impacts to all five ancient woodland sites.
- 7.1.15. The habitat improvements would comprise invasive/non-native species removal, management to encourage the development of an understorey, selective thinning followed by understorey planting with ancient woodland typical species and subsequent management for the establishment period (5 years post-planting). The habitat improvements are to be secured by a legal agreement to be signed by both the Applicant and Northumberland County Council.

Veteran Trees

- 7.1.16. The original 2021 assessment identified two trees where significant effects may occur and secured compensation, T682 and T701. The Applicant has provided compensatory tree planting for the theoretical damage to veteran trees T682 and T701 at a 1:30 ratio. This is captured on the Landscape Mitigation Masterplan Part A [REP8a-003] (labelled on sheet 17 as “0.1ha of woodland in relation to air quality impacts to veteran trees”), where a minimum of 60 trees would be planted. This compensation is secured by measure ExA: S-B100 of the Outline CEMP [REP9-016 and 017] (and as updated at Deadline 10).
- 7.1.17. The compensatory ratio and location of tree planting was agreed with Natural England during a meeting on 09 May 2021, as detailed in the Statement of Common Ground with Natural England issued at Deadline 9 [REP9-022] (and as updated at Deadline 10).
- 7.1.18. Significant effects are predicted to an additional eight veteran trees within the updated 2024 assessment (T457, T681, T684, T690, 68872, 68541, 133031 and 132902). The Applicant commits to planting a further 240 trees (a ratio of 1:30 for the additional eight veteran trees)

within the Order Limits or adjacent land within their ownership. This may include, but would not be restricted to, the soft estate along the de-trunked section of the A1 (Part A). The locations of the trees would be informed by a suitably experienced ecologist, with the secondary aim of also providing connectivity for wildlife. The proposed additional planting is considered adequate to compensate for the significant effects to the additional eight veteran trees.

ENHANCEMENT

- 7.1.19. There are no enhancement measures (i.e. those beyond mitigation and compensation) relevant to this assessment.

8 ASSESSMENT OF LIKELY SIGNIFICANT EFFECTS

- 8.1.1. This section identifies changes in nitrogen deposition and ammonia concentrations in the air that may lead to a significant effect as a result of the Scheme, in accordance with the updated 2024 assessment. The following designated habitats would not experience a change in nitrogen deposition and ammonia concentrations greater than 1% of the critical load/level, which is the same conclusion as that identified during the original 2021 assessment. As such, the change in nitrogen deposition would result in **Neutral (not significant)** effects and these designated habitats are not considered further within this assessment:
- a. Burnie House Dean Wood Ancient Woodland
 - b. Carlisle Park LNR
 - c. Tree T91
 - d. Tree T195
 - e. Tree T196
- 8.1.2. For those designated habitats predicted to experience a change in nitrogen deposition greater than 1 % of the critical load, the identified air quality attribute ('Restore' or 'Maintain') and whether the applicable nitrogen deposition threshold has been exceeded are presented in **Table 9-1**. Where information is available to inform a professional judgement to determine the air quality attribute for the designated habitat (as discussed in **paragraph 2.1.11**), the justification is set out below. Qualified statements, including ecological interpretation, are also presented below for those designated habitats where the increase in nitrogen deposition exceeds the applicable 'Restore' or 'Maintain' threshold.
- 8.1.3. For those designated habitats predicted to experience a change in ammonia concentrations greater than 1 % of the critical level, these are presented in **Table 9-2**. The ecological assessment of significance in accordance with LA 108 Biodiversity (**Ref. 5**) and LA 104 Environmental Assessment and Monitoring (**Ref. 4**) is summarised in **Table 9-3**.
- 8.1.4. In accordance with LA 105 Air Quality (**Ref. 1**), where the change in nitrogen deposition does not exceed the appropriate threshold (determined by the air quality attribute applied, as explained in **paragraphs 2.1.15** and **2.1.16**), a significant effect would not occur. Similarly, a significant effect is not predicted where the change in ammonia concentration is less than 1 % of the critical level. In such cases, effects are considered **Neutral (not significant)** and the designated habitat is not discussed further.

OPERATION

River Coquet and Coquet Valley Woodlands SSSI

- 8.1.5. The River Coquet and Coquet Valley Woodlands SSSI is located within 200 m of the ARN at three locations, hereafter referenced as Eco1, Eco9 and Eco12 (refer to **Figure 5.2: Human and Ecological Receptors Assessed Part A [APP-076]**). The SSSI is located both east and west of the ARN at each of the three locations.

- 8.1.6. SSSIs are broken down into units, which may be designated for different criteria. In order to understand the impacts to the River Coquet and Coquet Valley Woodlands SSSI, it is necessary to determine the impacts at the unit level. This approach was considered during consultation with Natural England in 2021.
- 8.1.7. Eco9 and Eco12 relate to units 4 and 5 of the SSSI, respectively. In addition, Eco1 is also within proximity to unit 5. Both units 4 and 5 of the SSSI are designated for their rivers and stream habitat. As per **paragraph 3.1.2**, effects to the river component of the SSSI are not explored further.
- 8.1.8. Eco1 also relates to unit 13 of the SSSI, which is designated for its broadleaved, mixed and yew woodland – upland habitat. An assessment has been made in relation to the potential impact of the Scheme in relation to unit 13.
- 8.1.9. At Eco1, the Scheme addresses the loss of all SSSI woodland (ancient woodland) within the Order Limits adjacent to the existing A1 (0.27 ha) and provides woodland planting as compensation (detailed within the **Ancient Woodland Strategy [REP9-012]**). The area for which compensation has been provided is excluded from the assessment because habitat that has been removed can no longer be affected by operational changes in air quality. As such, the closest point from the existing A1 affected by increased nitrogen deposition or ammonia concentrations is at the Order Limits boundary, approximately 25 m distance to the east and 7.5 m to the west of the ARN.

Nitrogen Deposition

- 8.1.10. At Eco1, the potential increase in levels of nitrogen deposition as a result of the Scheme to the east of the ARN are a maximum of 0.9 kg N/ha/yr. at 25 m along the transect, the closest transect point where impacts may occur (with reference to the at ground dispersion model results). Impacts then decrease with increasing distance from the road. The increases in nitrogen deposition experienced to the west of the ARN are a maximum of 0.3 kg N/ha/yr. (with reference to the at ground dispersion model results).
- 8.1.11. As detailed within the methodology section of this appendix (refer to **paragraph 2.1.13** and **2.1.16**) a key part of the assessment and determination of a significant air quality effect on a designated habitat is to determine whether the designated habitat has a ‘Restore’ or ‘Maintain’ air quality attribute (refer to Figure 2.98 in LA 105 Air Quality (**Ref. 1**)).
- 8.1.12. A note in LA 105 Air Quality, under Figure 2.98, states that:
- 8.1.13. “The presumption is that the air quality attribute for most designated habitats has been set to restore and the air quality assessment is completed on this basis.”
- 8.1.14. Therefore, in the absence of a site-specific air quality attribute status, a ‘Restore’ attribute should be initially considered. However, as explained in **paragraph 2.1.13** of this appendix, air quality attributes are publicly specified for European designated sites (those protected at an international level) but not for locally or nationally designated sites for nature conservation or for ancient woodland.

- 8.1.15. Paragraph 2.100 of LA 105 Air Quality states that:
- 8.1.16. “The competent expert for biodiversity shall conclude whether the changes in nitrogen deposition are likely to trigger a significant air quality effect.”
- 8.1.17. This means that whilst LA 105 Air Quality suggests that the presumption for designated habitats is a ‘Restore’ status in the absence of other information, the professional opinion of the competent expert for biodiversity has to be applied. That opinion must be informed by the information available to the competent expert.
- 8.1.18. In this case, the competent expert’s opinion is that evidence available demonstrates that a ‘Maintain’ status can be attributed to the River Coquet and Coquet Valley Woodlands SSSI. The evidence and reasoning that justifies the conclusion of a ‘Maintain’ status by the competent expert for biodiversity is presented below.

The ‘Favourable’ Condition Status of the SSSI Unit where the Impact Would Take Place

- 8.1.19. Unit 13 of the SSSI has been assigned a ‘Favourable’ condition by Natural England (**Ref. 12**). As defined by Natural England, “favourable condition means that the SSSI’s habitats and features are in a healthy state and are being conserved by appropriate management” (**Ref. 13**).
- 8.1.20. Whilst the condition status of unit 13 does not refer specifically to air quality pressures, the ‘Favourable’ condition indicates that the current nitrogen deposition rates are not leading to the site needing to be reclassified as having an ‘Unfavourable’ condition. Unit 13 has been classed as being in ‘Favourable’ condition since at least 1999 (**Ref. 14**). There is no reason to suppose that this would change in the future baseline as a result of air quality.

Change in Background Nitrogen Levels Over Time

- 8.1.21. The National Atmospheric Emission Inventory (NAEI) identifies that total NO_x emissions from road transport in 2018 are approximately a third of the level experienced in 1999 (earliest date where unit 13 was known to be of ‘Favourable’ condition) and have approximately halved since 2005 (**Ref. 15**). It is therefore reasonable to conclude that road emissions from the ARN were higher in the past than they are today. This means that historically there would have been larger contributions from the A1 to nitrogen deposition to unit 13 than today. Nevertheless, the condition of unit 13 during the last 21 years has remained as ‘Favourable’.
- 8.1.22. The competent expert for air quality also advised during the original 2021 assessment that NO₂ concentrations within the affected area have been monitored as part of the assessment, and the concentration is already low in this area (in the region of 25 µg/m³ at the roadside and less than 10 µg/m³ at background locations (refer to **Appendix 16.4: Air Quality Likely Significant Effects of the Scheme [APP-330]**). NO₂ concentrations are used in the calculation of nitrogen deposition. APIS Trends for this SSSI indicate relatively little change in nitrogen deposition between 2005 and 2020 (latest figures) (**Ref. 16**), whereas emissions from road transport have halved over the same time period (**Ref. 15**). It

is therefore concluded that most of the nitrogen deposition over the SSSI is due to other sources and the local road component of the nitrogen deposition is a small contributor.

8.1.23. According to APIS Trends for this 1 km grid square at the location of the A1 – River Coquet crossing (**Ref. 16**), nitrogen deposition for ‘Forest’ habitat in 2003⁷ was 21.8 kg N/ha/yr. and showed a peak in 2010 of 22.3 kg N/ha/yr. The APIS data also shows that nitrogen deposition for this SSSI was consistently above 19 kg N/ha/yr in and prior to 2020 (latest figures), with a spike observed in 2019 (22 kg N/ha/yr.). Comparable trends are observed for other SSSIs in Northumberland, refer to **Table 8-1**. This table has been updated since the original 2021 assessment due to more granular information that is now available via the APIS website. APIS provides trend data for each grid square across the designated habitat on a 1 km grid. For the purpose of the table, a grid square was selected for each SSSI adjacent to a road network (where present) to provide a comparable scenario to the Scheme and River Coquet and Coquet Valley Woodlands SSSI.

Table 8-1 - Trends in Nitrogen Deposition for a Sample of SSSIs in Northumberland

Year	SSSI					
	River Coquet and Coquet Valley Woodlands SSSI (at Scheme location)	Longhorsley Moor SSSI	Simonside Hills SSSI	Bewick and Beanley Moors SSSI	Northumberland Shore SSSI	Willow Burn Pasture SSSI
	Nitrogen deposition (kg N/ha/yr.) for Forest habitat					
2005	21.4	22.8	23.8	21.2	18.8	22.8
2010	22.3	23.4	25.0	22.8	20.0	23.1
2014	20.4	21.4	24.0	20.7	18.2	21.0
2017	20.0	21.3	23.1	20.8	17.4	21.0
2019	22.0	23.3	27.5	21.7	18.8	22.3
2020	19.9	20.9	24.3	19.6	17.0	20.1

⁷ Earliest record available.

8.1.24. The decrease in deposition in the APIS data for the River Coquet and Coquet Valley Woodlands SSSI between 2005 and 2020 is 1.5 kg N/ha/yr. Moreover, the decrease in deposition at the roadside is likely to be even greater as a result of the significant decrease in vehicle emissions over the same period, and this trend is expected to continue. Therefore, the competent expert for air quality concludes that future deposition rates from road transport will be below historic rates when unit 13 was classed as being in 'Favourable' condition.

The Evidence Relating to the Appropriate Threshold to Determine a Significant Effect

- 8.1.25. LA 105 Air Quality refers to Table 21 in the Natural England dose response report (**Ref. 10**) to determine whether the change in nitrogen deposition is likely to lead to a significant air quality effect. A significant effect would occur where the change in nitrogen deposition would lead to the theoretical loss of one species. The air quality attribute of the designated habitat (i.e. 'Restore' or 'Maintain') affects what change in nitrogen deposition could lead to a significant effect under LA 105 Air Quality (**Ref. 1**).
- 8.1.26. 'Restore' and 'Maintain' air quality attributes are determined for European sites in response to site-specific air quality criteria. There are no site-specific criteria relating to air quality for the SSSI and therefore no air quality attribute. In accordance with LA 105 Air Quality, a 'Restore' status would be applied in the absence of other information indicating the contrary (refer to **paragraph 8.1.14**).
- 8.1.27. If a designated habitat has a 'Restore' air quality attribute, the lowest change in nitrogen deposition of 0.4 kg N/ha/yr. from Table 21 of Natural England's dose response report (excluding sand dunes) is used as the threshold to determine a significant effect (**Ref. 10**). This change corresponds to the amount of additional nitrogen deposition that would theoretically reduce species richness by one against a background nitrogen deposition rate of 5 kg N/ha/yr.
- 8.1.28. However, the critical load for W9 woodland associated with this particular SSSI; unit 13, which is in 'Favourable' condition; is between 15 and 20 kg N/ha/yr. (**Ref. 16**). APIS considers the definition of the critical load as "*a quantitative estimate of exposure to one or more pollutants below which significant harmful effects on specified sensitive elements of the environment do not occur according to present knowledge*" (**Ref. 9**). In accordance with the definition of critical load, this suggests nitrogen deposition below a rate of 15 kg N/ha/yr. will not lead to harm to the woodland habitat.
- 8.1.29. Nitrogen deposition levels for unit 13 are approximately 22.96 kg N/ha/yr. (5 km average deposition from APIS) (refer to **Table 9-1**). Even though the background is higher than the lower (and higher) end of the critical load range, the designated habitat has maintained a 'Favourable' condition over the last 21 years. This further supports adopting and using the 'Maintain' approach in this instance.
- 8.1.30. Using Table 21 in the Natural England dose response report (**Ref. 10**), **Table 8-2** below shows the change in nitrogen deposition required to result in the theoretical loss of one

species in relation to the lower critical load for the woodland of this SSSI and the background nitrogen levels experienced by unit 13. Both are significantly greater than the threshold of 0.4 kg N/ha/yr. required for the ‘Restore’ approach.

Table 8-2 - Increase in Nitrogen Deposition Required to Result in the Theoretical Loss of One Species at Different Background N Deposition Levels

Scenario	Respective background nitrogen level category in NECR210 (Ref. 10) (kg N/ha/yr.)	Increase in nitrogen deposition required to result in the theoretical loss of one species (kg N/ha/yr.)
Lower critical load of SSSI woodland – 15 kg N/ha/yr.	15	1.3
Background nitrogen levels at this SSSI – 22.96 kg N/ha/yr.	20	1.7

8.1.31. When considering the at ground dispersion model result, the increase in nitrogen deposition that may be experienced by unit 13 as a result of the Scheme is a maximum of approximately 0.9 kg N/ha/yr to the east of the ARN and 0.3 kg N/ha/yr to the west (refer to **Table 9-1**) (decreasing as the distance increases into the SSSI away from the ARN). These values do not exceed either threshold of 1.3 and 1.7 kg N/ha/yr. This leads to the conclusion that no significant effect would occur as a result of nitrogen deposition.

Ammonia Concentration

- 8.1.32. Background ammonia concentration levels at Eco1 are predicted to be 1.04 µg/m³ (**Ref. 16, Table 9-2**) and therefore exceeds the 1 µg/m³ critical level threshold (with reference to **paragraph 2.1.29**) with or without the Scheme.
- 8.1.33. Both the at grade (i.e. level with the road) and ground level dispersion models predict an exceedance of the 1% of the critical level threshold along the 200 m transects both east and west of the ARN. For the purpose of this assessment, to provide a reasonable worst-case, the results of the at grade dispersion model have been used within the assessment below.
- 8.1.34. At Eco1, the potential increase in ammonia concentration as a result of the Scheme to the east of the ARN is a maximum of approximately 0.32 µg/m³ (a change equating to 32% of the critical level) at 25 m along the transect, the closest transect point where impacts may occur. Impacts then decrease with increasing distance from the road. However, predicted increases in ammonia concentration remain above the 1% critical level threshold along the full length of the 200 m transect (4.7% at 200 m).

- 8.1.35. The potential increase in ammonia concentration experienced to the west of the ARN is a maximum of 0.06 µg/m³ (a change equating to 6% of the critical level) and also remains above the 1% critical level threshold along the full length of the 200 m transect (2% at 200m).
- 8.1.36. As the impact exceeds the 1 % threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required.

Concluding Opinion of the Competent Expert

- 8.1.37. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as irreversible.
- 8.1.38. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.39. In relation to ammonia concentration, the **maximum** magnitude of the impact to the east of the ARN is 0.32 µg/m³ (change equating to 32% of the critical level), with exceedance of the 1% critical level threshold along the full length of the 200 m transect (3.12% at 200 m). The exceedance of the threshold up to 200 m to the east of the ARN would cover an **extent** of habitat of approximately 1.1 ha. To the west of the ARN, the maximum magnitude of the impacts is 0.06 µg/m³ (a change equating to 6% of the critical level). The exceedance of the threshold up to 200 m to the west of the ARN covers an **extent** of woodland habitat of approximately 1.3 ha. Collectively, the area of the designated habitat predicted to be subject to a potential increase in ammonia concentration in exceedance of the threshold is approximately 2.4 ha. There is the potential for the increase in ammonia concentration to cause adverse effects to the key characteristics of the SSSI (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).
- 8.1.40. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact level is classified as **Major adverse**.
- 8.1.41. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance (identified in Table 9-7, **Chapter 9: Biodiversity Part A [APP-048]**) would result in a Large or Very Large adverse effect. Mitigation has not been secured that would reduce the level of impact identified. It is therefore determined that, in accordance with Table 3.13 of LA 108 Biodiversity (**Ref. 5**), the increase in nitrogen deposition would result in a **Very Large adverse** effect to the River Coquet and Coquet Valley Woodlands SSSI (unit 13).
- 8.1.42. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

Duke's Bank Wood Ancient Woodland

- 8.1.43. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme. Duke's Bank Wood Ancient Woodland is 9.43 ha in size and located within the boundaries of the River Coquet and Coquet Valley Woodlands SSSI. The Ancient Woodland site is located east and west of the existing A1 (ARN) at Eco1 (refer to **Figure 5.2: Human and Ecological Receptors Assessed, Volume 5** of this ES [APP-076]).
- 8.1.44. As Duke's Bank Wood Ancient Woodland is located within the boundaries of the River Coquet and Coquet Valley Woodlands SSSI, the information presented in **paragraphs 8.1.10** to Error! Reference source not found. for determining the air quality attribute of the designated habitat applies. It is therefore considered that a 'Maintain' air quality attribute is appropriate for Duke's Bank Wood Ancient Woodland in relation to nitrogen deposition.
- 8.1.45. As presented above in relation to the River Coquet and Coquet Valley Woodlands SSSI, the threshold of significance for the 'Maintain' approach (an increase of 1.7 kg N/ha/yr. (refer to **Table 9-1**)) is exceeded. The assessment made above in **paragraphs 8.1.32 to 8.1.36** in relation to ammonia concentration is also applicable to Duke's Bank Ancient Woodland. Duke's Bank Wood Ancient Woodland is also a designated habitat of National importance. The characterisation of the impact in accordance with LA 108 as detailed above for the River Coquet and Coquet Valley Woodlands in **paragraph 8.1.37 to 8.1.41** is also valid for Duke's Bank Wood Ancient Woodland. Therefore, it is concluded that the increase in nitrogen deposition and ammonia concentrations would result in a **Very Large adverse** effect to Duke's Bank Wood Ancient Woodland.
- 8.1.46. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

Coquet River Felton Park LWS

- 8.1.47. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition as a result of the Scheme and the change in nitrogen deposition is greater than that predicted within the original 2021 assessment. The updated 2024 assessment also quantified the potential impacts of increased atmospheric ammonia concentrations. Coquet River Felton Park LWS is 18.02 ha in size and located to the east and west of the existing A1 (ARN) where it crosses the River Coquet, model reference of Eco1 (refer to **Figure 5.2: Human and Ecological Receptors Assessed Part A** of the ES [APP-076]). The LWS includes the woodland on the northern bank of the river.
- 8.1.48. The Scheme addresses the loss of all LWS woodland within the Order Limits adjacent to the existing A1 (0.69 ha) and provides woodland planting as compensation (detailed within the **Ancient Woodland Strategy [REP9-012]**). The area for which compensation has been provided is excluded from the assessment because habitat that has been removed can no longer be affected by operational changes in air quality. As such, the closest point affected

by increased nitrogen deposition or ammonia concentrations from the existing A1 is at the Order Limits boundary, approximately 15 m to the east and 7.5 m to the west of the ARN.

Nitrogen Deposition

- 8.1.49. At Eco1, the potential increases in levels of nitrogen deposition as a result of the Scheme to the east of the ARN are a maximum of 5.5 kg N/ha/yr at 15 m along the transect, the closest transect point where impacts may occur. Impacts decrease with increasing distance from the road. The increases in nitrogen deposition experienced to the west of the ARN are a maximum of 0.7kg N/ha/yr.
- 8.1.50. The competent expert's opinion is that evidence available demonstrates that a 'Maintain' status can be attributed to the Coquet River Felton Park LWS. The evidence and reasoning that justifies the conclusion of a 'Maintain' status by the competent expert for biodiversity is presented below.
- 8.1.51. A National Vegetation Classification (NVC) survey was undertaken in April 2017 (refer to **Appendix 9.2: National Vegetation Classification Survey Report Part A [APP-228]**). The survey included the Coquet River Felton Park LWS and the River Coquet and Coquet Valley Woodlands SSSI (containing Duke's Bank Wood Ancient Woodland) and concluded that "*the woodland as a whole fits well with W9.*" The survey recorded a greater number of ancient woodland indicator species within the LWS when compared to the SSSI, implying that the environmental conditions of the LWS are in a similar, if not better, condition when compared to the SSSI. In addition, the LWS is located adjacent to the SSSI. Given the proximity of the LWS to the SSSI and the likely comparable condition of the habitats (informed by the NVC data), the habitats of the LWS are also considered to be in a 'Favourable' condition. Whilst this does not refer specifically to air quality pressures, a 'Favourable' condition indicates the need to maintain the current condition of the LWS habitats, rather than instigate restorative measures.
- 8.1.52. As the LWS is contiguous with the River Coquet and Coquet Valley Woodlands SSSI and both represent the same type of woodland habitat (as identified by the NVC survey), it is reasonable to conclude that the same lower critical load of 15 kg N/ha/yr. can be applied on a precautionary basis for the LWS. Therefore, information presented in **paragraphs 8.1.10 to 8.1.30** above for determining the air quality attribute of the SSSI applies.
- 8.1.53. Taking account of the evidence available, it is the professional opinion of the competent expert for biodiversity that a 'Maintain' air quality attribute is appropriate for the LWS and a similar assessment outcome is predicted in respect of significance.
- 8.1.54. The increased nitrogen deposition levels do not exceed the threshold of significance for the 'Maintain' approach (an increase of 1.7 kg N/ha/yr. (refer to **Table 9-1**) equating to a background deposition of 20 kg N/ha/yr. (**Ref. 10**)) to the west of the ARN. As such, nitrogen deposition to the west of the ARN at Eco1 is not considered further.
- 8.1.55. The increased nitrogen deposition exceeds the 1.7 kg N/ha/yr threshold to the east of the ARN at the Order Limits, 15 m along the transect, falling below this threshold at between 60

and 70 m. As the impact exceeds the 'Maintain' threshold under LA 105 (Ref. 1), characterisation of the impact in accordance with LA 108 is required (see *Significance of Effect* below).

Ammonia Concentration

- 8.1.56. Background ammonia concentration levels at Eco1 are predicted to be 1.04 $\mu\text{g}/\text{m}^3$ (Ref. 16, Table 9-2) and therefore exceeds a 1 $\mu\text{g}/\text{m}^3$ critical level threshold (with reference to paragraph 2.1.29) with or without the Scheme.
- 8.1.57. At Eco1, the potential increase in ammonia concentration as a result of the Scheme to the east of the ARN is a maximum of approximately 0.47 $\mu\text{g}/\text{m}^3$ (a change equating to 47% of the critical level) at 15 m along the transect, the closest transect point where impacts may occur. Impacts then decrease with increasing distance from the road. However, predicted increases in ammonia concentration remain above the 1% critical level threshold along the full length of the 200 m transect (3.12% at 200 m).
- 8.1.58. The potential increase in ammonia concentration experienced to the west of the ARN is a maximum of 0.06 $\mu\text{g}/\text{m}^3$ (a change equating to 6% of the critical level) and also remains above the 1% critical level threshold along the full length of the 200 m transect (2% at 200m).
- 8.1.59. As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see *Significance of Effect* below).

Significance of Effect

- 8.1.60. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition and ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** impact, in accordance with LA 108 Biodiversity (Ref. 5), the impact is also classified as **irreversible**.
- 8.1.61. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.62. In relation to nitrogen deposition, the maximum **magnitude** of the impact is 5.5 kg N/ha/yr, with the exceedance of the threshold covering an **extent** of habitat of approximately 0.5 ha. A limited proportion of the designated habitats site would be affected, with the Scheme delaying long-term reductions in overall nitrogen deposition rates rather than leading to long-term increases in these relative to the current baseline. However, there is potential for the Scheme nitrogen deposition rates to have adverse impacts to the key characteristics of the ancient woodland habitat (refer to **Section 6**).
- 8.1.63. In relation to ammonia concentration, the **maximum** magnitude of the impact to the east of the ARN is 0.47 $\mu\text{g}/\text{m}^3$ (change equating to 47% of the critical level), with exceedance of the 1% critical level threshold along the full length of the 200 m transect (4.7% at 200 m). The

exceedance of the threshold up to 200 m from the ARN would cover an **extent** of habitat of approximately 1.6 ha. To the west of the ARN, the maximum magnitude of the impacts is $0.06 \mu\text{g}/\text{m}^3$ (a change equating to 6% of the critical level). The exceedance of the threshold covers an **extent** of woodland habitat of approximately 1.9 ha. Collectively, the area of the designated habitat predicted to be subject to a potential increase in ammonia concentration in exceedance of the threshold is approximately 3.5 ha. There is the potential for the increase in ammonia concentration to cause adverse effects to the key characteristics of the LWS (woodland habitat and flora) (refer to **Section 6**).

- 8.1.64. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact level is classified as **Major adverse**.
- 8.1.65. In accordance with Table 3.13 of LA 108, as a Major adverse impact on a resource of Local importance⁸, the Scheme would result in a **Slight adverse (not significant)** effect to the Coquet River Felton Park LWS as a result of operational air quality.

Longhorsley Moor SSSI

- 8.1.66. The updated 2024 assessment also predicts beneficial impacts to Longhorsley Moor SSSI as a result of the reduction of nitrogen deposition and ammonia concentrations. Longhorsley Moor SSSI is approximately 35.2 ha in size and adjacent to the west of the ARN (A697). The SSSI is designated for its mosaic of heathland, scrub and woodland habitats and the species the support (notably birds and butterflies).
- 8.1.67. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The decrease in nitrogen deposition is predicted to exceed $0.4 \text{ kg N}/\text{ha}/\text{yr}$. (the 'Restore' approach threshold) up to 10 m from the ARN, falling below this threshold at 15 m. As the beneficial impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.68. The potential decrease in ammonia concentration is a maximum of $-0.22 \mu\text{g}/\text{m}^3$ (a change equating to -7.2% of the critical level) and exceeds the 3% critical level threshold up to 5 m from the ARN (falling below the 3% threshold at 10 m). As the beneficial impact exceeds the 3% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.69. The **duration** of the impact is considered **permanent**, given the considerable declines in total NO_x emissions from road transport over the last two decades (as detailed in

⁸ As identified in Table 9-7, **Chapter 9: Biodiversity Part A [APP-048]** and detailed within the Applicant's response to BIO.1.18 of the Examining Authority's first written questions **[REP1-032]**.

paragraph 2.1.19), and the predicted continuation of these decreases in the future due to forecast reductions in 'per vehicle' emissions as the UK vehicle fleet decarbonises.

- 8.1.70. The maximum **magnitude** of the nitrogen deposition impact is -1.51 kg N/ha/yr.⁹ (**Table 9-1**), with the exceedance of the threshold covering an **extent** of habitat of approximately 0.8 ha. In relation to ammonia concentration, the **maximum** magnitude of the impact is -0.22 µg/m³ and the exceedance of the 3% critical level threshold covering an **extent** of habitat of approximately 0.25 ha.
- 8.1.71. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.72. A limited proportion of the designated habitat would be beneficially affected by reduced nitrogen deposition and ammonia concentrations. The predicted reductions are unlikely to lead to long-term perceptible change of the composition and species richness of the woodland ground flora based on the literature review completed (refer to **Section 6**) or on the health of trees within the woodland. Any subtle effects that do occur are therefore not predicted to positively affect the integrity of the designated habitats. However, the key characteristics of the SSSI (woodland habitat) may be positively impacted.
- 8.1.73. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent beneficial impact that would positively impact the key characteristics of the resource and therefore the impact level is classified as **Major beneficial**.
- 8.1.74. In accordance with Table 3.13 of LA 108, a Major beneficial impact on a resource of National importance would result in a Large or Very Large beneficial effect. Paragraph 3.13.1 of LA 108 Biodiversity states that where there are "*two significance categories, evidence should be provided to support the reporting of a single significance category.*" There is no known evidence to distinguish between the two significance categories provided and therefore, on a precautionary basis, the lower level of significance has been attributed. It is therefore determined that the Scheme would result in a **Large beneficial** effect to Longhorsley Moor SSSI as a result of operational air quality.

Bothal Burn and River Wansbeck LWS / Park Wood/Bothal Bank Ancient Woodland

- 8.1.75. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme (Eco3). Within 200 m of the ARN, south of the A197 to the east of Morpeth, Bothal Burn and River Wansbeck LWS and Park Wood/Bothal Bank Ancient Woodland encompass the same geographical area and set back from the ARN by approximately 30 to 50 m. Bothal Burn and River Wansbeck LWS is approximately 73 ha in size in total. Park Wood/Bothal Bank

⁹ -1.4 kg N/ha/yr. within the existing assessment.

Ancient Woodland, which comprises a number of sections of ancient semi-natural and ancient replanted woodland, is approximately 118 ha in size.

Nitrogen Deposition

- 8.1.76. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the two designated habitats. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The predicted increase in nitrogen deposition does not exceed 0.4 kg N/ha/yr (the 'Restore' approach threshold) at any point along the 200 m transect. As the threshold is not exceeded, in accordance with **paragraph 2.1.31**, significant effects are not predicted. As such, nitrogen deposition has not been considered further.

Ammonia Concentration

- 8.1.77. Background ammonia concentration levels at Eco3 are predicted to be 1.08 µg/m³ (**Ref. 16, Table 9-2**) and therefore exceeds the 1 µg/m³ critical level threshold (with reference to **paragraph 2.1.29**) with or without the Scheme.
- 8.1.78. The potential increase in ammonia concentration as a result of the Scheme is a maximum of 0.02 µg/m³ (a change equating to 2% of the critical level) and exceeds the 1% critical level threshold up to 90 m from the ARN (falling below at 100 m). As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).

Significance of Effect

- 8.1.79. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** Impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.
- 8.1.80. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.81. In relation to ammonia concentration, the **maximum** magnitude of the impact is approximately 0.02 µg/m³ and the exceedance of the 1% critical level threshold covers an **extent** of habitat of approximately 1 ha. A very limited proportion of the designated habitats would be affected, with the Scheme delaying long-term reductions in overall ammonia concentration rather than leading to long-term increases in these relative to the current baseline. Therefore, the predicted changes are unlikely to affect the integrity of the designated habitat. However, there is potential for the predicted increases in ammonia concentrations as a result of the Scheme to have adverse impacts on the key characteristics of the LWS (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).

- 8.1.82. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact is classified as **Major adverse**.
- 8.1.83. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance (Park Wood/Bothal Bank Ancient Woodland) would result in a Large or Very Large adverse effect. A Major adverse impact on a resource of Local importance (Bothal Burn and River Wansbeck LWS) would result in a Slight adverse effect. Mitigation has not been secured that would reduce the level of impact identified. It is therefore determined that, in accordance with Table 3.13 of LA 108 Biodiversity (**Ref. 5**), the increase in ammonia concentration would result in a **Very Large adverse** effect to Park Wood/Bothal Bank Ancient Woodland and a **Slight adverse (not significant)** effect to Bothal Burn and River Wansbeck LWS as a result of operational air quality.
- 8.1.84. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

Cotting Wood Local Wildlife Site and Ancient Woodland

- 8.1.85. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme at Cotting Wood LWS and Ancient Woodland (Eco4). Cotting Woodland LWS (5.2 ha) is located to the north of Morpeth and approximately 70 m to the north of the ARN (A192 Pottery Bank). The LWS encompasses the area of Cotting Woodland Ancient Woodland (3.6 ha), which is located approximately 130 m north of the ARN, plus additional areas of broadleaved woodland habitat that fall within the designated habitat.

Nitrogen Deposition

- 8.1.86. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the two designated habitats. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The predicted increase in nitrogen deposition does not exceed 0.4 kg N/ha/yr (the 'Restore' approach threshold) at any point along the 200 m transect. As the threshold is not exceeded, in accordance with **paragraph 2.1.31**, significant effects are not predicted. As such, nitrogen deposition has not been considered further.

Ammonia Concentration

- 8.1.87. Background ammonia concentration levels at Eco4 are predicted to be 1.14 µg/m³ (**Ref. 16, Table 9-2**) and therefore exceeds a 1 µg/m³ critical level threshold for ancient woodland habitat (with reference to **paragraph 2.1.29**) with or without the Scheme. A 3 µg/m³ critical level threshold, applicable to other woodland within the LWS designation but not designated as ancient woodland, would not be exceeded.
- 8.1.88. The potential increase in ammonia concentration as a result of the Scheme is a maximum of 0.02 µg/m³ (a change equating to 1.6% of the critical level) and exceeds the 1% critical level threshold for ancient woodland habitat along the full length of the 200 m transect (1.3% at

200 m). As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below). It is notable that a 1% of the 3 µg/m³ critical level threshold, which would be applicable to other woodland habitat within the LWS but outside the ancient woodland designation, is not predicted to be exceeded.

Significance of Effect

- 8.1.89. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** Impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.
- 8.1.90. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.91. In relation to ammonia concentration, the **maximum** magnitude of the impact is approximately 0.02 µg/m³ and the exceedance of the 1% critical level threshold covers an **extent** of habitat of approximately 0.7 ha of the ancient woodland habitat. The Scheme is predicted to result in only small incremental increases in ammonia concentration, delaying long-term reductions in overall ammonia concentration rather than leading to long-term increases in these relative to the current baseline. However, there is potential for the predicted increases in ammonia concentrations as a result of the Scheme to have adverse impacts on the key characteristics of the designated sites (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).
- 8.1.92. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact is classified as **Major adverse**.
- 8.1.93. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance (Cotting Wood Ancient Woodland) would result in a Large or Very Large adverse effect. A Major adverse effect on a resource of Local importance (Cotting Wood LWS) would result in a Slight adverse effect. Mitigation has not been secured that would reduce the level of impact identified. It is therefore determined that, in accordance with Table 3.13 of LA 108 Biodiversity (**Ref. 5**), the increase in ammonia concentration would result in a **Very Large adverse** effect to Cotting Wood Ancient Woodland and a **Slight adverse (not significant)** effect to Cotting Wood LWS as a result of operational air quality.
- 8.1.94. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

Davies Wood Local Nature Reserve and Ancient Woodland

- 8.1.95. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme at

Davies Wood LNR and Ancient Woodland (Eco5). Davies Wood Ancient Woodland (6.9 ha) is located to the north of Morpeth and approximately 15 m south of the ARN (A192 Pottery Bank). The ancient woodland designation encompasses the area of Davies Wood LNR (5.4 ha), which is located approximately 35m at its closest point to the ARN.

Nitrogen Deposition

8.1.96. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the two designated habitats. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The predicted increase in nitrogen deposition does not exceed 0.4 kg N/ha/yr (the 'Restore' approach threshold) at any point along the 200 m transect. As the threshold is not exceeded, in accordance with **paragraph 2.1.31**, significant effects are not predicted. As such, nitrogen deposition has not been considered further.

Ammonia Concentration

- 8.1.97. Background ammonia concentration levels at Eco5 are predicted to be 1.14 µg/m³ (**Ref. 16, Table 9-2**) and therefore exceeds a 1 µg/m³ critical level threshold for ancient woodland habitat (with reference to **paragraph 2.1.29**) with or without the Scheme.
- 8.1.98. The potential increase in ammonia concentration as a result of the Scheme is a maximum of 0.03 µg/m³ (a change equating to 3% of the critical level) and exceeds the 1% critical level threshold up to 120 m from the ARN. As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).

Significance of Effect

- 8.1.99. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** Impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.
- 8.1.100. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.101. In relation to ammonia concentration, the **maximum** magnitude of the impact is approximately 0.03 µg/m³ and the exceedance of the 1% critical level threshold covers an **extent** of habitat of approximately 2.6 ha of the ancient woodland habitat (which encompasses approximately 1 ha of the LNR). The Scheme is predicted to result in only small incremental increases in ammonia concentration, delaying long-term reductions in overall ammonia concentration rather than leading to long-term increases in these relative to the current baseline. However, there is potential for the predicted increases in ammonia concentrations as a result of the Scheme to have adverse impacts on the key characteristics of the designated sites (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).

- 8.1.102. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact is classified as **Major adverse**.
- 8.1.103. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance (Davies Wood Ancient Woodland) would result in a Large or Very Large adverse effect. A Major adverse effect on a resource of County importance (Davies Wood LNR) would result in a Slight or Moderate adverse effect. Mitigation has not been secured that would reduce the level of impact identified. It is therefore determined that, in accordance with Table 3.13 of LA 108 Biodiversity (**Ref. 5**), the increase in ammonia concentration would result in a **Very Large adverse** effect to Davies Wood Ancient Woodland and a **Moderate adverse** effect to Davies Wood LNR as a result of operational air quality.
- 8.1.104. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

Wansbeck and Hartburn Woods LWS / Borough Wood ancient woodland / Borough Wood LNR

- 8.1.105. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme (Eco7). Wansbeck and Hartburn Woods LWS (161.6 ha), which encompasses Borough Wood ancient woodland (16.1 ha), is bisected by the existing A1 (affected road) to the south of the Scheme. As such, modelling was undertaken to both the east and west of the existing A1. Borough Wood LNR (18.35 ha) is located to the east of the existing A1 only. The majority of the LNR overlaps with the boundaries of the Wansbeck and Hartburn Woods LWS and Borough Wood ancient woodland, although discrete areas extend beyond the boundaries of the LWS and ancient woodland. All three designated habitats are designated for their woodland habitat.

Nitrogen Deposition

- 8.1.106. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the three designated habitats. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. To the west of the ARN, the increase in nitrogen deposition exceeds 0.4 kg N/ha/yr (the 'Restore' approach threshold) up to 30 m, falling below this threshold at 35 m. To the east of the ARN, the increase in nitrogen deposition exceeds 0.4 kg N/ha/yr up to a distance of 80 m into the designated habitats (falling below the threshold at 90 m). As the impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see *Significance of Effect* below).

Ammonia Concentration

- 8.1.107. Background ammonia concentration levels at Eco7 are predicted to be $1.13 \mu\text{g}/\text{m}^3$ (**Ref. 16, Table 9-2**) and therefore exceeds the $1 \mu\text{g}/\text{m}^3$ critical level threshold (with reference to **paragraph 2.1.29**) with or without the Scheme.
- 8.1.108. The potential increase in ammonia concentration experienced to the east of the ARN as a result of the Scheme is a maximum of $0.31 \mu\text{g}/\text{m}^3$ (a change equating to 31% of the critical level). Impacts then decrease with increasing distance from the road. However, predicted increases in ammonia concentration remain above the 1% critical level threshold along the full length of the 200m transect (1.7% at 200 m). To the west of the ARN, the potential increase in ammonia concentration as a result of the Scheme is a maximum of approximately $0.18 \mu\text{g}/\text{m}^3$ (a change equating to 18% of the critical level). The 1% critical level threshold is exceeded up to a distance of 150 m from the ARN. As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see *Significance of Effect* below).
- 8.1.109. It should be noted that approximately 1.4 ha of the woodland within the LNR that falls within the impacted extent for ammonia concentrations represents plantation woodland and falls outside the ancient woodland designation. Therefore, a $3 \mu\text{g}/\text{m}^3$ critical level threshold would be applicable to this habitat. The predicted increase in ammonia concentration with or without the Scheme would not exceed the $3 \mu\text{g}/\text{m}^3$ critical level threshold. As such, in accordance with **paragraph 2.1.31**, significant effects are not predicted as a result of changes in ammonia concentrations to the 1.4 ha of plantation woodland within the LNR.

Significance of Effect

- 8.1.110. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition and ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as irreversible.
- 8.1.111. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.112. In relation to nitrogen deposition, the maximum **magnitude** of the impact is 1.2 kg N/ha/yr. to the west of the ARN and 2.2 kg N/ha/yr. to the east of the ARN, with the exceedance of the threshold covering an **extent** of habitat of approximately 1.8 ha, constituted of approximately 1.0 ha of the ancient woodland and LWS woodland, and

approximately 1.7 ha of the LNR woodland¹⁰ (encompassing approximately 0.9 ha of the affected area of both the ancient woodland and LWS to the east of the ARN). A limited proportion of the designated habitats site would be affected, with the Scheme delaying long-term reductions in overall nitrogen deposition rates rather than leading to long-term increases in these relative to the current baseline. However, there is potential for the Scheme nitrogen deposition rates to have adverse impacts on the key characteristics of the designated habitats (woodland habitat) (refer to **Section 6**).

- 8.1.113. In relation to ammonia concentration, the **maximum** magnitude of the impact is 0.31 µg/m³ (change of 31% of the critical level) to the east of the ARN and 0.18 µg/m³ (a change equating to 18% of the critical level) to the west of the ARN. The exceedance of the threshold covers an **extent** of habitat of approximately 4.9 ha of the ancient woodland and LWS woodland (3.8ha to the east and 1.1 ha to the west of the ARN), encompassing the 3.8 ha of the LNR ancient woodland to the east of the ARN. There is the potential for the increase in ammonia concentration to cause adverse effects to the key characteristics of the designated habitats (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).
- 8.1.114. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact level is classified as **Major adverse**.
- 8.1.115. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance (Borough Wood ancient woodland) would result in a Large or Very Large adverse effect. A Major adverse impact on a resource of County importance (Borough Wood LNR) would result in a Slight or Moderate adverse effect and on a resource of Local importance (Wansbeck and Hartburn Woods LWS) would result in a Slight adverse effect. Mitigation has not been secured that would reduce the level of impact identified for each of the three designated habitats. It is therefore determined that, in accordance with Table 3.13 of LA 108 Biodiversity (**Ref. 5**), the increase in nitrogen deposition would result in a **Very Large adverse** effect to Borough Wood ancient woodland, a **Moderate adverse** effect to Borough Wood LNR and a **Slight adverse (not significant)** effect to Wansbeck and Hartburn Woods LWS as a result of operational air quality.
- 8.1.116. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.

¹⁰ The ancient woodland and LWS woodland comprise approximately the same geographical area, both east and west of the ARN. There is a partial but not complete overlap of the ancient woodland and LWS woodland with the LNR woodland. Approximately 1.5 ha of woodland covered by one or more of these designations experiences nitrogen deposition impacts exceeding the 0.4 kg N/ha/yr 'Restore' approach threshold.

Well Wood Ancient Woodland

- 8.1.117. The updated air quality modelling undertaken in 2024 showed that there would be an increase in nitrogen deposition as a result of the Scheme (Eco8). The updated 2024 assessment also quantified the potential impacts of increased atmospheric ammonia concentrations. Well Wood Ancient Woodland (approximately 52.7 ha in size) is located to the east of the existing A1 (ARN).
- 8.1.118. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The increase in nitrogen deposition exceeds 0.4 kg N/ha/yr. (the 'Restore' approach threshold) up to 45 m east of the ARN, falling below the threshold at 50 m. As the impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.119. The potential increase in ammonia concentration as a result of the Scheme is a maximum of 0.21 µg/m³ (a change equating to 21% of the critical level) and exceeds the 1% critical level threshold along the full length of the 200 m transect. Background ammonia concentration levels are predicted to be 1.15 µg/m³ (**Ref. 16, Table 9-2**) and therefore exceeds the 1 µg/m³ critical level threshold (with reference to **paragraph 2.1.29**) with or without the Scheme. As the impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.120. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition and ammonia concentrations would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.
- 8.1.121. In relation to nitrogen deposition, the maximum **magnitude** of the impact is 2.2 kg N/ha/yr. (**Table 9-1**), with the exceedance of the threshold covering an **extent** of habitat of approximately 0.5 ha. In relation to ammonia concentration, the **maximum** magnitude of the impact is 0.21 µg/m³ (change equating to 21% of the critical level) and the exceedance of the 1 % critical level threshold covers an **extent** of habitat of approximately 2.7 ha.
- 8.1.122. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.123. As described above, a limited proportion of the designated habitat would be affected, with the Scheme delaying long-term reductions in overall nitrogen deposition rates rather than leading to long-term increases in these relative to the current baseline. However, there is potential for the Scheme nitrogen deposition rates and the predicted increases in ammonia concentrations to have adverse impacts on the key characteristics of the

designated habitat (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (refer to **Section 6**).

- 8.1.124. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact level is classified as **Major adverse**.
- 8.1.125. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance would result in a Large or Very Large adverse effect. Mitigation has not been secured to reduce the level of impact. It is therefore determined that the Scheme would result in a **Very Large adverse** effect to Well Wood ancient woodland as a result of operational air quality.
- 8.1.126. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.
- Ulgham Meadow LNR**
- 8.1.127. Air quality modelling as part of the updated 2024 assessment predicted a decrease in nitrogen deposition and ammonia concentrations for Ulgham Meadows LNR (Eco10) in the opening year (2024). This is due to the increase in capacity for vehicular traffic along the A1 (the Scheme), drawing traffic off other roads and thereby reducing associated vehicular emissions in proximity to the LNR. Ulgham Meadows LNR is approximately 3.62 ha in size and designated for its woodland habitat.
- 8.1.128. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The decrease in nitrogen deposition exceeds 0.4 kg N/ha/yr. (the 'Restore' approach threshold) up to 65 m from the ARN, falling below the threshold at 70 m. As the beneficial impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.129. The potential decrease in ammonia concentration as a result of the Scheme is a maximum of -0.40 µg/m³ (a change equating to -13% of the critical level) and exceeds the 3% critical level threshold up to 20 m from the ARN (falling below 3% at 25 m). As the beneficial impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.130. The **duration** of the impact is considered **permanent**, given the considerable declines in total NO_x emissions from road transport over the last two decades (as detailed in **paragraph 2.1.19**), and the predicted continuation of these decreases in the future due to forecast reductions in 'per vehicle' emissions as the UK vehicle fleet decarbonises.

- 8.1.131. The maximum **magnitude** of the nitrogen deposition impact is -4.5 kg N/ha/yr.¹¹ (**Table 9-1**), with the exceedance of the threshold covering an **extent** of habitat of approximately 0.6 ha. In relation to ammonia concentration, the **maximum** magnitude of the impact is -0.40 µg/m³ and the exceedance of the 1% critical level threshold covers an **extent** of habitat of approximately 0.2 ha.
- 8.1.132. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.133. Approximately 16.5% of the designated habitat would be beneficially affected by a decrease in nitrogen deposition (approximately 5.5% when considering ammonia concentration). However, the beneficial impacts of the Scheme are unlikely to lead to long-term perceptible change of the composition and species richness of the woodland ground flora. Any subtle effects that do occur are therefore not predicted to positively affect the integrity of the designated habitats. However, the key characteristics of the designated habitat (woodland habitat) may be positively impacted.
- 8.1.134. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent beneficial impact that would positively impact the key characteristics of the resource and therefore the impact level is classified as **Major beneficial**.
- 8.1.135. In accordance with Table 3.13 of LA 108, a Major beneficial impact on a resource of County importance would result in a Slight or Moderate beneficial effect. Paragraph 3.13.1 of LA 108 Biodiversity states that where there are “*two significance categories, evidence should be provided to support the reporting of a single significance category.*” There is no known evidence to distinguish between the two significance categories provided and therefore, on a precautionary basis, the lower level of significance has been attributed. It is therefore determined that the Scheme would result in a **Slight beneficial (not significant)** effect to Ulgham Meadow LNR as a result of operational air quality.

Weldon Wood Ancient Woodland

- 8.1.136. Similar to Ulgham Meadows LNR above, air quality modelling as part of the updated 2024 assessment predicted a decrease in nitrogen deposition and ammonia concentrations for Weldon Wood Ancient Woodland (Eco11) in the opening year (2024). Weldon Wood Ancient Woodland is approximately 5.23 ha in size and located approximately 20 m from the ARN at its closest point.
- 8.1.137. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the ‘Restore’ approach. The decrease in nitrogen

¹¹ -1.4 kg N/ha/yr. within the existing assessment.

deposition exceeds 0.4 kg N/ha/yr. (the 'Restore' approach threshold) up to 30 m along the transect, falling below the threshold at 35 m. As the beneficial impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).

- 8.1.138. The potential decrease in ammonia concentration as a result of the Scheme is a maximum of $-0.07 \mu\text{g}/\text{m}^3$ (a change equating to -8% of the critical level) and exceeds the 1% critical level threshold up to 170 m from the ARN. As the beneficial impact exceeds the 1% critical level threshold associated with ammonia concentration, characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.139. The **duration** of the impact is considered **permanent**, given the considerable declines in total NO_x emissions from road transport over the last two decades (as detailed in **paragraph 2.1.19**), and the predicted continuation of these decreases in the future due to forecast reductions in 'per vehicle' emissions as the UK vehicle fleet decarbonises.
- 8.1.140. The maximum **magnitude** of the nitrogen deposition impact is $-0.83 \text{ kg N}/\text{ha}/\text{yr}$. (**Table 9-1**), with the exceedance of the threshold covering an **extent** of habitat of approximately 0.05 ha. In relation to ammonia concentration, the **maximum** magnitude of the impact is $-0.08 \mu\text{g}/\text{m}^3$ and the exceedance of the 1% critical level threshold cover an **extent** of habitat of approximately 1.4 ha.
- 8.1.141. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.142. The predicted reduction in nitrogen deposition is unlikely to lead to long-term perceptible change of the composition and species richness of the woodland ground flora based on the literature review completed (refer to **Section 6**) or on the health of trees within the woodland. Any subtle effects that do occur are therefore not predicted to positively affect the integrity of the designated habitats. However, the key characteristics of the designated habitat (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) may be positively impacted by the reduction in ammonia concentrations given the spatial extent of the exceedance of the threshold.
- 8.1.143. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent beneficial impact that would positively impact the key characteristics of the resource and therefore the impact level is classified as **Major beneficial**.
- 8.1.144. In accordance with Table 3.13 of LA 108, a Major beneficial impact on a resource of National importance would result in a Large of Very Large beneficial effect. Paragraph 3.13.1 of LA 108 Biodiversity states that where there are "*two significance categories, evidence should be provided to support the reporting of a single significance category.*" There is no known evidence to distinguish between the two significance categories provided and therefore, on a precautionary basis, the lower level of significance has been attributed. It is therefore determined that the Scheme would result in a **Large beneficial** effect to Weldon Wood Ancient Woodland as a result of operational air quality.

Cocklaw Dene LWS

8.1.145. Air quality modelling as part of the 2024 assessment showed that there would be an increase in nitrogen deposition and ammonia concentrations as a result of the Scheme. Cocklaw Dene LWS (approximately 44.6 ha in size) is located approximately 8 m to the west of the ARN (Eco17W) near Warenford, approximately 6.5 km to the north of the Scheme, and designated for its woodland habitat. An area of the LWS supports ancient woodland, although this falls outside the Study Area and is therefore not considered within this assessment.

Nitrogen Deposition

8.1.146. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The increase in nitrogen deposition exceeds 0.4 kg N/ha/yr (the 'Restore' approach threshold) up to 20m west of the ARN, falling below the threshold at 25 m. As the impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).

Ammonia Concentration

8.1.147. As detailed in **paragraph 2.1.29**, the critical level for Cocklaw Dene LWS is 3 µg/m³ ammonia, as lower plants do not form part of the designation nor are they considered to be a key component of the LWS. Exceedance of the 3% critical level threshold is only predicted up to 5 m from the ARN. As the LWS is approximately 8 m from the ARN, exceedances of the ammonia concentration critical level are not predicted within the boundaries of the LWS. Therefore, ammonia concentration is not considered further.

Significance of Effect

8.1.148. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as irreversible.

8.1.149. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.

8.1.150. The maximum **magnitude** of the impact is 1.0 kg N/ha/yr, with the exceedance of the threshold covering an **extent** of habitat of approximately 0.05 ha. A very limited proportion of the designated habitat would be affected, with the Scheme delaying long-term reductions in overall nitrogen deposition rates rather than leading to long-term increases in these relative to the current baseline. The Scheme nitrogen deposition rates are unlikely to lead to a long-term perceptible change of the composition and species richness of the woodland ground flora based on the literature review completed (refer to **Section 6**) or on the health of trees within the woodland. Any subtle effects that do occur are therefore not predicted to

compromise the integrity of the designated habitat. However, the key characteristics of the LWS (woodland habitat) may be adversely affected.

- 8.1.151. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact is classified as **Major adverse**.
- 8.1.152. In accordance with Table 3.13 of LA 108, as a Major adverse impact on a resource of Local importance, the Scheme would result in a **Slight adverse (not significant)** effect to Cocklaw Dene LWS as a result of operational air quality.

Cawledge Burn LWS

- 8.1.153. The updated air quality modelling undertaken in 2024 showed that there would be a potential increase in nitrogen deposition and ammonia concentrations as a result of the Scheme. Cawledge Burn LWS (approximately 10 ha in size) is located either side of the existing A1 (ARN; Eco18E and Eco18W) to the south of Alnwick. The LWS is designated primarily for its geological interest, although the citation does include biological features of interest. LA 105 Air Quality states that sites designated for geological purposes need not be assessed. However, given that the LWS supports biological interest, the site has been scoped in to ensure a robust assessment.
- 8.1.154. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The increase in nitrogen deposition exceeds 0.4 kg N/ha/yr (the 'Restore' approach threshold) up to 60 m west of the ARN and 80 m east of the ARN. As the impact exceeds the 'Restore' threshold under LA 105 (**Ref. 1**), characterisation of the impact in accordance with LA 108 is required (see below).
- 8.1.155. As detailed in **paragraph 2.1.29**, the critical level for Cawledge Burn LWS is 3 µg/m³ ammonia, as lower plants do not form part of the designation nor are they considered to be a key component of the LWS. The potential increase in ammonia concentration as a result of the Scheme to the west of the ARN is a maximum of 0.30 µg/m³ (a change equating to 10% of the critical level) and to the east of the ARN is predicted to be a maximum of 0.31 µg/m³ (a change equating to 10% of the critical level). Background ammonia concentration levels at Cawledge Burn LWS are predicted to be 0.89 µg/m³ (**Ref. 16, Table 9-2**). The predicted increase in ammonia concentration with or without the Scheme would not exceed the 3 µg/m³ critical level threshold. As such, in accordance with **paragraph 2.1.31**, significant effects are not predicted as a result of changes in ammonia concentrations.
- 8.1.156. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition would continue until and beyond the design year (2039), although they would be expected to be substantially reduced by this time as the UK vehicle fleet decarbonises. As a **permanent** Impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.

- 8.1.157. In relation to nitrogen deposition, the maximum **magnitude** of the impact is approximately 3.4 kg N/ha/yr to the west and 3.5 kg N/ha/yr to the east of the ARN, although falling away quickly to around 2 kg N/ha/yr at 5 m from the ARN. The exceedance of the threshold covers an **extent** of habitat of approximately 2 ha.
- 8.1.158. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.159. Approximately 20% of the designated habitats site would be affected, with the Scheme delaying long-term reductions in overall nitrogen deposition rates rather than leading to long-term increases in these relative to the current baseline. The Scheme nitrogen deposition impacts are unlikely to lead to long-term perceptible change of the composition and species richness of the woodland ground flora based on the literature review completed (refer to **Section 6**) or on the health of trees within the woodland. Any subtle effects that do occur are therefore not predicted to compromise the integrity of the designated habitats. However, the key characteristics of the LWS (woodland habitat) (refer to **Section 6**) may be adversely impacted.
- 8.1.160. It should be noted that an assessment made by vehicle in September 2020 recorded the woodland within the LWS to the west of the A1 (affected road) to have been clear-felled as part of forestry operations. It is therefore likely that management operations, at least within woodland of the LWS to the west of the A1, will have a substantially greater effect on the designated habitat than those experienced from the increase in nitrogen deposition as a result of the Scheme. However, as management practices across the extent of the LWS are not fully understood at this stage, for the purpose of this assessment and to ensure a robust assessment, this factor has not been considered within the assessment of likely significant effects arising from operational air quality.
- 8.1.161. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact is classified as **Major adverse**.
- 8.1.162. In accordance with Table 3.13 of LA 108, as a Major adverse impact on a resource of Local importance, the Scheme would result in a **Slight adverse (not significant)** effect to Cawledge Burn as a result of operational air quality.

Coney Garth Pond LWS

- 8.1.163. Air quality modelling as part of the updated 2024 assessment predicted an increase in nitrogen deposition at Coney Garth Pond LWS (Eco19) in the opening year (2024). Coney Garth Pond LWS is designated for its open water habitat and the migratory wading birds that it supports.
- 8.1.164. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for the designated habitat. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach. The increase in nitrogen deposition exceeds 0.4 kg N/ha/yr (the 'Restore' approach threshold) up to 10 m from the

ARN. A similar pattern is observed in the air quality model in relation to ammonia concentrations, with exceedance of the 3% critical level threshold only experienced between 5 and 10 m from the ARN. The designated features of the LWS are approximately 12 m from the ARN at the closest point and are therefore not predicted to be subject to exceedance of the thresholds. It is predicted that the Scheme would result in **Neutral (not significant)** effects to Coney Garth Pond LWS.

Ancient / Veteran Trees

- 8.1.165. The original 2021 assessment quantified the impacts and effects in relation to two veteran trees where increases in nitrogen deposition were predicted above the associated threshold; T682 and T701. Tree T682 is a veteran ash. The tree was in fair physiological condition and a poor structural condition, although has a predicted future lifespan in excess of 40 years (see **Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]**). Tree T701 is a potential veteran oak. The tree was in good physiological and structural condition, with a predicted future lifespan in excess of 40 years (see **Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]**).
- 8.1.166. As part of the updated 2024 assessment, ammonia concentrations have also been considered for tree T682 and T701. In addition, a further eight trees are predicted to experience increases in nitrogen deposition and/or ammonia concentrations that could result in significant effects; trees T457, T684, T681, T690, 68872, 68541 133031 and 132902.
- 8.1.167. Trees T457 and T684 are over-mature veteran sycamore trees. The trees were in good physiological condition and a fair structural condition, with a predicted future lifespan in excess of 20 years (see **Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]**).
- 8.1.168. Trees T681 and T690 are over-mature veteran oak trees. The trees were in good physiological and structural condition, with a predicted future lifespan in excess of 40 years (see **Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]**).
- 8.1.169. Trees 68872 and 68541 are a veteran common sycamore and veteran hybrid sessile and English oak respectively, identified on the Woodland Trust Ancient Tree Inventory (**Ref. 7**). The trees are located within the area predicted to be significantly impacted within the River Coquet and Coquet Valley Woodlands SSSI and Duke's Bank Wood Ancient Woodland.
- 8.1.170. Trees 133031 and 132902 are veteran sweet chestnut trees, identified on the Woodland Trust Ancient Tree Inventory (**Ref. 7**). The trees are located within parkland to the northeast of the River Coquet crossing, to the southwest of Felton.
- 8.1.171. In relation to nitrogen deposition, there is insufficient information to determine an air quality attribute for ancient/veteran trees. As such, the assessment of likely significant effects has been determined based on the 'Restore' approach for all trees with the exception of trees 68872 and 68541. As trees 68872 and 68541 are located within the River

Coquet and Coquet Valley Woodlands SSSI, information presented in **paragraphs 8.1.9 to 8.1.30** above for determining the air quality attribute are considered applicable. For the purpose of this assessment, a 'Maintain' air quality attribute has therefore been used for trees 68872 and 68541.

- 8.1.172. The updated air quality modelling undertaken in 2024 predicts an increase in nitrogen deposition of 1.8 kg N/ha/yr. at the location of tree 68872, which exceeds the 1.7 kg N/ha/yr. threshold. In addition, ammonia concentrations at the location of tree 68872 are predicted to increase by approximately 0.15 µg/m³ as a result of the Scheme (a change equating to 15% of the critical level).
- 8.1.173. For tree 68541, whilst the updated 2024 air quality modelling did not predict an increase in nitrogen deposition in excess of the 1.7 kg N/ha/yr threshold (predicted increase is 1.2 kg N/ha/yr), the increase in ammonia concentration is predicted to exceed the 1% critical level threshold (0.1 µg/m³; a change equating to 10% of the critical level).
- 8.1.174. The updated air quality modelling undertaken in 2024 predicts an increase in nitrogen deposition in excess of 0.4 kg N/ha/yr (the 'Restore' threshold) and an increase in atmospheric ammonia concentrations in excess of the 1% threshold at the location of Trees T457, T682, T684, T681, T690 and T701 (see **Tables 9-1 and 9-2**).
- 8.1.175. For trees 133031 and 132902, whilst the updated air quality modelling did not predict an increase in nitrogen deposition in excess of the 0.4 kg N/ha/yr. threshold (predicted increases of 0.17 and 0.15 kg N/ha/yr. respectively), the increase in ammonia concentrations is predicted to exceed the 1% critical level threshold (0.01 µg/m³; a change equating to 1.2 to 1.4% of the critical level).
- 8.1.176. As the predicted impacts exceed the associated nitrogen deposition and ammonia concentration thresholds for these trees, characterisation of the impact in accordance with LA 108 is required.
- 8.1.177. As shown by the literature review presented in **Section 6**, the effects of low doses of nitrogen on trees are unlikely to lead to detectable changes in the health of individual trees and therefore it is unlikely that the integrity of the veteran trees would be adversely affected. However, as detailed in **paragraph 6.1.11**, the research examined demonstrates that the effects of increased nitrogen deposition on trees are difficult to detect. In addition, there is evidence to suggest that increased ammonia can have an adverse effect on the moss and lichen communities often associated with veteran trees (**Section 6**). CIEEM Guidelines (**Ref. 3**) define the "precautionary principle" and states that "*the evaluation of significant effects should always be based on the best available scientific evidence ... In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect should be assumed.*" In light of the above and in consideration of the precautionary principle (**Ref. 3**), a significant effect has been assumed for the veteran trees.

- 8.1.178. The **duration** of the impact is considered **permanent**, as increased NO_x emissions and hence contributions to nitrogen deposition would continue until and beyond the design year (2039). As a **permanent** Impact, in accordance with LA 108 Biodiversity (**Ref. 5**), the impact is also classified as **irreversible**.
- 8.1.179. The maximum **magnitude** of the impact in relation to nitrogen deposition is between 0.6 and 0.8 kg N/ha/yr for Trees T457, T681, T684 and T690 (see **Table 9-1**), 1.1 kg N/ha/yr. for trees T682 and T701, 1.2 kg N/ha/yr. for tree 68541 and 1.8 kg N/ha/yr for tree 68872 (**extent**, in accordance with **paragraph 2.1.37**). Changes in atmospheric ammonia concentrations are predicted to exceed the 1% critical level threshold for all eight trees detailed above, plus trees 133031 and 132902.
- 8.1.180. The **frequency** of the impact is **annual**, with the **timing** of the impact being during the **operational** period of the Scheme.
- 8.1.181. In accordance with Table 3.11 of LA 108, the Scheme would result in a permanent/irreversible impact that may negatively impact the key characteristics of the resource and therefore the impact level is classified as **Major adverse**.
- 8.1.182. In accordance with Table 3.13 of LA 108, a Major adverse impact on a resource of National importance would result in a Large or Very Large adverse effect. Mitigation has not been secured to reduce the level of impact to the ancient/veteran trees for which significant effects cannot be excluded. It is therefore determined that the Scheme would result in a **Very Large adverse** effect to the ten veteran trees.
- 8.1.183. Details of the proposed compensation for the significant effects predicted are presented in **Section 7**.
- 8.1.184. An additional seven veteran trees (93294, 93296, 153192, 153524, 153191, 153195 and 153193) were identified where the updated air quality modelling did not predict an increase in nitrogen deposition in excess of the 0.4 kg N/ha/yr. threshold but did predict a change in ammonia concentration that exceeds the 1% critical level threshold. The Scheme is predicted to result in only small incremental increases in ammonia concentration, between 0.01 and 0.03 µg/m³. However, background levels of ammonia (as identified using the APIS GIS map tool (**Ref. 16**)) at the locations of these trees is predicted to be between 0.83 and 0.88 µg/m³. Even when considering future predicted background ammonia concentration levels (as informed by APIS (**Ref. 16**) and the 2024 air quality modelling) the predicted increases in ammonia concentration are not expected to result in exceedances of the 1 µg/m³ critical level threshold at the location of the trees. Therefore, significant effects are not predicted to occur.

9 CONCLUSION

- 9.1.1. The updated 2024 assessment identified increases in operational nitrogen deposition as a result of the Scheme that are generally greater than those predicted in the original 2021 assessment. In addition, increased atmospheric ammonia concentrations are also predicted at a number of designated habitats.
- 9.1.2. Following identification of changes in nitrogen deposition and ammonia concentrations that exceed the applicable habitat thresholds and characterisation of the impacts, including ecological interpretation in line with LA 108 Biodiversity (**Ref. 5**), increases in operational nitrogen predicted for the following designated habitats would result in significant effects:
- a. River Coquet and Coquet Valley Woodlands SSSI and Duke's Bank ancient woodland (**Very Large adverse**)
 - b. Park Wood/Bothal Bank ancient woodland (**Very Large adverse**)
 - c. Cotting Wood ancient woodland (**Very Large adverse**)
 - d. Davies Wood LNR and ancient woodland (**Moderate** and **Very Large adverse**, respectively)
Borough Wood LNR and ancient woodland (**Moderate** and **Very Large adverse**, respectively)
Well Wood ancient woodland (**Very Large adverse**)
Veteran tree T682 (**Very Large adverse**)
 - e. Veteran tree T701 (**Very Large adverse**)
 - f. Veteran tree T457 (**Very Large adverse**)
 - g. Veteran tree T681 (**Very Large adverse**)
 - h. Veteran tree T684 (**Very Large adverse**)
 - i. Veteran tree T690 (**Very Large adverse**)
 - j. Veteran trees 68872 and 68541 (**Very Large adverse**) (located within the area predicted to be significantly impacted within the River Coquet and Coquet Valley Woodlands SSSI and Duke's Bank Wood Ancient Woodland)
 - k. Veteran tree 133031 (**Very Large adverse**)
Veteran tree 132902 (**Very Large adverse**)
- 9.1.3. As detailed in **Section 7**, mitigation measures to avoid or reduce the potential adverse impacts of the Scheme arising from operational nitrogen deposition have been considered. However, no viable mitigation measures have been identified. Details of the proposed compensation that are intended to address the significant effects predicted within the updated 2024 assessment are presented in **Section 7**.
- 9.1.4. Whilst an increase in nitrogen deposition and/or ammonia concentration that exceeds the applicable habitat thresholds was recorded for the following sites, in accordance with LA 108 Biodiversity (**Ref. 5**), effects are identified as **Slight adverse (not significant)**:
- a. Coquet River Felton Park LWS
 - b. Bothal Burn and River Wansbeck LWS

- c. Cotting Wood LWS
- d. Wansbeck and Hartburn Woods LWS
- e. Cocklaw Dene LWS
- f. Cawledge Burn LWS

9.1.5. A decrease in predicted nitrogen deposition and/or ammonia concentration above the applicable habitat % thresholds was predicted for Ulgham Meadows LNR, Weldon Wood Ancient Woodland and Longhorsley Moor SSSI, as a result of the increase in capacity for vehicular traffic along the A1 (the Scheme), drawing traffic off other roads and thereby reducing associated vehicular emissions in proximity to the designated habitats. This is predicted to result in a **Slight beneficial (not significant)** effect to Ulgham Meadows LNR and potentially **Large Beneficial** effects to Weldon Wood Ancient Woodland and Longhorsley Moor SSSI. Other instances of beneficial reductions to nitrogen deposition are also predicted (see **Table 9-1**), although are not claimed to result in significant effects for the purpose of this updated 2024 assessment.

Table 9-1 – Summary of Nitrogen Deposition Assessment of Ecological Receptors Under LA 105

Transect Reference	Designated Habitat(s)	Lowest Critical Load (kg N/ha/yr.)	Air Quality Attribute used in Assessment	Background Nitrogen Deposition (5 km Average Deposition from APIS (kg N/ha/yr.)) 'Maintain' only	Nitrogen Deposition threshold (kg N/ha/yr.) Resulting in Theoretical Loss of 1 Species (Threshold)	Maximum Change in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Exceeds Threshold
Eco1E	River Coquet and Coquet Valley Woodlands SSSI – unit 13 Duke's Bank Ancient Woodland	15	Maintain	22.96	1.7	0.9 (at ground dispersion model)	Not exceeded
Eco1W	River Coquet and Coquet Valley Woodlands SSSI – unit 13 Duke's Bank Ancient Woodland	15	Maintain	22.96	1.7	0.3 (at ground dispersion model)	Not exceeded
Eco1E	Coquet River Felton Park LWS	15	Maintain	22.96	1.7	5.5	60 m
Eco1W	Coquet River Felton Park LWS	15	Maintain	22.96	1.7	0.7	Not exceeded
Eco2	Longhorsley Moor SSSI Longhorsley Moor LWS	10	Restore	N/A	0.4	-1.5	Not exceeded
Eco3	Bothal Burn and River Wansbeck LWS Park Wood/Bothal Banks Ancient Woodland	10	Restore	N/A	0.4	0.3	Not exceeded
Eco4	Cotting Wood LWS and Ancient Woodland	10	Restore	N/A	0.4	0.2	Not exceeded
Eco5	Davies Wood LNR Davies Wood Ancient Woodland	10	Restore	N/A	0.4	0.36	Not exceeded
Eco6	Unnamed (Scotch Gill Wood) Ancient Woodland	10	Restore	N/A	0.4	0.2	Not exceeded
Eco7E	Borough Wood LNR Borough Wood Ancient Woodland Wansbeck & Hartburn Woods LWS	10	Restore	N/A	0.4	2.2	80 m
Eco7W	Borough Wood Ancient Woodland Wansbeck & Hartburn Woods LWS	10	Restore	N/A	0.4	1.2	30 m
Eco8	Well Wood Ancient Woodland	10	Restore	N/A	0.4	2.2	45 m

Transect Reference	Designated Habitat(s)	Lowest Critical Load (kg N/ha/yr.)	Air Quality Attribute used in Assessment	Background Nitrogen Deposition (5 km Average Deposition from APIS (kg N/ha/yr.)) 'Maintain' only	Nitrogen Deposition threshold (kg N/ha/yr.) Resulting in Theoretical Loss of 1 Species (Threshold)	Maximum Change in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Exceeds Threshold
Eco10	Ulgham Meadow LNR	10	Restore	N/A	0.4	-4.5	Not exceeded
Eco11	Weldon Wood Ancient Woodland	10	Restore	N/A	0.4	-0.8	Not exceeded
Eco13	Unnamed (Stobswood) Ancient Woodland	10	Restore	N/A	0.4	-0.2	Not exceeded
Eco17W	Cocklaw Dene LWS	10	Restore	N/A	0.4	1.0	20 m
Eco18E	Cawledge Burn LWS	10	Restore	N/A	0.4	3.5	80m
Eco18W	Cawledge Burn LWS	10	Restore	N/A	0.4	3.4	60m
Eco19	Coney Garth Pond LWS	5	Restore	N/A	0.4	1.4	10 m
Eco_VT1	Tree 93294	10	Restore	N/A	0.4	0.3	Not exceeded
Eco_VT2	Tree 93296	10	Restore	N/A	0.4	0.3	Not exceeded
Eco_VT3	Tree 156557	10	Restore	N/A	0.4	-0.4	Not exceeded
Eco_VT4	Tree 133417	10	Restore	N/A	0.4	-0.2	Not exceeded
Eco_VT5	Tree 133031	10	Restore	N/A	0.4	0.2	Not exceeded
Eco_VT6	Tree 132902	10	Restore	N/A	0.4	0.2	Not exceeded
Eco_VT7	Tree 153192	10	Restore	N/A	0.4	0.2	Not exceeded
Eco_VT8	Tree 98458	10	Restore	N/A	0.4	-0.2	Not exceeded
Eco_VT9	Tree 156556	10	Restore	N/A	0.4	-0.7	Not exceeded
Eco_VT10	Tree 153524	10	Restore	N/A	0.4	0.15	Not exceeded
Eco_VT11	Tree 68534	10	Restore	N/A	0.4	-0.2	Not exceeded
Eco_VT12	Tree 153191	10	Restore	N/A	0.4	-0.1	Not exceeded
Eco_VT13	Tree 153195	10	Restore	N/A	0.4	-0.2	Not exceeded
Eco_VT14	Tree 156339	10	Restore	N/A	0.4	-0.1	Not exceeded
Eco_VT15	Tree 68555	10	Restore	N/A	0.4	-0.2	Not exceeded

Transect Reference	Designated Habitat(s)	Lowest Critical Load (kg N/ha/yr.)	Air Quality Attribute used in Assessment	Background Nitrogen Deposition (5 km Average Deposition from APIS (kg N/ha/yr.)) 'Maintain' only	Nitrogen Deposition threshold (kg N/ha/yr.) Resulting in Theoretical Loss of 1 Species (Threshold)	Maximum Change in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in N Deposition (kg N/ha/yr.) Between Do Minimum and Do Something Exceeds Threshold
Eco_VT16	Tree 68872	10	Maintain*	N/A	1.7	1.8	At location of tree
Eco_VT17	Tree 153193	10	Restore	N/A	0.4	0.14	Not exceeded
Eco_VT18	Tree 68541	10	Maintain*	N/A	1.7	1.2	Not exceeded
Eco_VT20	Tree T457	10	Restore	N/A	0.4	0.8	At location of tree
Eco_VT23	Tree T684	10	Restore	N/A	0.4	0.5	At location of tree
Eco_VT24	Tree T682	10	Restore	N/A	0.4	1.1	At location of tree
Eco_VT25	Tree T681	10	Restore	N/A	0.4	0.6	At location of tree
Eco_VT26	Tree T690	10	Restore	N/A	0.4	0.6	At location of tree
Eco_VT27	Tree T701	10	Restore	N/A	0.4	1.1	At location of tree

* Tree located within the boundaries of the River Coquet and Coquet Valley Woodlands SSSI. As such, the information presented in paragraphs 8.1.10 to 8.1.30 for determining the air quality attribute applies and the air quality attribute is therefore identified as 'Maintain'.

Table 9-2 – Summary of Ammonia Concentration Assessment of Ecological Receptors

Transect Reference	Designated Habitat(s)	Critical Level (µg/m³)	Background ammonia concentration (1 km grid square, APIS) as of 2020 (µg/m³)	Maximum Change in ammonia concentration (µg/m³) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in ammonia concentration (µg/m³) Between Do Minimum and Do Something Exceeds 1% or 3% of the Critical Level
Eco1E	River Coquet and Coquet Valley Woodlands SSSI – unit 13 Duke's Bank Ancient Woodland	1	1.04	0.32	200 m +
Eco1W	River Coquet and Coquet Valley Woodlands SSSI – unit 13 Duke's Bank Ancient Woodland	1	1.04	0.06	200 m +

Transect Reference	Designated Habitat(s)	Critical Level ($\mu\text{g}/\text{m}^3$)	Background ammonia concentration (1 km grid square, APIS) as of 2020 ($\mu\text{g}/\text{m}^3$)	Maximum Change in ammonia concentration ($\mu\text{g}/\text{m}^3$) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in ammonia concentration ($\mu\text{g}/\text{m}^3$) Between Do Minimum and Do Something Exceeds 1% or 3% of the Critical Level
Eco1E	Coquet River Felton Park LWS	1	1.04	0.47	200 m +
Eco1W	Coquet River Felton Park LWS	1	1.04	0.06	200 m +
Eco2	Longhorsley Moor SSSI Longhorsley Moor LWS	3	1.07	-0.22	Not exceeded
Eco3	Bothal Burn and River Wansbeck LWS Park Wood/Bothal Banks Ancient Woodland	1	1.08	0.02	90 m
Eco4	Cotting Wood LWS and Ancient Woodland	1	1.14	0.02	200 m +
Eco5	Davies Wood LNR Davies Wood Ancient Woodland	1	1.14	0.03	120 m
Eco6	Unnamed (Scotch Gill Wood) Ancient Woodland	1	1.14	0.02	Site boundary, 200m from ARN
Eco7E	Borough Wood LNR Borough Wood Ancient Woodland Wansbeck & Hartburn Woods LWS	1	1.13	0.31	200 m +
Eco7W	Borough Wood Ancient Woodland Wansbeck & Hartburn Woods LWS	1	1.13	0.18	150 m
Eco8	Well Wood Ancient Woodland	1	1.15	0.21	200 m +
Eco10	Ulgham Meadow LNR	3	1.07	-0.40	Not exceeded
Eco11	Weldon Wood Ancient Woodland	1	1.03	-0.07	Not exceeded
Eco13	Unnamed (Stobswood) Ancient Woodland	1	1.06	-0.02	Not exceeded
Eco17W	Cocklaw Dene LWS	3	0.91	0.09	5 m
Eco18E	Cawledge Burn LWS	3	0.89	0.31	20 m
Eco18W	Cawledge Burn LWS	3	0.89	0.30	15 m
Eco19	Coney Garth Pond LWS	3	1.05	0.21	5 m
Eco_VT1	Tree 93294	1	0.88	0.02	At location of tree

Transect Reference	Designated Habitat(s)	Critical Level (µg/m³)	Background ammonia concentration (1 km grid square, APIS) as of 2020 (µg/m³)	Maximum Change in ammonia concentration (µg/m³) Between Do Minimum and Do Something Experienced by the Designated Habitat	Distance along the Transect the Increase in ammonia concentration (µg/m³) Between Do Minimum and Do Something Exceeds 1% or 3% of the Critical Level
Eco_VT2	Tree 93296	1	0.88	0.03	At location of tree
Eco_VT3	Tree 156557	1	1.04	-0.03	Not exceeded
Eco_VT4	Tree 133417	1	0.80	-0.01	Not exceeded
Eco_VT5	Tree 133031	1	1.04	0.01	At location of tree
Eco_VT6	Tree 132902	1	1.04	0.01	At location of tree
Eco_VT7	Tree 153192	1	0.83	0.01	At location of tree
Eco_VT8	Tree 98458	1	1.06	-0.01	Not exceeded
Eco_VT9	Tree 156556	1	1.04	-0.07	Not exceeded
Eco_VT10	Tree 153524	1	0.83	0.01	At location of tree
Eco_VT11	Tree 68534	1	1.04	-0.02	Not exceeded
Eco_VT12	Tree 153191	1	0.83	0.01	At location of tree
Eco_VT13	Tree 153195	1	0.83	0.02	At location of tree
Eco_VT14	Tree 156339	1	1.04	-0.01	Not exceeded
Eco_VT15	Tree 68555	1	0.95	-0.01	Not exceeded
Eco_VT16	Tree 68872	1	1.04	0.15	At location of tree
Eco_VT17	Tree 153193	1	0.83	0.01	At location of tree
Eco_VT18	Tree 68541	1	1.04	0.01	At location of tree
Eco_VT20	Tree T457	1	1.08	0.06	At location of tree
Eco_VT23	Tree T684	1	1.02	0.04	At location of tree
Eco_VT24	Tree T682	1	1.02	0.08	At location of tree
Eco_VT25	Tree T681	1	1.02	0.05	At location of tree
Eco_VT26	Tree T690	1	1.02	0.04	At location of tree
Eco_VT27	Tree T701	1	1.02	0.08	At location of tree

Table 9-3 - Summary of Assessment of Ecological Receptors Under LA 108

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
River Coquet and Coquet Valley Woodlands SSSI and Duke's Bank Ancient Woodland (Maintain)	National	Permanent, irreversible	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.9 kg N/ha/yr. to east of ARN, 0.3 kg N/ha/yr to west of ARN. Habitat threshold; 1.7 kg N/ha/yr.	Area; 2.4 ha	Maximum predicted ammonia concentration; 0.32 µg/m ³ to east of ARN, 0.06 µg/m ³ to west of ARN. Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	This site is designated for its woodland habitat. The Scheme addresses the loss of all SSSI woodland (ancient woodland) within the Order Limits adjacent to the existing A1 (0.27 ha) and provides woodland planting as compensation (detailed within the Ancient Woodland Strategy [REP9-012]). The area for which compensation has been provided is excluded from the assessment because habitat that has been removed can no longer be affected by operational changes in air quality. As such, the closest point affected is at the Order Limits boundary, approximately 25 m distance to the east and 7.5 m to the west of the ARN.	Major adverse	Very Large Adverse

¹² Maximum change as a result of the Scheme

¹³ Maximum change as a result of the Scheme

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>Up to 2.4 ha of the designated habitat would be subject to a change that exceeds the habitat ammonia concentration threshold.</p> <p>There is the potential for the increased nitrogen deposition and ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat; including the lower plant community that forms a key component of this habitat type) (Section 6).</p>		
Coquet River Felton Park LWS (Maintain)	Local	Permanent, irreversible	Area; 0.5 ha	Maximum predicted nitrogen deposition; 5.5 kg N/ha/yr. to east of ARN, 0.7 kg N/ha/yr. to west of ARN. Habitat threshold; 1.7 kg N/ha/yr.	Area; 3.5 ha	Maximum predicted ammonia concentration; 0.47 µg/m ³ to the east of ARN, 0.06 µg/m ³ .to west of ARN. Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	<p>This site is designated for its woodland habitat.</p> <p>The Scheme addresses the loss of all LWS woodland within the Order Limits adjacent to the existing A1 (0.69 ha) and provides woodland planting as compensation (detailed within the Ancient Woodland Strategy [REP9-012]). The area for which compensation has been provided is excluded from the assessment because habitat that has been removed can no longer be affected by operational changes in air quality. As such, the closest point</p>	Major adverse	Slight adverse (not significant)

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>affected by increased nitrogen deposition from the existing A1 is at the Order Limits boundary, approximately 15 m distance to the east and 7.5 m to the west of the ARN.</p> <p>Up to 3.5 ha of the designated habitat (which has a total area of 18.02 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (0.5 ha when considering exceedance of the nitrogen deposition threshold).</p> <p>There is the potential for the increased nitrogen deposition and ammonia concentrations to cause adverse effects to the key characteristics of the resource (woodland habitat) (Section 6).</p>		
Longhorsley Moor SSSI (Restore)	National	Permanent improvement	Area; 0.8 ha	Maximum predicted nitrogen deposition; -1.51 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 0.25 ha	Maximum predicted ammonia concentration; -0.22 µg/m ³ Habitat threshold; 3 µg/m ³ .	Annual	Operational Ongoing from 2024	The SSSI is designated for its mosaic of heathland, scrub and woodland habitats and the species the support (notably birds and butterflies).	Major beneficial	Large Beneficial

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>Up to 0.8 ha of the designated habitat (which has a total area of 35.2 ha) would be subject to a beneficial change that exceeds the habitat nitrogen deposition threshold (0.25 ha when considering the ammonia concentration threshold).</p> <p>Given the small extent of the effects, the integrity of the designated habitat resource is not predicted to be positively affected.</p> <p>However, the key characteristics of the resource (woodland habitat) may be positively affected by the decrease in nitrogen deposition and ammonia concentrations.</p>		
Park Wood/Bothal Bank ancient woodland (Restore)	National	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.27 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 1 ha	Maximum predicted ammonia concentration; 0.02 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	This site is included on the ancient woodland inventory which identifies it as a mixture of ancient semi-natural and ancient replanted woodland. The ancient woodland within 200 m of the ARN is identified as ancient replanted woodland.	Major	Very Large Adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>The ancient woodland site falls within the boundary of the Bothal Burn and River Wansbeck LWS. The citation for the associated LWS records the presence of ancient woodland indicator species (including dog's mercury <i>Mercurialis perennis</i>, bluebells <i>Hyacinthoides non-scripta</i> and wood sorrel <i>Oxalis acetosella</i>).</p> <p>Up to 1 ha of the designated habitat (which has a total area of approximately 118 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded).</p> <p>Given the small extent of the effects, the integrity of the designated habitat resource is not predicted to be positively affected.</p> <p>However, the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) may be affected by the increase in ammonia concentrations.</p>		

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
Bothal Burn and River Wansbeck LWS (Restore)	Local	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.27 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 1 ha	Maximum predicted ammonia concentration; 0.02 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	<p>This site is designated for its ancient woodland and river habitat, including several species these habitats support (white-clawed crayfish, otter, badger).</p> <p>Up to 1 ha of the designated habitat (which has a total area of approximately 73 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded).</p> <p>Given the small extent of the effects, the integrity of the designated habitat resource is not predicted to be positively affected.</p> <p>However, the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) may be affected by the increase in ammonia concentrations.</p>	Major adverse	Slight adverse (not significant)

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
Cotting Wood ancient woodland (Restore)	National	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.20 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 0.7 ha	Maximum predicted ammonia concentration; 0.02 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	<p>This site is included on the ancient woodland inventory which identifies it as ancient semi-natural woodland. The ancient woodland site falls entirely within the boundary of the Cotting Wood LWS.</p> <p>The citation of the LWS includes details of the tree species and NVC communities present (W10e and W7c) but does not provide further information on the ground flora or other floral communities.</p> <p>Up to 0.7 ha of the designated habitat (which has a total area of approximately 3.6 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded).</p> <p>There is the potential for the increased ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (Section 6).</p>	Major	Very Large Adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
Cotting Wood LWS (Restore)	Local	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.20 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 0.7 ha	Maximum predicted ammonia concentration; 0.02 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	The citation of the LWS identifies the presence of semi-natural ancient woodland recorded on the Inventory of Ancient Woodland. The citation details the tree species and NVC communities present (W10e and W7c) but does not provide further information on the ground flora or other floral communities. Up to 0.7 ha of the designated habitat (which has a total area of approximately 3.6 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded). There is the potential for the increased ammonia concentrations to cause adverse effects to the key characteristics of the resource (woodland habitat) (Section 6).	Major	Slight adverse (not significant)
Davies Wood ancient woodland (Restore)	National	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.36 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 2.6 ha	Maximum predicted ammonia concentration; 0.03 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	This site is included on the ancient woodland inventory which identifies it as ancient semi-natural woodland.	Major	Very Large Adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>Up to 2.6 ha of the designated habitat (which has a total area of approximately 6.9 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded).</p> <p>There is the potential for the increased ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (Section 6).</p>		
Davies Wood LNR (Restore)	County	Permanent	N/A (threshold not exceeded)	Maximum predicted nitrogen deposition; 0.36 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 1.0 ha	Maximum predicted ammonia concentration; 0.03 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	<p>The LNR is designated for its mature broad-leaved woodland, supporting birds, small mammals and ground flora (species not named). The LNR is encompassed within the ancient woodland designation.</p> <p>Up to 1.0 ha of the designated habitat (which has a total area of approximately 5,4 ha) would be subject to a change that exceeds the habitat ammonia concentration threshold (nitrogen deposition threshold not predicted to be exceeded).</p>	Major	Moderate Adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									There is the potential for the increased ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (Section 6).		
Borough Wood ancient woodland (Restore)	National	Permanent, irreversible	Area; 1.0 ha	Maximum predicted nitrogen deposition; 2.2 kg N/ha/yr. to the east of the ARN, 1,2 kg N/ha/yr. to the west. Habitat threshold; 0.4 kg N/ha/yr.	Area; 4.9 ha	Maximum predicted ammonia concentration; 0.31 µg/m ³ to the east of the ARN, 0.18 µg/m ³ to the west. Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	This site is included on the ancient woodland inventory which identifies it as an Ancient and Semi-natural Woodland site. The ancient woodland site falls entirely within the boundary of the Wansbeck and Hartburn Woods LWS.	Major adverse	Very Large adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>The citation for the associated Wansbeck and Hartburn Woods LWS records the presence of ancient woodland indicator species including wild garlic <i>Allium ursinum</i>, woodruff <i>Galium odoratum</i>, wood-sedge <i>Carex sylvatica</i>, bluebell <i>Hyacinthoides non-scripta</i>, wood anemone <i>nemerosa</i> and dog's mercury <i>Mercurialis perennis</i>. The only tree species recorded in the citation is field maple <i>Acer campestre</i>. Tree species including ash, hazel <i>Corylus avellana</i> and hawthorn are present adjacent to the ARN. The key characteristics of the site are the ground flora and largely continuous tree cover, supporting its classification as a broadleaved deciduous woodland.</p> <p>Up to 4.9 ha of the designated habitat (which has a total area of 16.1 ha) would be subject to an impact that exceeds the habitat ammonia concentration threshold (1.0 ha when considering the nitrogen deposition threshold).</p> <p>There is the potential for the increased nitrogen deposition and ammonia concentrations to cause</p>		

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (Section 6).		
Borough Wood LNR (Restore)	County	Permanent, irreversible	Area; 1.7 ha	Maximum predicted nitrogen deposition; 2.2 kg N/ha/yr. to the east of the ARN, 1,2 kg N/ha/yr. to the west Habitat threshold; 0.4 kg N/ha/yr	Area; 3.8 ha (excludes area of plantation woodland)	Maximum predicted ammonia concentration; 0.31 µg/m ³ to the east of the ARN, 0.18 µg/m ³ to the west. Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	This site is a designated LNR (no citation information available) and falls entirely within the boundary of the Wansbeck and Hartburn Woods LWS. The citation for Wansbeck and Hartburn Woods LWS records the presence of ancient woodland indicator species including wild garlic, woodruff, wood-sedge, bluebell, wood anemone and dog's mercury. The only tree species recorded in the citation is field maple. Tree species including ash, hazel and hawthorn are present adjacent to the ARN. The key characteristics of the site are the ground flora and largely continuous tree cover, supporting its classification as a broadleaved deciduous woodland.	Major adverse	Moderate adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>Up to 5.2 ha of the designated habitat (which has a total area of 18.35 ha) would be subject to an impact that exceeds the habitat ammonia concentration threshold, (1.7 ha when considering the nitrogen deposition threshold).</p> <p>There is the potential for the increased nitrogen deposition and ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type) (Section 6).</p>		

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
Wansbeck and Hartburn Woods LWS (Restore)	Local	Permanent, irreversible	Area; 1.0 ha	Maximum predicted nitrogen deposition; 2.2 kg N/ha/yr to the east of the ARN, 1,2 kg N/ha/yr. to the west. Habitat threshold; 0.4 kg N/ha/yr	Area; 4.9 ha	Maximum predicted ammonia concentration; 0.31 µg/m ³ to the east of the ARN, 0.18 µg/m ³ to the west Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024	<p>The citation for Wansbeck and Hartburn Woods LWS records the presence of ancient woodland indicator species including wild garlic, woodruff, wood-sedge, bluebell, wood anemone and dog's mercury. The only tree species recorded in the citation is field maple. Tree species including ash, hazel and hawthorn are present adjacent to the ARN. The key characteristics of the site are the ground flora and largely continuous tree cover, supporting its classification as a broadleaved deciduous woodland.</p> <p>Up to 4.9 ha of the designated habitat (which has a total area of 161.6 ha) would be subject to an impact that exceeds the habitat ammonia concentration threshold, (1.0 ha when considering the nitrogen deposition threshold).</p> <p>There is the potential for the increased nitrogen deposition and ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a</p>	Major adverse	Slight adverse (not significant)

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									key component of this habitat type) (Section 6).		
Well Wood ancient woodland (Restore)	National	Permanent, irreversible	Area; 0.5ha	Maximum predicted nitrogen deposition; 2.2 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Area; 2.7 ha	Maximum predicted ammonia concentration; 0.21 µg/m ³ Habitat threshold; 1 µg/m ³ .	Annual	Operational Ongoing from 2024.	This site is included on the ancient woodland inventory which identifies it as an Ancient and Semi-natural Woodland site. Up to 2.7 ha of the designated habitat (which has a total area of 52.7 ha) would be subject to an impact that exceeds the habitat ammonia concentration threshold (0.5 ha when considering the nitrogen deposition threshold). There is the potential for the increased nitrogen deposition and ammonia concentrations to cause adverse effects to the key characteristics of the resource (ancient woodland habitat, including the lower plant community that forms a key component of this habitat type)(Section 6).	Major adverse	Very Large adverse
Ulgham Meadow LNR	County	Permanent improvement	Area; 0.6 ha	Maximum predicted nitrogen deposition; -4.5 kg N/ha/yr. (reduction)	Area; 0.2 ha	Maximum predicted ammonia concentration; -0.4 µg/m ³ Habitat threshold; 3 µg/m ³ .	Annual	Operational Ongoing from 2024	The citation document for the LNR records the presence of woodland that supports over 10 ancient woodland indicator species.	Major beneficial	Slight beneficial (not significant)

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
				Habitat threshold; 0.4 kg N/ha/yr.					<p>The air quality modelling predicts a decrease in nitrogen deposition and ammonia concentration for Ulgham Meadows LNR. This is due to the increase in capacity for vehicular traffic along the A1 (the Scheme), drawing traffic off other roads and thereby reducing associated vehicular emissions in proximity to the LNR.</p> <p>Up to 0.6 ha of the designated habitat (which has a total area of 3.62 ha) would be subject to the beneficial impact that exceeds the habitat nitrogen deposition threshold (0.2 ha when considering the ammonia concentration threshold).</p> <p>Given the extent of the effects, the integrity of the designated habitat resource is not predicted to be positively affected.</p> <p>However, the key characteristics of the resource (woodland habitat) may be positively affected by the decrease in nitrogen deposition and ammonia concentration.</p>		
Weldon Wood ancient woodland (Restore)	National	Permanent improvement	Area; 0.05 ha	Maximum predicted nitrogen deposition;	Area; 1.4 ha	Maximum predicted ammonia concentration; -0.08 µg/m ³	Annual	Operational Ongoing from 2024	This site is included on the ancient woodland inventory which identifies it as an Ancient and Semi-natural Woodland site.	Major beneficial	Large beneficial

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
				-0.84 kg N/ha/yr. (reduction) Habitat threshold; 0.4 kg N/ha/yr.		Habitat threshold; 1 µg/m ³ .			Up to 1.4 ha of the designated habitat (which has a total area of approximately 5.23 ha) would be subject to the beneficial impact that exceeds the habitat ammonia concentration threshold (0.05 ha when considering the nitrogen deposition threshold). The integrity of the designated habitat resource is not predicted to be positively affected. However, the key characteristics of the resource (woodland habitat) may be positively affected by the decrease in nitrogen deposition and ammonia concentration.		
Cawledge Burn LWS (Restore)	Local	Permanent, irreversible	Area; 2ha	Maximum predicted nitrogen deposition; 3.4 kg N/ha/yr. to the west of the ARN and 3.5 kg N/ha/yr to the east. Habitat threshold; 0.4 kg N/ha/yr.	N/A (threshold not exceeded)	Maximum predicted ammonia concentration; 0.30 µg/m ³ Habitat threshold; 3 µg/m ³ .	Annual	Operational Ongoing from 2024.	The LWS is designated for its geological interest. Although the DMRB (LA 105 Air Quality) states that sites designated for geological purposes need not be assessed, the citation does include biological features of interest, and is therefore included to ensure this assessment is robust. The site supports bird species, and also has "little botanical interest", mainly in woodland extending to the east of the A1, dominated by beech.	Major adverse	Slight adverse (not significant)

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>This woodland is extensive; aerial photography shows woodland of similar structure to extend over several hectares and connect with woodland occupying the majority of the site, which follows the line of Cawledge Burn. It should be noted that an assessment made by vehicle in September 2020 recorded the woodland within the LWS to the west of the A1 (affected road) to have been clear-felled as part of forestry operations. It is therefore likely that management operations, at least within woodland of the LWS to the west of the A1, will have a greater adverse impact on the designated habitat than those experienced from the increase in nitrogen deposition as a result of the Scheme.</p> <p>Woodland species described in the citation for the LWS are widespread throughout Britain.</p> <p>Up to 2 ha (including an area clear-felled in 2020) of the designated habitat would be subject to an impact that exceeds the habitat threshold.</p>		

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									As shown by the literature review, the effects of doses of nitrogen on trees and woodland ground flora are unlikely to lead to detectable changes in the composition, species-richness, or health of trees and ground flora within the woodland community. Given this, magnitude and extent of the impact and the management operations known for woodland habitat of the LWS to the west of the A1, the integrity of the designated habitat resource is not predicted to be affected. However, the key characteristics of the resource (woodland habitat) may be negatively impacted by the increased nitrogen deposition.		
Tree T682 (Restore)	National	Permanent, irreversible	Local to the tree	Maximum predicted nitrogen deposition; 1.1 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.	Local to the tree	Maximum predicted ammonia concentration; 0.30 µg/m ³ Habitat threshold; 3 µg/m ³ .	Annual	Operational Ongoing from 2024.	Tree 682 is a veteran ash. The tree is in fair physiological condition and a poor structural condition, although has a predicted future lifespan in excess of 40 years (see Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]).	Major adverse	Very Large adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									<p>The maximum predicted increase in nitrogen deposition is equal to, as opposed to greater than, the threshold of 0.4 kg N/ha/yr. As such, the air quality modelling for the Scheme has been reviewed with the competent expert for Air Quality, which established that the maximum impact of nitrogen deposition to two decimal places is 0.44 kg N/ha/yr. (opening year). As such, it is determined that the habitat threshold is predicted to be exceeded.</p> <p>As shown by the literature review, the effects of low doses of nitrogen on trees are unlikely to lead to detectable changes in the health of individual trees and therefore it is unlikely that the integrity of the veteran tree would be adversely affected.</p> <p>However, as detailed in paragraph 6.1.11, the research examined demonstrates that the effects of increased nitrogen deposition are difficult to detect. As such, it is not possible to robustly justify a conclusion of no significant effects.</p>		

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									In light of the above and in consideration of the precautionary principle (Ref. 3), a significant effect has been assumed.		
Tree T701 (Restore)	National	Permanent, irreversible	Local to the tree	Maximum Total nitrogen deposition; 0.6 kg N/ha/yr. Habitat threshold; 0.4 kg N/ha/yr.			Annual	Operational Ongoing from 2024	Tree 701 is a potential veteran oak. The tree is in good physiological and structural condition, with a predicted future lifespan in excess of 40 years (see Appendix A, Appendix 7.5: Arboricultural Report Part A [APP-220]). The habitat threshold for nitrogen deposition (0.4 kg N/ha/yr.) is predicted to be exceeded. As shown by the literature review, the effects of low doses of nitrogen on trees are unlikely to lead to detectable changes in the health of individual trees and therefore it is unlikely that the integrity of the veteran tree would be adversely affected. However, as detailed in paragraph 6.1.11, the research examined demonstrates that the effects of increased nitrogen deposition are difficult to detect. As such, it is not possible to robustly justify a conclusion of no significant effect.	Major adverse	Very Large adverse

Designated Habitat(s) and Air Quality Attribute (from LA105)	Resource Importance	Duration and Reversibility	Nitrogen Deposition		Ammonia Concentration		Frequency	Timing	Integrity and key characteristics of resource	Level of Impact	Effect Significance (in accordance with LA 108 Biodiversity)
			Extent	Nitrogen Deposition - Magnitude ¹² and Habitat Threshold	Extent	Ammonia conc. – Magnitude ¹³ and Threshold					
									In light of the above and in consideration of the precautionary principle (Ref. 3), a significant effect has been assumed.		

10 REFERENCES

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11 ANNEX A – 2024 AIR QUALITY MODELLING

Summary of air quality modelling on NH3, including contribution to nitrogen deposition at all modelled ecological receptor transects.

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as perc of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco1W SSSI 0	417428	599724	15	28.93	27.27	27.72	-0.17	-1.20%	1.31	1.26	-0.05	Long	1	-5.10%	10.19	9.8	-0.4	38.09	37.52	-0.57	-3.81%	Within Order Limits
Eco1W SSSI 5	417423	599724	15	26.96	26.92	26.38	0.1	0.70%	0.85	0.87	0.02	Long	1	2.50%	6.61	6.8	0.19	32.88	33.18	0.3	1.99%	Within Order Limits
Eco1W SSSI 10	417418	599724	15	25.98	25.46	25.67	0.21	1.40%	0.63	0.68	0.05	Long	1	5.00%	4.92	5.31	0.39	30.38	30.97	0.59	4.00%	
Eco1W SSSI 15	417413	599724	15	25.4	24.98	25.22	0.25	1.60%	0.51	0.56	0.06	Long	1	5.80%	3.94	4.39	0.45	28.92	29.62	0.7	4.70%	
Eco1W SSSI 20	417408	599725	15	25.01	24.66	24.91	0.26	1.70%	0.42	0.48	0.06	Long	1	6.10%	3.3	3.77	0.47	27.95	28.68	0.73	4.90%	
Eco1W SSSI 25	417403	599725	15	24.73	24.43	24.68	0.25	1.70%	0.36	0.42	0.06	Long	1	6.00%	2.84	3.31	0.47	27.27	27.99	0.72	4.80%	
Eco1W SSSI 30	417398	599725	15	24.52	24.26	24.5	0.25	1.60%	0.32	0.38	0.06	Long	1	5.90%	2.5	2.96	0.46	26.76	27.46	0.71	4.70%	
Eco1W SSSI 35	417393	599725	15	24.36	24.12	24.36	0.24	1.60%	0.29	0.34	0.06	Long	1	5.70%	2.24	2.68	0.44	26.36	27.04	0.68	4.60%	
Eco1W SSSI 40	417388	599725	15	24.23	24.01	24.24	0.23	1.50%	0.26	0.31	0.05	Long	1	5.50%	2.03	2.46	0.43	26.04	26.7	0.66	4.40%	
Eco1W SSSI 45	417383	599725	15	24.12	23.92	24.14	0.22	1.50%	0.24	0.29	0.05	Long	1	5.20%	1.86	2.27	0.41	25.78	26.41	0.63	4.20%	
Eco1W SSSI 50	417378	599726	15	24.03	23.85	24.06	0.22	1.40%	0.22	0.27	0.05	Long	1	5.00%	1.72	2.11	0.39	25.57	26.17	0.61	4.00%	
Eco1W SSSI 60	417368	599726	15	23.89	23.73	23.93	0.2	1.30%	0.19	0.24	0.05	Long	1	4.60%	1.5	1.86	0.36	25.23	25.79	0.56	3.70%	
Eco1W SSSI 70	417358	599726	15	23.79	23.64	23.83	0.18	1.20%	0.17	0.21	0.04	Long	1	4.30%	1.33	1.66	0.33	24.97	25.49	0.52	3.40%	
Eco1W SSSI 80	417348	599726	15	23.71	23.58	23.75	0.17	1.10%	0.15	0.19	0.04	Long	1	4.00%	1.2	1.51	0.31	24.78	25.26	0.48	3.20%	
Eco1W SSSI 90	417338	599727	15	23.64	23.53	23.69	0.16	1.10%	0.14	0.18	0.04	Long	1	3.70%	1.1	1.39	0.29	24.63	25.08	0.45	3.00%	
Eco1W SSSI 100	417328	599727	15	23.59	23.48	23.64	0.15	1.00%	0.13	0.16	0.03	Long	1	3.40%	1.02	1.28	0.27	24.5	24.92	0.42	2.80%	
Eco1W SSSI 110	417318	599727	15	23.55	23.44	23.58	0.14	0.90%	0.12	0.15	0.03	Long	1	3.20%	0.95	1.2	0.25	24.39	24.78	0.39	2.60%	
Eco1W SSSI 120	417308	599728	15	23.51	23.41	23.54	0.13	0.90%	0.11	0.14	0.03	Long	1	3.00%	0.89	1.12	0.24	24.3	24.67	0.37	2.50%	
Eco1W SSSI 130	417298	599728	15	23.48	23.39	23.52	0.13	0.90%	0.11	0.14	0.03	Long	1	2.80%	0.84	1.06	0.22	24.22	24.58	0.35	2.30%	
Eco1W SSSI 140	417288	599728	15	23.45	23.36	23.48	0.12	0.80%	0.1	0.13	0.03	Long	1	2.70%	0.79	1	0.21	24.15	24.48	0.33	2.20%	
Eco1W SSSI 150	417278	599729	15	23.42	23.34	23.46	0.11	0.80%	0.1	0.12	0.03	Long	1	2.50%	0.76	0.95	0.2	24.1	24.41	0.31	2.10%	
Eco1W SSSI 160	417268	599729	15	23.4	23.33	23.43	0.11	0.70%	0.09	0.12	0.02	Long	1	2.40%	0.72	0.91	0.19	24.05	24.34	0.3	2.00%	
Eco1W SSSI 170	417258	599729	15	23.38	23.31	23.41	0.1	0.70%	0.09	0.11	0.02	Long	1	2.30%	0.69	0.87	0.18	24	24.28	0.28	1.90%	
Eco1W SSSI 180	417248	599730	15	23.37	23.29	23.39	0.1	0.70%	0.09	0.11	0.02	Long	1	2.20%	0.66	0.84	0.17	23.95	24.22	0.27	1.80%	
Eco1W SSSI 190	417238	599730	15	23.35	23.28	23.37	0.1	0.60%	0.08	0.11	0.02	Long	1	2.10%	0.64	0.8	0.16	23.92	24.18	0.26	1.70%	
Eco1W SSSI 200	417228	599730	15	23.34	23.27	23.36	0.09	0.60%	0.08	0.1	0.02	Long	1	2.00%	0.62	0.77	0.16	23.89	24.13	0.25	1.60%	
Eco1E SSSI 0	417463	599814	15	26.76	26.11	31.35	5.24	34.90%	0.8	2.22	1.41	Long	1	141.40%	6.27	17.31	11.03	32.38	48.65	16.27	108.47%	Within Order Limits
Eco1E SSSI 5	417468	599814	15	26.24	25.68	28.98	3.31	22.10%	0.69	1.55	0.87	Long	1	86.60%	5.36	12.12	6.76	31.04	41.1	10.06	67.10%	Within Order Limits
Eco1E SSSI 10	417473	599813	15	25.83	25.34	27.71	2.38	15.80%	0.6	1.21	0.61	Long	1	61.20%	4.68	9.45	4.77	30.02	37.17	7.15	47.68%	Within Order Limits
Eco1E SSSI 15	417478	599813	15	25.52	25.08	26.92	1.84	12.30%	0.53	1	0.47	Long	1	46.90%	4.15	7.81	3.65	29.23	34.73	5.5	36.65%	Within Order Limits
Eco1E SSSI 20	417483	599813	15	25.27	24.7	26.38	1.51	10.00%	0.48	0.86	0.38	Long	1	38.00%	3.73	6.69	2.96	28.61	33.07	4.47	29.78%	Within Order Limits
Eco1E SSSI 25	417488	599813	15	25.07	24.7	25.98	1.28	8.50%	0.44	0.75	0.32	Long	1	31.90%	3.4	5.88	2.48	28.1	31.86	3.76	25.09%	Within Order Limits
Eco1E SSSI 30	417493	599813	15	24.9	24.56	25.67	1.1	7.30%	0.4	0.67	0.27	Long	1	27.40%	3.12	5.26	2.14	27.68	30.92	3.24	21.60%	
Eco1E SSSI 35	417498	599813	15	24.76	24.44	25.42	0.98	6.50%	0.37	0.61	0.24	Long	1	24.10%	2.88	4.76	1.88	27.33	30.18	2.85	19.00%	
Eco1E SSSI 40	417503	599812	15	24.63	24.34	25.21	0.87	5.80%	0.34	0.56	0.21	Long	1	21.40%	2.69	4.36	1.67	27.03	29.57	2.54	17.00%	
Eco1E SSSI 45	417508	599812	15	24.53	24.26	25.04	0.78	5.20%	0.32	0.52	0.19	Long	1	19.30%	2.52	4.02	1.51	26.78	29.07	2.29	15.30%	
Eco1E SSSI 50	417513	599812	15	24.44	24.18	24.9	0.72	4.80%	0.3	0.48	0.18	Long	1	17.60%	2.37	3.74	1.37	26.55	28.63	2.09	13.90%	
Eco1E SSSI 60	417523	599812	15	24.29	24.06	24.67	0.61	4.10%	0.27	0.42	0.15	Long	1	14.80%	2.13	3.29	1.16	26.19	27.96	1.77	11.80%	
Eco1E SSSI 70	417533	599812	15	24.17	23.96	24.49	0.53	3.50%	0.25	0.38	0.13	Long	1	12.80%	1.94	2.94	1	25.9	27.43	1.53	10.20%	
Eco1E SSSI 80	417543	599811	15	24.07	23.88	24.35	0.47	3.10%	0.23	0.34	0.11	Long	1	11.20%	1.79	2.66	0.88	25.67	27.01	1.35	9.00%	
Eco1E SSSI 90	417553	599811	15	23.99	23.81	24.23	0.42	2.80%	0.21	0.31	0.1	Long	1	10.00%	1.66	2.44	0.78	25.47	26.68	1.2	8.00%	
Eco1E SSSI 100	417563	599811	15	23.92	23.76	24.14	0.38	2.50%	0.2	0.29	0.09	Long	1	9.00%	1.55	2.26	0.71	25.31	26.39	1.08	7.20%	
Eco1E SSSI 110	417573	599810	15	23.86	23.71	24.05	0.34	2.30%	0.19	0.27	0.08	Long	1	8.30%	1.46	2.1	0.64	25.17	26.15	0.99	6.60%	
Eco1E SSSI 120	417583	599810	15	23.81	23.67	23.99	0.32	2.10%	0.18	0.25	0.08	Long	1	7.60%	1.38	1.97	0.59	25.04	25.95	0.91	6.10%	
Eco1E SSSI 130	417593	599810	15	23.77	23.63	23.93	0.3	2.00%	0.17	0.24	0.07	Long	1	7.10%	1.31	1.86	0.55	24.94	25.78	0.85	5.60%	
Eco1E SSSI 140	417603	599809	15	23.73	23.59	23.87	0.27	1.80%	0.16	0.23	0.07	Long	1	6.60%	1.24	1.76	0.51	24.84	25.62	0.79	5.20%	
Eco1E SSSI 150	417613	599809	15	23.69	23.56	23.83	0.26	1.80%	0.15	0.21	0.06	Long	1	6.20%	1.19	1.67	0.48	24.75	25.5	0.74	5.00%	
Eco1E SSSI 160	417623	599809	15	23.66	23.53	23.78	0.25	1.60%	0.15	0.22	0.06	Long	1	5.80%	1.14	1.59	0.45	24.67	25.37	0.7	4.70%	
Eco1E SSSI 170	417633	599808	15	23.63	23.52	23.75	0.23	1.50%	0.14	0.19	0.05	Long	1	5.50%	1.09	1.52	0.43	24.61	25.27	0.66	4.40%	
Eco1E SSSI 180	417643	599808	15	23.61	23.49	23.71	0.22	1.50%	0.14	0.19	0.05	Long	1	5.20%	1.05	1.46	0.41	24.54	25.17	0.62	4.20%	
Eco1E SSSI 190	417653	599808	15	23.58	23.47	23.68	0.21	1.40%	0.13	0.18	0.05	Long	1	4.90%	1.02	1.4	0.38	24.49	25.08	0.59	3.90%	
Eco1E SSSI 200	417663	599808	15	23.56	23.45	23.66	0.2	1.40%	0.13	0.17	0.05	Long	1	4.70%	0.99	1.35	0.37	24.44	25.01	0.57	3.80%	
Eco2 SSSI 0	416443	592550	10	16.76	16.46	16.08	-0.38	-3.80%	0.71	0.5	-0.22	Short	3	-7.20%	3.71	2.58	-1.13	20.16	18.65	-1.51	-15.10%	
Eco2 SSSI 5	416438	592549	10	16	15.85	15.66	-0.19	-1.90%	0.36	0.25	-0.1	Short	3	-3.50%	1.85	1.32	-0.54	17.7	16.98	-0.73	-7.30%	
Eco2 SSSI 10	416433	592547	10	15.76	15.65	15.52	-0.12	-1.20%	0.24	0.18	-0.07	Short	3	-2.30%	1.27	0.92	-0.35	16.92	16.44	-0.48	-4.80%	
Eco2 SSSI 15	416429	592546	10	15.63	15.55	15.46	-0.09	-0.90%	0.19	0.14	-0.05	Short	3	-1.70%	0.98	0.72	-0.26	16.53	16.18	-0.35	-3.50%	
Eco2 SSSI 20	416424	592544	10	15.56	15.49	15																

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as per of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco3 AW 110	423632	587147	10	16.97	16.87	16.91	0.04	0.40%	0.09	0.1	0.01	Long	1	0.90%	0.69	0.76	0.07	17.56	17.67	0.11	1.10%	
Eco3 AW 120	423634	587137	10	16.95	16.86	16.89	0.04	0.40%	0.09	0.09	0.01	Long	1	0.90%	0.67	0.73	0.07	17.52	17.63	0.11	1.00%	
Eco3 AW 130	423637	587128	10	16.94	16.85	16.89	0.04	0.40%	0.08	0.09	0.01	Long	1	0.80%	0.65	0.71	0.06	17.5	17.6	0.1	1.00%	
Eco3 AW 140	423640	587118	10	16.93	16.85	16.88	0.03	0.30%	0.08	0.09	0.01	Long	1	0.80%	0.63	0.69	0.06	17.48	17.57	0.09	0.90%	
Eco3 AW 150	423643	587108	10	16.91	16.83	16.86	0.03	0.30%	0.08	0.09	0.01	Long	1	0.80%	0.61	0.67	0.06	17.45	17.54	0.09	0.90%	
Eco4 AW 0	419456	586727	10	17.65	17.43	17.5	0.07	0.70%	0.13	0.14	0.02	Long	1	1.60%	0.98	1.1	0.13	18.41	18.61	0.2	2.00%	
Eco4 AW 5	419458	586732	10	17.64	17.43	17.49	0.06	0.60%	0.12	0.14	0.02	Long	1	1.60%	0.96	1.09	0.12	18.39	18.57	0.19	1.90%	
Eco4 AW 10	419460	586736	10	17.62	17.41	17.47	0.06	0.60%	0.12	0.14	0.02	Long	1	1.60%	0.95	1.07	0.12	18.36	18.54	0.18	1.80%	
Eco4 AW 15	419462	586741	10	17.61	17.41	17.47	0.06	0.60%	0.12	0.13	0.02	Long	1	1.50%	0.93	1.05	0.12	18.34	18.52	0.18	1.80%	
Eco4 AW 20	419464	586746	10	17.6	17.4	17.46	0.06	0.60%	0.12	0.13	0.01	Long	1	1.50%	0.92	1.03	0.12	18.32	18.5	0.18	1.80%	
Eco4 AW 25	419466	586750	10	17.59	17.39	17.45	0.06	0.60%	0.12	0.13	0.01	Long	1	1.50%	0.91	1.02	0.11	18.3	18.47	0.17	1.70%	
Eco4 AW 30	419468	586755	10	17.58	17.39	17.45	0.06	0.60%	0.11	0.13	0.01	Long	1	1.40%	0.89	1.01	0.11	18.28	18.45	0.17	1.70%	
Eco4 AW 35	419470	586759	10	17.57	17.38	17.44	0.06	0.60%	0.11	0.13	0.01	Long	1	1.40%	0.88	0.99	0.11	18.27	18.43	0.17	1.70%	
Eco4 AW 40	419472	586764	10	17.56	17.38	17.43	0.06	0.60%	0.11	0.13	0.01	Long	1	1.40%	0.87	0.98	0.11	18.25	18.41	0.16	1.60%	
Eco4 AW 45	419474	586768	10	17.55	17.38	17.43	0.05	0.50%	0.11	0.12	0.01	Long	1	1.40%	0.86	0.97	0.11	18.24	18.4	0.16	1.60%	
Eco4 AW 50	419476	586773	10	17.54	17.37	17.42	0.05	0.50%	0.11	0.12	0.01	Long	1	1.30%	0.85	0.96	0.11	18.22	18.38	0.16	1.60%	
Eco4 AW 60	419480	586782	10	17.53	17.36	17.41	0.05	0.50%	0.11	0.12	0.01	Long	1	1.30%	0.83	0.94	0.1	18.19	18.34	0.15	1.50%	
Eco4 AW 70	419485	586791	10	17.51	17.35	17.4	0.05	0.50%	0.1	0.12	0.01	Long	1	1.30%	0.82	0.92	0.1	18.17	18.32	0.15	1.50%	
Eco5 AW 0	419274	586594	10	18.12	17.71	17.83	0.12	1.20%	0.2	0.23	0.03	Long	1	3.00%	1.54	1.78	0.24	19.25	19.61	0.36	3.60%	
Eco5 AW 5	419274	586589	10	18.01	17.64	17.75	0.11	1.10%	0.18	0.21	0.03	Long	1	2.70%	1.41	1.62	0.21	19.05	19.37	0.32	3.20%	
Eco5 AW 10	419273	586584	10	17.92	17.59	17.69	0.09	0.90%	0.17	0.19	0.02	Long	1	2.40%	1.3	1.49	0.19	18.89	19.17	0.28	2.80%	
Eco5 AW 15	419272	586579	10	17.85	17.55	17.63	0.09	0.90%	0.16	0.18	0.02	Long	1	2.20%	1.21	1.38	0.17	18.76	19.02	0.26	2.60%	
Eco5 AW 20	419272	586574	10	17.8	17.52	17.59	0.08	0.80%	0.15	0.17	0.02	Long	1	2.00%	1.15	1.3	0.16	18.66	18.9	0.23	2.30%	
Eco5 AW 25	419271	586569	10	17.75	17.49	17.56	0.07	0.70%	0.14	0.16	0.02	Long	1	1.90%	1.09	1.24	0.14	18.58	18.8	0.22	2.20%	
Eco5 AW 30	419270	586565	10	17.71	17.47	17.53	0.07	0.70%	0.13	0.15	0.02	Long	1	1.70%	1.05	1.18	0.13	18.51	18.71	0.2	2.00%	
Eco5 AW 35	419269	586560	10	17.68	17.45	17.52	0.07	0.70%	0.13	0.15	0.02	Long	1	1.60%	1.01	1.13	0.13	18.46	18.65	0.19	1.90%	
Eco5 AW 40	419269	586555	10	17.66	17.43	17.5	0.06	0.60%	0.13	0.14	0.02	Long	1	1.50%	0.98	1.1	0.12	18.41	18.59	0.18	1.80%	
Eco5 AW 45	419268	586550	10	17.63	17.42	17.48	0.06	0.60%	0.12	0.14	0.01	Long	1	1.50%	0.95	1.06	0.11	18.37	18.54	0.18	1.80%	
Eco5 AW 50	419267	586545	10	17.61	17.41	17.47	0.06	0.60%	0.12	0.13	0.01	Long	1	1.40%	0.92	1.03	0.11	18.33	18.5	0.17	1.70%	
Eco5 AW 60	419266	586535	10	17.58	17.39	17.44	0.05	0.50%	0.11	0.13	0.01	Long	1	1.30%	0.89	0.99	0.1	18.27	18.43	0.15	1.50%	
Eco5 AW 70	419264	586525	10	17.56	17.38	17.43	0.05	0.50%	0.11	0.12	0.01	Long	1	1.20%	0.86	0.95	0.09	18.24	18.38	0.14	1.40%	
Eco5 AW 80	419263	586515	10	17.54	17.36	17.41	0.05	0.50%	0.11	0.12	0.01	Long	1	1.10%	0.84	0.92	0.09	18.2	18.33	0.14	1.40%	
Eco5 AW 90	419262	586505	10	17.53	17.36	17.4	0.04	0.40%	0.1	0.12	0.01	Long	1	1.10%	0.82	0.9	0.08	18.17	18.3	0.13	1.30%	
Eco5 AW 100	419260	586495	10	17.51	17.35	17.39	0.04	0.40%	0.1	0.11	0.01	Long	1	1.00%	0.8	0.88	0.08	18.15	18.27	0.12	1.20%	
Eco5 AW 110	419259	586485	10	17.51	17.34	17.38	0.04	0.40%	0.1	0.11	0.01	Long	1	1.00%	0.79	0.87	0.08	18.13	18.25	0.12	1.20%	
Eco5 AW 120	419257	586475	10	17.5	17.34	17.38	0.04	0.40%	0.1	0.11	0.01	Long	1	1.00%	0.78	0.86	0.07	18.12	18.24	0.11	1.10%	
Eco5 AW 130	419256	586466	10	17.49	17.33	17.37	0.04	0.40%	0.1	0.11	0.01	Long	1	0.90%	0.77	0.85	0.07	18.11	18.22	0.11	1.10%	
Eco5 AW 140	419254	586456	10	17.49	17.33	17.37	0.04	0.40%	0.1	0.11	0.01	Long	1	0.90%	0.77	0.84	0.07	18.1	18.21	0.11	1.10%	
Eco5 AW 150	419253	586446	10	17.48	17.33	17.37	0.04	0.40%	0.1	0.11	0.01	Long	1	0.90%	0.76	0.83	0.07	18.09	18.2	0.11	1.00%	
Eco5 AW 160	419252	586436	10	17.48	17.33	17.36	0.03	0.30%	0.1	0.11	0.01	Long	1	0.80%	0.76	0.82	0.07	18.09	18.18	0.1	1.00%	
Eco5 AW 170	419250	586426	10	17.48	17.33	17.37	0.04	0.40%	0.1	0.1	0.01	Long	1	0.80%	0.75	0.82	0.06	18.08	18.18	0.1	1.00%	
Eco5 AW 180	419249	586416	10	17.48	17.33	17.36	0.03	0.30%	0.1	0.1	0.01	Long	1	0.80%	0.75	0.81	0.06	18.07	18.17	0.09	0.90%	
Eco6 AW 0	417829	585952	10	17.74	17.68	17.75	0.08	0.80%	0.18	0.19	0.02	Long	1	1.80%	1.37	1.51	0.14	19.04	19.26	0.22	2.20%	
Eco7E AW 0	417649	585669	10	26.99	26.35	27.31	0.96	9.60%	2.72	3.03	0.31	Long	1	30.50%	21.21	23.6	2.38	47.57	50.9	3.34	33.40%	
Eco7E AW 5	417654	585670	10	23.69	23.28	23.95	0.67	6.70%	1.69	1.89	0.19	Long	1	19.00%	13.22	14.7	1.48	36.5	38.65	2.15	21.50%	
Eco7E AW 10	417659	585671	10	22.13	21.82	22.34	0.53	5.30%	1.26	1.4	0.14	Long	1	14.10%	9.81	10.92	1.1	31.63	33.26	1.63	16.30%	
Eco7E AW 15	417664	585671	10	21.19	20.93	21.37	0.43	4.30%	1.01	1.12	0.11	Long	1	11.30%	7.88	8.76	0.88	28.81	30.13	1.31	13.10%	
Eco7E AW 20	417669	585672	10	20.56	20.34	20.71	0.37	3.70%	0.85	0.94	0.09	Long	1	9.50%	6.61	7.35	0.74	26.95	28.06	1.11	11.10%	
Eco7E AW 25	417674	585673	10	20.11	19.91	20.24	0.32	3.20%	0.74	0.82	0.08	Long	1	8.20%	5.73	6.37	0.64	25.65	26.61	0.96	9.60%	
Eco7E AW 30	417679	585673	10	19.77	19.59	19.88	0.29	2.90%	0.65	0.72	0.07	Long	1	7.20%	5.07	5.63	0.56	24.66	25.51	0.85	8.50%	
Eco7E AW 35	417684	585674	10	19.49	19.33	19.59	0.26	2.60%	0.58	0.65	0.06	Long	1	6.50%	4.55	5.06	0.5	23.88	24.64	0.77	7.70%	
Eco7E AW 40	417689	585675	10	19.28	19.12	19.36	0.23	2.30%	0.53	0.59	0.06	Long	1	5.90%	4.14	4.6	0.46	23.26	23.95	0.69	6.90%	
Eco7E AW 45	417694	585675	10	19.09	18.95	19.17	0.22	2.20%	0.49	0.54	0.05	Long	1	5.40%	3.8	4.22	0.42	22.75	23.38	0.64	6.40%	
Eco7E AW 50	417699	585676	10	18.94	18.81	19.01	0.2	2.00%	0.45	0.5	0.05	Long	1	5.00%	3.52	3.9	0.39	22.32	22.91	0.59	5.90%	
Eco7E AW 60	417709	585677	10	18.7	18.58	18.75	0.18	1.80%	0.39	0.44	0.04	Long	1	4.30%	3.08	3.41	0.34	21.65	22.17	0.51	5.10%	
Eco7E AW 70	417719	585678	10	18.52	18.4	18.56	0.16	1.60%	0.35	0.39	0.04	Long	1	3.80%	2.74	3.04	0.3	21.15	21.61	0.46	4.60%	
Eco7E AW 80	417729	585680	10	18.38	18.27	18.41	0.14	1.40%	0.32	0.35	0.03	Long	1	3.40%	2.49	2.76	0.27	20.75	21.17	0.41	4.10%	
Eco7E AW 90	417738	585681	10	18.27	18.16	18.29	0.13	1.30%	0.29	0.32	0.03	Long	1									

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as per of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco8 AW 0	421691	578433	10	29.64	27.11	27.65	0.53	5.30%	4.18	4.39	0.21	Long	1	20.70%	32.6	34.22	1.62	59.72	61.87	2.15	21.50%	
Eco8 AW 5	421696	578435	10	24.85	23.18	23.57	0.39	3.90%	2.59	2.72	0.13	Long	1	13.00%	20.23	21.25	1.02	43.42	44.82	1.41	14.10%	
Eco8 AW 10	421701	578436	10	22.52	21.25	21.56	0.31	3.10%	1.91	2.01	0.1	Long	1	9.70%	14.93	15.69	0.75	36.19	37.25	1.07	10.70%	
Eco8 AW 15	421706	578438	10	21.1	20.06	20.32	0.26	2.60%	1.53	1.6	0.08	Long	1	7.80%	11.91	12.52	0.6	31.97	32.84	0.86	8.60%	
Eco8 AW 20	421711	578439	10	20.13	19.26	19.49	0.22	2.20%	1.28	1.34	0.07	Long	1	6.50%	9.95	10.46	0.51	29.22	29.95	0.73	7.30%	
Eco8 AW 25	421715	578441	10	19.44	18.68	18.87	0.2	2.00%	1.1	1.16	0.06	Long	1	5.60%	8.58	9.01	0.44	27.25	27.89	0.63	6.30%	
Eco8 AW 30	421720	578442	10	18.91	18.24	18.41	0.18	1.80%	0.97	1.02	0.05	Long	1	5.00%	7.55	7.93	0.39	25.78	26.35	0.56	5.60%	
Eco8 AW 35	421725	578443	10	18.48	17.88	18.04	0.16	1.60%	0.86	0.91	0.04	Long	1	4.40%	6.74	7.09	0.35	24.62	25.13	0.5	5.00%	
Eco8 AW 40	421730	578445	10	18.14	17.59	17.74	0.14	1.40%	0.78	0.82	0.04	Long	1	4.00%	6.1	6.41	0.31	23.69	24.15	0.46	4.60%	
Eco8 AW 45	421734	578446	10	17.86	17.36	17.49	0.13	1.30%	0.71	0.75	0.04	Long	1	3.70%	5.56	5.85	0.29	22.92	23.34	0.42	4.20%	
Eco8 AW 50	421739	578448	10	17.62	17.15	17.28	0.12	1.20%	0.66	0.69	0.03	Long	1	3.40%	5.12	5.39	0.26	22.28	22.66	0.39	3.90%	
Eco8 AW 60	421749	578451	10	17.24	16.84	16.95	0.11	1.10%	0.57	0.6	0.03	Long	1	2.90%	4.43	4.65	0.23	21.26	21.6	0.34	3.40%	
Eco8 AW 70	421758	578454	10	16.95	16.59	16.69	0.1	1.00%	0.5	0.53	0.03	Long	1	2.60%	3.9	4.1	0.2	20.49	20.8	0.3	3.00%	
Eco8 AW 80	421768	578456	10	16.72	16.4	16.49	0.09	0.90%	0.45	0.47	0.02	Long	1	2.30%	3.49	3.68	0.18	19.89	20.16	0.27	2.70%	
Eco8 AW 90	421778	578459	10	16.54	16.25	16.33	0.08	0.80%	0.41	0.43	0.02	Long	1	2.10%	3.17	3.33	0.17	19.41	19.66	0.25	2.50%	
Eco8 AW 100	421787	578462	10	16.39	16.12	16.19	0.07	0.70%	0.37	0.39	0.02	Long	1	1.90%	2.9	3.05	0.15	19.02	19.25	0.22	2.20%	
Eco8 AW 110	421797	578465	10	16.26	16.01	16.08	0.07	0.70%	0.34	0.36	0.02	Long	1	1.80%	2.68	2.82	0.14	18.69	18.9	0.21	2.10%	
Eco8 AW 120	421806	578468	10	16.15	15.92	15.99	0.07	0.70%	0.32	0.34	0.02	Long	1	1.70%	2.49	2.62	0.13	18.41	18.61	0.2	2.00%	
Eco8 AW 130	421816	578471	10	16.06	15.84	15.9	0.06	0.60%	0.3	0.31	0.02	Long	1	1.60%	2.33	2.45	0.12	18.17	18.35	0.18	1.80%	
Eco8 AW 140	421825	578474	10	15.98	15.78	15.83	0.06	0.60%	0.28	0.3	0.01	Long	1	1.50%	2.19	2.3	0.11	17.96	18.13	0.17	1.70%	
Eco8 AW 150	421835	578477	10	15.91	15.71	15.77	0.05	0.50%	0.26	0.28	0.01	Long	1	1.40%	2.07	2.17	0.11	17.78	17.94	0.16	1.60%	
Eco8 AW 160	421845	578480	10	15.85	15.66	15.71	0.05	0.50%	0.25	0.26	0.01	Long	1	1.30%	1.96	2.06	0.1	17.62	17.77	0.15	1.50%	
Eco8 AW 170	421854	578482	10	15.79	15.61	15.66	0.05	0.50%	0.24	0.25	0.01	Long	1	1.30%	1.86	1.96	0.1	17.47	17.62	0.14	1.40%	
Eco8 AW 180	421864	578485	10	15.74	15.57	15.62	0.05	0.50%	0.23	0.24	0.01	Long	1	1.20%	1.77	1.86	0.09	17.34	17.48	0.14	1.40%	
Eco8 AW 190	421873	578488	10	15.69	15.53	15.58	0.05	0.50%	0.22	0.23	0.01	Long	1	1.10%	1.69	1.78	0.09	17.22	17.36	0.14	1.40%	
Eco8 AW 200	421883	578491	10	15.65	15.5	15.54	0.05	0.50%	0.21	0.22	0.01	Long	1	1.10%	1.62	1.7	0.09	17.11	17.25	0.13	1.30%	
Eco9E SSSI 0	413890	598615	15	27.9	27.02	25.72	-1.3	-8.70%	1.15	0.78	-0.38	Long	1	-37.60%	8.98	6.05	-2.93	36	31.77	-4.23	-28.20%	
Eco9E SSSI 5	413894	598616	15	25.85	25.33	24.58	-0.75	-5.00%	0.65	0.44	-0.21	Long	1	-20.90%	5.07	3.44	-1.63	30.41	28.02	-2.38	-15.90%	
Eco9E SSSI 10	413899	598618	15	25	24.64	24.11	-0.53	-3.50%	0.45	0.31	-0.14	Long	1	-14.40%	3.55	2.42	-1.12	28.19	26.54	-1.65	-11.00%	
Eco9E SSSI 15	413904	598619	15	24.55	24.27	23.87	-0.41	-2.70%	0.35	0.24	-0.11	Long	1	-10.90%	2.74	1.89	-0.85	27.01	25.75	-1.26	-8.40%	
Eco9E SSSI 20	413909	598620	15	24.27	24.04	23.71	-0.33	-2.20%	0.29	0.2	-0.09	Long	1	-8.80%	2.25	1.56	-0.69	26.29	25.27	-1.02	-6.80%	
Eco9E SSSI 25	413914	598621	15	24.08	23.88	23.61	-0.28	-1.80%	0.25	0.17	-0.07	Long	1	-7.40%	1.91	1.34	-0.58	25.28	24.94	-0.85	-5.70%	
Eco9E SSSI 30	413919	598622	15	23.94	23.77	23.52	-0.24	-1.60%	0.21	0.15	-0.06	Long	1	-6.40%	1.67	1.17	-0.5	25.44	24.7	-0.74	-4.90%	
Eco9E SSSI 35	413924	598623	15	23.83	23.68	23.47	-0.21	-1.40%	0.19	0.13	-0.06	Long	1	-5.60%	1.49	1.05	-0.43	25.16	24.52	-0.65	-4.30%	
Eco9E SSSI 40	413929	598624	15	23.75	23.61	23.42	-0.18	-1.20%	0.17	0.12	-0.05	Long	1	-4.90%	1.34	0.96	-0.39	24.95	24.38	-0.57	-3.80%	
Eco9E SSSI 45	413933	598625	15	23.68	23.55	23.39	-0.17	-1.10%	0.16	0.11	-0.04	Long	1	-4.40%	1.22	0.88	-0.35	24.78	24.26	-0.52	-3.40%	
Eco9E SSSI 50	413938	598626	15	23.63	23.51	23.36	-0.15	-1.00%	0.14	0.1	-0.04	Long	1	-4.00%	1.13	0.81	-0.31	24.64	24.17	-0.47	-3.10%	
Eco9E SSSI 55	413943	598627	15	23.58	23.47	23.33	-0.14	-1.00%	0.13	0.1	-0.04	Long	1	-3.70%	1.05	0.76	-0.29	24.52	24.09	-0.43	-2.90%	
Eco9E SSSI 60	413948	598629	15	23.54	23.44	23.31	-0.13	-0.90%	0.13	0.09	-0.03	Long	1	-3.40%	0.98	0.72	-0.27	24.42	24.02	-0.39	-2.60%	
Eco9E SSSI 65	413953	598630	15	23.51	23.41	23.29	-0.12	-0.80%	0.12	0.09	-0.03	Long	1	-3.20%	0.92	0.68	-0.25	24.33	23.97	-0.37	-2.40%	
Eco9E SSSI 70	413958	598631	15	23.48	23.38	23.27	-0.11	-0.70%	0.11	0.08	-0.03	Long	1	-2.90%	0.87	0.64	-0.23	24.26	23.92	-0.34	-2.30%	
Eco9E SSSI 75	413963	598632	15	23.45	23.36	23.26	-0.1	-0.70%	0.11	0.08	-0.03	Long	1	-2.70%	0.83	0.61	-0.21	24.19	23.87	-0.32	-2.10%	
Eco9E SSSI 80	413968	598633	15	23.43	23.34	23.25	-0.09	-0.60%	0.1	0.08	-0.03	Long	1	-2.60%	0.79	0.59	-0.2	24.13	23.84	-0.3	-2.00%	
Eco9E SSSI 85	413972	598634	15	23.41	23.33	23.23	-0.09	-0.60%	0.1	0.07	-0.02	Long	1	-2.40%	0.76	0.57	-0.19	24.08	23.8	-0.28	-1.90%	
Eco9E SSSI 90	413977	598635	15	23.39	23.31	23.22	-0.09	-0.60%	0.09	0.07	-0.02	Long	1	-2.30%	0.72	0.55	-0.18	24.04	23.77	-0.27	-1.80%	
Eco9E SSSI 95	413982	598636	15	23.37	23.3	23.21	-0.08	-0.60%	0.09	0.07	-0.02	Long	1	-2.20%	0.7	0.53	-0.17	23.99	23.74	-0.25	-1.70%	
Eco9E SSSI 100	413987	598637	15	23.36	23.29	23.21	-0.08	-0.50%	0.09	0.07	-0.02	Long	1	-2.10%	0.67	0.51	-0.16	23.96	23.72	-0.24	-1.60%	
Eco9E SSSI 110	413997	598639	15	23.33	23.26	23.19	-0.07	-0.50%	0.08	0.06	-0.02	Long	1	-1.90%	0.63	0.48	-0.15	23.89	23.67	-0.22	-1.40%	
Eco9E SSSI 120	414007	598642	15	23.31	23.25	23.18	-0.06	-0.40%	0.08	0.06	-0.02	Long	1	-1.70%	0.59	0.46	-0.13	23.84	23.64	-0.2	-1.30%	
Eco9E SSSI 130	414016	598644	15	23.29	23.23	23.17	-0.06	-0.40%	0.07	0.06	-0.02	Long	1	-1.60%	0.56	0.44	-0.12	23.79	23.6	-0.19	-1.30%	
Eco9E SSSI 140	414026	598646	15	23.28	23.22	23.17	-0.06	-0.40%	0.07	0.05	-0.01	Long	1	-1.50%	0.53	0.42	-0.11	23.76	23.59	-0.17	-1.10%	
Eco9E SSSI 150	414036	598648	15	23.26	23.21	23.16	-0.05	-0.30%	0.07	0.05	-0.01	Long	1	-1.40%	0.51	0.4	-0.11	23.72	23.56	-0.16	-1.10%	
Eco9E SSSI 160	414046	598650	15	23.25	23.19	23.15	-0.04	-0.30%	0.06	0.05	-0.01	Long	1	-1.30%	0.49	0.39	-0.1	23.68	23.54	-0.14	-1.00%	
Eco9E SSSI 170	414055	598653	15	23.24	23.19	23.15	-0.05	-0.30%	0.06	0.05	-0.01	Long	1	-1.20%	0.47	0.38	-0.09	23.66	23.52	-0.14	-0.90%	
Eco9E SSSI 180	414065	598655	15	23.23	23.18	23.14	-0.05	-0.30%	0.06	0.05	-0.01	Long	1	-1.10%	0.45	0.36	-0.09	23.64	23.5	-0.13	-0.90%	
Eco9E SSSI 190	414075	598657	15	23.22	23.17	23.13	-0.04	-0.30%	0.06	0.05	-0.01	Long	1	-1.10%	0.44	0.35	-0.08	23.61	23.49	-0.12	-0.80%	
Eco9W SSSI 0	413889	598590	15	26.07	25.51	24.7	-0.81	-5.40%	0.7	0.47	-0.23	Long	1	-22.60%	5.47	3.7	-1.77	30.98	28.4	-2.58	-17.20%	

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as per of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco10_95	423648	592629	10	15.88	15.72	15.63	-0.09	-0.90%	0.13	0.1	-0.03	Short	3	-0.80%	0.98	0.78	-0.2	16.69	16.41	-0.28	-2.80%	
Eco10_100	423653	592628	10	15.87	15.71	15.62	-0.08	-0.80%	0.12	0.1	-0.02	Short	3	-0.80%	0.95	0.76	-0.19	16.65	16.38	-0.27	-2.70%	
Eco10_110	423663	592626	10	15.84	15.69	15.61	-0.08	-0.80%	0.11	0.09	-0.02	Short	3	-0.70%	0.9	0.73	-0.17	16.58	16.33	-0.25	-2.50%	
Eco10_120	423673	592624	10	15.82	15.67	15.59	-0.07	-0.70%	0.11	0.09	-0.02	Short	3	-0.70%	0.86	0.71	-0.15	16.53	16.3	-0.23	-2.30%	
Eco10_130	423683	592623	10	15.81	15.65	15.59	-0.07	-0.70%	0.11	0.09	-0.02	Short	3	-0.60%	0.84	0.69	-0.14	16.49	16.28	-0.21	-2.10%	
Eco10_140	423693	592621	10	15.8	15.64	15.58	-0.06	-0.60%	0.11	0.09	-0.02	Short	3	-0.60%	0.82	0.69	-0.13	16.46	16.27	-0.19	-1.90%	
Eco10_150	423702	592619	10	15.81	15.64	15.58	-0.05	-0.50%	0.11	0.09	-0.02	Short	3	-0.50%	0.82	0.7	-0.12	16.46	16.28	-0.18	-1.80%	
Eco10_160	423712	592618	10	15.83	15.65	15.59	-0.05	-0.50%	0.11	0.09	-0.02	Short	3	-0.50%	0.83	0.72	-0.12	16.48	16.31	-0.17	-1.70%	
Eco10_170	423722	592616	10	15.86	15.65	15.6	-0.05	-0.50%	0.11	0.1	-0.01	Short	3	-0.50%	0.87	0.75	-0.11	16.52	16.35	-0.16	-1.60%	
Eco10_180	423732	592614	10	15.92	15.68	15.63	-0.05	-0.50%	0.12	0.1	-0.01	Short	3	-0.50%	0.92	0.82	-0.11	16.6	16.44	-0.16	-1.60%	
Eco10_190	423742	592613	10	15.9	15.66	15.62	-0.05	-0.50%	0.11	0.1	-0.01	Short	3	-0.40%	0.9	0.79	-0.1	16.56	16.41	-0.15	-1.50%	
Eco10_200	423752	592611	10	15.86	15.63	15.59	-0.04	-0.40%	0.11	0.1	-0.01	Short	3	-0.40%	0.84	0.75	-0.1	16.48	16.34	-0.14	-1.40%	
Eco11_0	413865	598854	10	16.56	16.38	16.12	-0.25	-2.50%	0.22	0.15	-0.07	Long	1	-6.60%	1.72	1.21	-0.51	18.1	17.33	-0.77	-7.70%	
Eco11_5	413870	598855	10	16.44	16.28	16.06	-0.21	-2.10%	0.2	0.14	-0.06	Long	1	-5.70%	1.53	1.08	-0.45	17.8	17.14	-0.66	-6.60%	
Eco11_10	413875	598857	10	16.35	16.2	16.01	-0.19	-1.90%	0.18	0.12	-0.05	Long	1	-5.10%	1.37	0.97	-0.4	17.57	16.98	-0.59	-5.90%	
Eco11_15	413880	598858	10	16.28	16.14	15.97	-0.17	-1.70%	0.16	0.11	-0.05	Long	1	-4.60%	1.25	0.89	-0.36	17.39	16.86	-0.53	-5.30%	
Eco11_20	413885	598859	10	16.22	16.1	15.94	-0.15	-1.50%	0.15	0.11	-0.04	Long	1	-4.10%	1.15	0.83	-0.32	17.25	16.77	-0.48	-4.80%	
Eco11_25	413890	598861	10	16.17	16.06	15.92	-0.14	-1.40%	0.14	0.1	-0.04	Long	1	-3.80%	1.07	0.77	-0.29	17.12	16.69	-0.43	-4.30%	
Eco11_30	413894	598862	10	16.13	16.02	15.89	-0.13	-1.30%	0.13	0.09	-0.03	Long	1	-3.50%	1	0.73	-0.27	17.02	16.62	-0.4	-4.00%	
Eco11_35	413899	598863	10	16.1	15.99	15.87	-0.12	-1.20%	0.12	0.09	-0.03	Long	1	-3.20%	0.94	0.68	-0.25	16.93	16.56	-0.37	-3.70%	
Eco11_40	413904	598864	10	16.06	15.97	15.86	-0.11	-1.10%	0.11	0.08	-0.03	Long	1	-3.00%	0.88	0.65	-0.23	16.85	16.51	-0.34	-3.40%	
Eco11_45	413909	598866	10	16.04	15.95	15.84	-0.1	-1.00%	0.11	0.08	-0.03	Long	1	-2.80%	0.84	0.62	-0.22	16.79	16.47	-0.32	-3.20%	
Eco11_50	413914	598867	10	16.02	15.93	15.83	-0.1	-1.00%	0.1	0.08	-0.03	Long	1	-2.60%	0.8	0.59	-0.2	16.73	16.42	-0.3	-3.00%	
Eco11_55	413918	598868	10	16	15.91	15.82	-0.09	-0.90%	0.1	0.07	-0.02	Long	1	-2.50%	0.76	0.57	-0.19	16.67	16.39	-0.28	-2.80%	
Eco11_60	413923	598870	10	15.98	15.89	15.81	-0.08	-0.80%	0.09	0.07	-0.02	Long	1	-2.30%	0.73	0.55	-0.18	16.62	16.36	-0.27	-2.70%	
Eco11_65	413928	598871	10	15.96	15.88	15.8	-0.08	-0.80%	0.09	0.07	-0.02	Long	1	-2.20%	0.7	0.53	-0.17	16.58	16.33	-0.26	-2.60%	
Eco11_70	413933	598872	10	15.94	15.87	15.79	-0.08	-0.80%	0.09	0.07	-0.02	Long	1	-2.10%	0.68	0.51	-0.16	16.55	16.3	-0.24	-2.40%	
Eco11_75	413938	598873	10	15.93	15.86	15.78	-0.08	-0.80%	0.08	0.06	-0.02	Long	1	-2.00%	0.65	0.5	-0.16	16.51	16.28	-0.24	-2.40%	
Eco11_80	413943	598875	10	15.92	15.85	15.78	-0.08	-0.80%	0.08	0.06	-0.02	Long	1	-1.90%	0.63	0.48	-0.15	16.48	16.26	-0.22	-2.20%	
Eco11_85	413947	598876	10	15.91	15.84	15.77	-0.07	-0.70%	0.08	0.06	-0.02	Long	1	-1.80%	0.61	0.47	-0.14	16.45	16.24	-0.21	-2.10%	
Eco11_90	413952	598877	10	15.89	15.83	15.77	-0.07	-0.70%	0.08	0.06	-0.02	Long	1	-1.70%	0.59	0.46	-0.14	16.42	16.22	-0.2	-2.00%	
Eco11_95	413957	598879	10	15.89	15.82	15.76	-0.06	-0.60%	0.07	0.06	-0.02	Long	1	-1.70%	0.58	0.45	-0.13	16.39	16.2	-0.19	-1.90%	
Eco11_100	413962	598880	10	15.88	15.82	15.76	-0.06	-0.60%	0.07	0.06	-0.02	Long	1	-1.60%	0.56	0.44	-0.12	16.38	16.19	-0.19	-1.90%	
Eco11_110	413972	598882	10	15.86	15.8	15.75	-0.06	-0.60%	0.07	0.05	-0.01	Long	1	-1.50%	0.53	0.42	-0.12	16.33	16.16	-0.17	-1.70%	
Eco11_120	413981	598885	10	15.84	15.79	15.73	-0.05	-0.50%	0.07	0.05	-0.01	Long	1	-1.40%	0.51	0.4	-0.11	16.3	16.14	-0.16	-1.60%	
Eco11_130	413991	598888	10	15.83	15.77	15.73	-0.04	-0.40%	0.06	0.05	-0.01	Long	1	-1.30%	0.49	0.39	-0.1	16.26	16.12	-0.14	-1.40%	
Eco11_140	414001	598890	10	15.82	15.77	15.72	-0.05	-0.50%	0.06	0.05	-0.01	Long	1	-1.20%	0.47	0.38	-0.09	16.24	16.1	-0.14	-1.40%	
Eco11_150	414010	598893	10	15.81	15.76	15.71	-0.04	-0.40%	0.06	0.05	-0.01	Long	1	-1.10%	0.45	0.36	-0.09	16.21	16.08	-0.13	-1.30%	
Eco11_160	414020	598895	10	15.8	15.75	15.71	-0.04	-0.40%	0.06	0.05	-0.01	Long	1	-1.10%	0.44	0.35	-0.08	16.19	16.07	-0.12	-1.20%	
Eco11_170	414030	598898	10	15.79	15.75	15.71	-0.04	-0.40%	0.05	0.04	-0.01	Long	1	-1.00%	0.42	0.34	-0.08	16.17	16.05	-0.12	-1.20%	
Eco11_180	414039	598900	10	15.79	15.74	15.71	-0.04	-0.40%	0.05	0.04	-0.01	Long	1	-0.90%	0.41	0.34	-0.07	16.15	16.04	-0.11	-1.10%	
Eco11_190	414049	598903	10	15.78	15.74	15.7	-0.04	-0.40%	0.05	0.04	-0.01	Long	1	-0.90%	0.4	0.33	-0.07	16.14	16.03	-0.11	-1.10%	
Eco11_200	414059	598906	10	15.77	15.73	15.7	-0.04	-0.40%	0.05	0.04	-0.01	Long	1	-0.90%	0.39	0.32	-0.07	16.12	16.02	-0.1	-1.00%	
Eco12E_0	418533	600330	15	21.07	20.04	18.78	-1.27	-8.50%	1.51	1.14	-0.38	Long	1	-37.60%	11.79	8.86	-2.93	31.83	27.63	-4.2	-28.00%	
Eco12E_5	418538	600332	15	18.43	17.83	17.11	-0.72	-4.80%	0.85	0.65	-0.2	Long	1	-20.10%	6.61	5.05	-1.56	24.44	22.16	-2.28	-15.20%	
Eco12E_10	418542	600334	15	17.35	16.93	16.44	-0.49	-3.30%	0.59	0.46	-0.13	Long	1	-13.50%	4.64	3.59	-1.05	21.57	20.02	-1.54	-10.30%	
Eco12E_15	418546	600337	15	16.76	16.44	16.07	-0.37	-2.50%	0.46	0.36	-0.1	Long	1	-10.00%	3.6	2.82	-0.78	20.03	18.88	-1.15	-7.70%	
Eco12E_20	418551	600339	15	16.4	16.13	15.84	-0.29	-1.90%	0.38	0.3	-0.08	Long	1	-7.90%	2.95	2.34	-0.61	19.08	18.17	-0.9	-6.00%	
Eco12E_25	418555	600341	15	16.16	15.93	15.69	-0.24	-1.60%	0.32	0.26	-0.06	Long	1	-6.40%	2.52	2.02	-0.5	18.45	17.71	-0.74	-4.90%	
Eco12E_30	418560	600343	15	15.98	15.77	15.57	-0.2	-1.30%	0.28	0.23	-0.05	Long	1	-5.40%	2.21	1.79	-0.42	17.98	17.36	-0.62	-4.10%	
Eco12E_35	418564	600346	15	15.84	15.66	15.49	-0.17	-1.20%	0.25	0.21	-0.05	Long	1	-4.60%	1.98	1.62	-0.36	17.65	17.11	-0.54	-3.60%	
Eco12E_40	418569	600348	15	15.74	15.57	15.42	-0.15	-1.00%	0.23	0.19	-0.04	Long	1	-4.00%	1.8	1.49	-0.31	17.37	16.91	-0.47	-3.10%	
Eco12E_45	418573	600350	15	15.66	15.5	15.37	-0.13	-0.90%	0.21	0.18	-0.04	Long	1	-3.50%	1.66	1.38	-0.28	17.16	16.75	-0.41	-2.70%	
Eco12E_50	418578	600353	15	15.59	15.44	15.33	-0.11	-0.80%	0.2	0.17	-0.03	Long	1	-3.10%	1.54	1.3	-0.25	16.99	16.63	-0.36	-2.40%	
Eco12E_55	418582	600355	15	15.53	15.4	15.3	-0.1	-0.70%	0.19	0.16	-0.03	Long	1	-2.80%	1.45	1.22	-0.22	16.84	16.52	-0.32	-2.20%	
Eco12E_60	418587	600357	15	15.48	15.36	15.27	-0.09	-0.60%	0.17	0.15	-0.03	Long	1	-2.50%	1.36	1.16	-0.2	16.72	16.43	-0.29	-1.90%	
Eco12E_65	418591	600359	15	15.44	15.32	15.24	-0.08	-0.60%	0.17	0.14	-0.02	Long	1	-2.30%	1.29	1.1	-0.18	16.62	16.35	-0.26	-1.80%	
Eco12E_70	418595	600362	15	15.41	15.3	15.22	-0.08	-0.50%	0.16	0.14	-0.02	Long	1	-2.10%	1.23	1.07	-0.16	16.53	16.29	-0.24	-1.60%	
Eco12E_75	41																					

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as per of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco12W_110	418432	600268	15	15.42	15.29	15.24	-0.05	-0.30%	0.16	0.14	-0.01	Long	1	-1.40%	1.23	1.13	-0.11	16.53	16.37	-0.16	-1.00%	
Eco13	423890	594266	10	15.68	15.61	15.55	-0.06	-0.60%	0.09	0.08	-0.02	Long	1	-1.50%	0.72	0.6	-0.12	16.32	16.15	-0.18	-1.80%	
Eco14	413443	599693	10	15.7	15.67	15.66	-0.01	-0.10%	0.03	0.03	0	Long	1	-0.40%	0.27	0.24	-0.03	15.93	15.89	-0.04	-0.40%	
Eco15	419951	585726	10	17.88	17.65	17.68	0.03	0.30%	0.19	0.2	0.01	Long	1	0.90%	1.46	1.53	0.07	19.11	19.21	0.1	1.00%	
Eco16	418306	599889	15	16.38	16.2	16.05	-0.14	-1.00%	0.25	0.21	-0.04	Long	1	-3.90%	1.92	1.62	-0.3	18.12	17.67	-0.44	-3.00%	
Eco17E_0	413617	628049	10	22.79	21.48	22.43	0.95	9.50%	2.29	2.59	0.3	Short	3	9.90%	17.89	20.2	2.31	39.38	42.63	3.25	32.50%	
Eco17E_5	413622	628050	10	19.07	18.3	18.9	0.6	6.00%	1.29	1.46	0.17	Short	3	5.50%	10.07	11.36	1.3	28.37	30.26	1.89	18.90%	
Eco17E_10	413627	628051	10	17.47	16.92	17.35	0.43	4.30%	0.9	1.01	0.12	Short	3	3.90%	7	7.91	0.9	23.92	25.26	1.33	13.30%	
Eco17E_15	413632	628052	10	16.57	16.15	16.49	0.33	3.30%	0.69	0.78	0.09	Short	3	3.00%	5.37	6.06	0.69	21.52	22.55	1.03	10.30%	
Eco17E_20	413636	628053	10	16	15.66	15.94	0.28	2.80%	0.56	0.63	0.07	Short	3	2.40%	4.36	4.92	0.56	20.01	20.85	0.84	8.40%	
Eco17E_25	413641	628054	10	15.61	15.32	15.55	0.23	2.30%	0.47	0.53	0.06	Short	3	2.00%	3.66	4.13	0.47	18.98	19.69	0.7	7.00%	
Eco17E_30	413646	628055	10	15.33	15.07	15.28	0.21	2.10%	0.41	0.46	0.05	Short	3	1.70%	3.16	3.57	0.41	18.24	18.85	0.61	6.10%	
Eco17E_35	413651	628056	10	15.11	14.88	15.06	0.18	1.80%	0.36	0.4	0.05	Short	3	1.50%	2.79	3.15	0.36	17.67	18.21	0.54	5.40%	
Eco17E_40	413656	628057	10	14.94	14.74	14.9	0.16	1.60%	0.32	0.36	0.04	Short	3	1.40%	2.5	2.82	0.32	17.24	17.72	0.49	4.90%	
Eco17E_45	413661	628057	10	14.8	14.62	14.76	0.15	1.50%	0.29	0.33	0.04	Short	3	1.20%	2.27	2.56	0.29	16.88	17.32	0.44	4.40%	
Eco17E_50	413666	628058	10	14.69	14.52	14.66	0.13	1.30%	0.27	0.3	0.03	Short	3	1.10%	2.07	2.34	0.27	16.6	17	0.4	4.00%	
Eco17E_55	413671	628059	10	14.59	14.44	14.57	0.13	1.30%	0.25	0.28	0.03	Short	3	1.10%	1.91	2.16	0.25	16.36	16.73	0.37	3.70%	
Eco17E_60	413676	628060	10	14.52	14.37	14.49	0.12	1.20%	0.23	0.26	0.03	Short	3	1.00%	1.78	2.01	0.23	16.15	16.5	0.35	3.50%	
Eco17E_65	413681	628061	10	14.45	14.31	14.42	0.11	1.10%	0.21	0.24	0.03	Short	3	0.90%	1.66	1.88	0.21	15.97	16.29	0.33	3.30%	
Eco17E_70	413686	628062	10	14.39	14.26	14.36	0.1	1.00%	0.2	0.23	0.03	Short	3	0.90%	1.56	1.76	0.2	15.82	16.12	0.3	3.00%	
Eco17E_75	413691	628063	10	14.33	14.21	14.31	0.1	1.00%	0.19	0.21	0.02	Short	3	0.80%	1.47	1.69	0.21	15.68	15.97	0.29	2.90%	
Eco17E_80	413695	628064	10	14.28	14.17	14.26	0.09	0.90%	0.18	0.2	0.02	Short	3	0.80%	1.39	1.57	0.18	15.56	15.83	0.27	2.70%	
Eco17E_85	413700	628065	10	14.24	14.13	14.22	0.09	0.90%	0.17	0.19	0.02	Short	3	0.70%	1.32	1.49	0.17	15.45	15.71	0.26	2.60%	
Eco17E_90	413705	628066	10	14.21	14.1	14.18	0.09	0.90%	0.16	0.18	0.02	Short	3	0.70%	1.26	1.42	0.16	15.36	15.6	0.25	2.50%	
Eco17E_95	413710	628067	10	14.17	14.08	14.16	0.08	0.80%	0.15	0.17	0.02	Short	3	0.70%	1.2	1.36	0.15	15.28	15.51	0.23	2.30%	
Eco17E_100	413715	628067	10	14.14	14.05	14.12	0.08	0.80%	0.15	0.17	0.02	Short	3	0.60%	1.15	1.3	0.15	15.2	15.42	0.22	2.20%	
Eco17E_110	413725	628069	10	14.09	14	14.07	0.07	0.70%	0.14	0.15	0.02	Short	3	0.60%	1.06	1.19	0.14	15.06	15.26	0.21	2.10%	
Eco17E_120	413735	628071	10	14.04	13.95	14.02	0.06	0.60%	0.13	0.14	0.02	Short	3	0.50%	0.98	1.11	0.13	14.94	15.13	0.19	1.90%	
Eco17E_130	413745	628073	10	14	13.93	13.98	0.06	0.60%	0.12	0.13	0.02	Short	3	0.50%	0.92	1.04	0.12	14.85	15.02	0.18	1.80%	
Eco17E_140	413754	628075	10	13.97	13.9	13.95	0.05	0.50%	0.11	0.13	0.01	Short	3	0.50%	0.87	0.98	0.11	14.76	14.93	0.16	1.60%	
Eco17E_150	413764	628077	10	13.94	13.87	13.92	0.05	0.50%	0.11	0.12	0.01	Short	3	0.40%	0.82	0.92	0.1	14.69	14.84	0.16	1.60%	
Eco17E_160	413774	628078	10	13.91	13.85	13.9	0.05	0.50%	0.11	0.11	0.01	Short	3	0.40%	0.77	0.87	0.1	14.63	14.77	0.15	1.50%	
Eco17E_170	413784	628080	10	13.89	13.83	13.88	0.05	0.50%	0.09	0.11	0.01	Short	3	0.40%	0.74	0.83	0.09	14.57	14.71	0.14	1.40%	
Eco17E_180	413794	628082	10	13.87	13.81	13.86	0.05	0.50%	0.09	0.11	0.01	Short	3	0.40%	0.7	0.79	0.09	14.51	14.65	0.14	1.40%	
Eco17E_190	413804	628084	10	13.85	13.8	13.84	0.04	0.40%	0.09	0.11	0.01	Short	3	0.40%	0.67	0.76	0.09	14.47	14.6	0.13	1.30%	
Eco17E_200	413813	628086	10	13.84	13.78	13.82	0.04	0.40%	0.08	0.09	0.01	Short	3	0.30%	0.65	0.73	0.08	14.43	14.55	0.12	1.20%	
Eco17W_0	413610	628048	10	19.52	18.69	19.31	0.62	6.20%	1.42	1.6	0.18	Short	3	5.90%	11.07	12.45	1.38	29.76	31.76	2	20.00%	
Eco17W_5	413605	628047	10	16.64	16.21	16.55	0.33	3.30%	0.71	0.8	0.09	Short	3	2.90%	5.55	6.23	0.69	21.76	22.78	1.02	10.20%	
Eco17W_10	413600	628046	10	15.65	15.35	15.58	0.22	2.20%	0.48	0.54	0.06	Short	3	2.00%	3.76	4.22	0.46	19.11	19.8	0.69	6.90%	
Eco17W_15	413595	628045	10	15.13	14.9	15.08	0.17	1.70%	0.37	0.41	0.04	Short	3	1.50%	2.85	3.2	0.35	17.75	18.28	0.52	5.20%	
Eco17W_20	413590	628045	10	14.81	14.62	14.77	0.14	1.40%	0.29	0.33	0.04	Short	3	1.20%	2.29	2.57	0.28	16.91	17.34	0.42	4.20%	
Eco17W_25	413585	628044	10	14.59	14.43	14.55	0.12	1.20%	0.25	0.28	0.03	Short	3	1.00%	1.92	2.15	0.23	16.34	16.7	0.36	3.60%	
Eco17W_30	413580	628043	10	14.43	14.29	14.4	0.11	1.10%	0.21	0.24	0.03	Short	3	0.90%	1.65	1.85	0.2	15.94	16.25	0.31	3.10%	
Eco17W_35	413575	628042	10	14.31	14.19	14.28	0.09	0.90%	0.19	0.21	0.02	Short	3	0.80%	1.45	1.62	0.18	15.64	15.9	0.27	2.70%	
Eco17W_40	413570	628041	10	14.22	14.11	14.19	0.08	0.80%	0.17	0.19	0.02	Short	3	0.70%	1.29	1.45	0.16	15.41	15.64	0.24	2.40%	
Eco17W_45	413566	628041	10	14.15	14.05	14.12	0.07	0.70%	0.15	0.17	0.02	Short	3	0.60%	1.17	1.31	0.14	15.22	15.44	0.22	2.20%	
Eco17W_50	413561	628040	10	14.09	14	14.06	0.06	0.60%	0.14	0.15	0.02	Short	3	0.60%	1.07	1.2	0.13	15.07	15.26	0.19	1.90%	
Eco17W_55	413556	628039	10	14.04	13.96	14.01	0.06	0.60%	0.13	0.14	0.02	Short	3	0.50%	0.99	1.11	0.12	14.94	15.12	0.18	1.80%	
Eco17W_60	413551	628038	10	13.99	13.92	13.97	0.05	0.50%	0.12	0.13	0.01	Short	3	0.50%	0.92	1.03	0.11	14.84	15	0.16	1.60%	
Eco17W_65	413546	628038	10	13.96	13.89	13.94	0.05	0.50%	0.11	0.12	0.01	Short	3	0.40%	0.85	0.96	0.1	14.74	14.9	0.16	1.60%	
Eco17W_70	413541	628037	10	13.93	13.86	13.91	0.05	0.50%	0.11	0.12	0.01	Short	3	0.40%	0.8	0.9	0.1	14.66	14.8	0.14	1.40%	
Eco17W_75	413536	628036	10	13.9	13.83	13.88	0.05	0.50%	0.11	0.11	0.01	Short	3	0.40%	0.76	0.85	0.09	14.59	14.73	0.14	1.40%	
Eco17W_80	413531	628035	10	13.88	13.81	13.86	0.05	0.50%	0.09	0.11	0.01	Short	3	0.40%	0.72	0.8	0.09	14.53	14.66	0.13	1.30%	
Eco17W_85	413526	628034	10	13.85	13.8	13.84	0.04	0.40%	0.09	0.11	0.01	Short	3	0.30%	0.68	0.76	0.08	14.48	14.6	0.12	1.20%	
Eco17W_90	413521	628034	10	13.83	13.78	13.82	0.04	0.40%	0.08	0.09	0.01	Short	3	0.30%	0.65	0.73	0.08	14.42	14.54	0.12	1.20%	
Eco17W_95	413516	628033	10	13.82	13.76	13.8	0.04	0.40%	0.08	0.09	0.01	Short	3	0.30%	0.62	0.69	0.07	14.38	14.49	0.11	1.10%	
Eco17W_100	413511	628032	10	13.8	13.75	13.78	0.04	0.40%	0.08	0.09	0.01	Short	3	0.30%	0.59	0.66	0.07	14.34	14.45	0.11	1.10%	
Eco17W_110	413501</																					

Receptor name	X(m)	Y(m)	Critical Load	BG18 With Gap N Dep from NO2 only					NH3 Conc (without background)					Ndep from NH3 only			Total Ndep				Comments	
				BS15	DM24	DS24	Change	Change %	DM	DS	Change	Habitat	Critical Level	Impact as per of Threshold	DM	DS	Change	DM	DS	Change		Change %
Eco18E_180	418790	610646	10	16.85	16.76	16.83	0.08	0.80%	0.12	0.14	0.02	Short	3	0.60%	0.97	1.11	0.14	17.72	17.94	0.22	2.20%	
Eco18E_190	418797	610639	10	16.83	16.74	16.81	0.07	0.70%	0.12	0.14	0.02	Short	3	0.60%	0.93	1.07	0.14	17.67	17.87	0.21	2.10%	
Eco18E_200	418805	610633	10	16.8	16.71	16.78	0.07	0.70%	0.11	0.13	0.02	Short	3	0.60%	0.9	1.03	0.13	17.61	17.81	0.2	2.00%	
Eco18W_0	418641	610778	10	24.53	23.31	24.34	1.03	10.30%	1.92	2.22	0.3	Short	3	10.00%	15	17.33	2.33	38.31	41.67	3.36	33.60%	
Eco18W_5	418637	610781	10	21.24	20.51	21.15	0.64	6.40%	1.09	1.26	0.17	Short	3	5.60%	8.52	9.84	1.32	29.04	30.99	1.95	19.50%	
Eco18W_10	418634	610784	10	19.93	19.4	19.87	0.47	4.70%	0.79	0.91	0.12	Short	3	4.10%	6.17	7.12	0.95	25.57	26.99	1.42	14.20%	
Eco18W_15	418630	610788	10	19.2	18.77	19.15	0.38	3.80%	0.63	0.72	0.1	Short	3	3.20%	4.88	5.63	0.75	23.65	24.78	1.13	11.30%	
Eco18W_20	418626	610791	10	18.72	18.36	18.67	0.32	3.20%	0.52	0.6	0.08	Short	3	2.70%	4.06	4.68	0.62	22.42	23.35	0.94	9.40%	
Eco18W_25	418623	610795	10	18.38	18.07	18.35	0.28	2.80%	0.45	0.51	0.07	Short	3	2.30%	3.48	4.01	0.53	21.55	22.36	0.81	8.10%	
Eco18W_30	418619	610798	10	18.13	17.85	18.09	0.24	2.40%	0.39	0.45	0.06	Short	3	2.00%	3.06	3.53	0.46	20.91	21.62	0.71	7.10%	
Eco18W_35	418615	610802	10	17.93	17.69	17.9	0.22	2.20%	0.35	0.4	0.05	Short	3	1.80%	2.73	3.15	0.41	20.42	21.05	0.63	6.30%	
Eco18W_40	418612	610805	10	17.77	17.55	17.74	0.2	2.00%	0.32	0.36	0.05	Short	3	1.60%	2.47	2.85	0.37	20.02	20.59	0.57	5.70%	
Eco18W_45	418608	610809	10	17.64	17.44	17.61	0.18	1.80%	0.29	0.33	0.04	Short	3	1.50%	2.26	2.6	0.34	19.7	20.22	0.52	5.20%	
Eco18W_50	418605	610812	10	17.54	17.35	17.51	0.16	1.60%	0.27	0.31	0.04	Short	3	1.30%	2.08	2.4	0.31	19.43	19.91	0.48	4.80%	
Eco18W_55	418601	610815	10	17.45	17.26	17.42	0.16	1.60%	0.25	0.29	0.04	Short	3	1.20%	1.94	2.22	0.29	19.2	19.65	0.45	4.50%	
Eco18W_60	418597	610819	10	17.37	17.2	17.34	0.14	1.40%	0.23	0.27	0.03	Short	3	1.20%	1.81	2.08	0.27	19.01	19.42	0.41	4.10%	
Eco18W_65	418594	610822	10	17.3	17.14	17.27	0.14	1.40%	0.22	0.25	0.03	Short	3	1.10%	1.7	1.95	0.25	18.84	19.22	0.39	3.90%	
Eco18W_70	418590	610826	10	17.24	17.09	17.21	0.13	1.30%	0.21	0.24	0.03	Short	3	1.00%	1.6	1.84	0.24	18.69	19.06	0.36	3.60%	
Eco18W_75	418587	610829	10	17.19	17.05	17.17	0.12	1.20%	0.19	0.22	0.03	Short	3	1.00%	1.52	1.74	0.23	18.57	18.91	0.35	3.50%	
Eco18W_80	418583	610833	10	17.14	17.01	17.12	0.11	1.10%	0.19	0.21	0.03	Short	3	0.90%	1.44	1.66	0.21	18.45	18.78	0.33	3.30%	
Eco18W_85	418579	610836	10	17.1	16.97	17.08	0.11	1.10%	0.18	0.2	0.03	Short	3	0.90%	1.38	1.58	0.2	18.35	18.66	0.31	3.10%	
Eco18W_90	418576	610840	10	17.07	16.94	17.05	0.1	1.00%	0.17	0.19	0.02	Short	3	0.80%	1.32	1.51	0.19	18.26	18.56	0.3	3.00%	
Eco18W_95	418572	610843	10	17.03	16.91	17.01	0.1	1.00%	0.16	0.19	0.02	Short	3	0.80%	1.26	1.45	0.19	18.17	18.46	0.28	2.80%	
Eco18W_100	418568	610846	10	17	16.88	16.98	0.1	1.00%	0.16	0.18	0.02	Short	3	0.80%	1.21	1.39	0.18	18.1	18.37	0.28	2.80%	
Eco18W_110	418561	610853	10	16.95	16.84	16.93	0.09	0.90%	0.14	0.17	0.02	Short	3	0.70%	1.13	1.29	0.16	17.97	18.22	0.25	2.50%	
Eco18W_120	418554	610860	10	16.91	16.8	16.89	0.08	0.80%	0.14	0.15	0.02	Short	3	0.70%	1.05	1.21	0.15	17.86	18.09	0.24	2.40%	
Eco18W_130	418547	610867	10	16.87	16.77	16.85	0.08	0.80%	0.13	0.15	0.02	Short	3	0.60%	0.99	1.14	0.14	17.76	17.98	0.22	2.20%	
Eco18W_140	418539	610874	10	16.83	16.74	16.82	0.07	0.70%	0.12	0.14	0.02	Short	3	0.60%	0.94	1.07	0.14	17.68	17.89	0.21	2.10%	
Eco18W_150	418532	610881	10	16.81	16.71	16.78	0.07	0.70%	0.11	0.13	0.02	Short	3	0.50%	0.89	1.02	0.13	17.61	17.8	0.19	1.90%	
Eco18W_160	418525	610888	10	16.78	16.7	16.76	0.07	0.70%	0.11	0.12	0.02	Short	3	0.50%	0.85	0.97	0.12	17.55	17.74	0.19	1.90%	
Eco18W_170	418518	610895	10	16.76	16.67	16.74	0.07	0.70%	0.1	0.12	0.01	Short	3	0.50%	0.82	0.93	0.12	17.49	17.67	0.18	1.80%	
Eco18W_180	418510	610902	10	16.74	16.65	16.71	0.06	0.60%	0.1	0.11	0.01	Short	3	0.50%	0.78	0.89	0.11	17.44	17.61	0.17	1.70%	
Eco18W_190	418503	610908	10	16.72	16.64	16.7	0.06	0.60%	0.1	0.11	0.01	Short	3	0.50%	0.76	0.86	0.11	17.4	17.56	0.17	1.70%	
Eco18W_200	418496	610915	10	16.7	16.63	16.68	0.05	0.50%	0.09	0.11	0.01	Short	3	0.40%	0.73	0.83	0.1	17.36	17.52	0.16	1.60%	
Eco19_0	424487	587540	5	20.22	19.4	19.75	0.35	6.90%	1.67	1.88	0.21	Short	3	7.00%	8.66	9.75	1.09	28.07	29.5	1.44	28.70%	
Eco19_5	424488	587535	5	18.5	18.07	18.26	0.19	3.80%	0.84	0.94	0.1	Short	3	3.40%	4.34	4.88	0.54	22.42	23.14	0.73	14.50%	
Eco19_10	424490	587531	5	17.92	17.62	17.75	0.13	2.70%	0.58	0.65	0.07	Short	3	2.30%	3.01	3.38	0.36	20.63	21.13	0.5	10.00%	
Eco19_15	424491	587526	5	17.61	17.38	17.48	0.1	2.00%	0.45	0.5	0.05	Short	3	1.80%	2.32	2.6	0.28	19.7	20.08	0.38	7.50%	
Eco19_20	424492	587521	5	17.42	17.23	17.31	0.08	1.70%	0.37	0.41	0.04	Short	3	1.40%	1.91	2.13	0.22	19.13	19.44	0.31	6.10%	
Eco19_25	424493	587516	5	17.29	17.13	17.19	0.07	1.40%	0.31	0.35	0.04	Short	3	1.20%	1.63	1.82	0.19	18.76	19.01	0.25	5.10%	
Eco19_30	424494	587511	5	17.2	17.05	17.11	0.06	1.20%	0.28	0.31	0.03	Short	3	1.00%	1.43	1.59	0.16	18.48	18.7	0.22	4.40%	
Eco19_35	424496	587506	5	17.13	17	17.05	0.05	1.10%	0.25	0.27	0.03	Short	3	0.90%	1.28	1.42	0.14	18.28	18.47	0.19	3.90%	
Eco19_40	424497	587501	5	17.07	16.95	17	0.05	1.00%	0.22	0.25	0.02	Short	3	0.80%	1.16	1.29	0.12	18.11	18.29	0.17	3.50%	
Eco19_45	424498	587497	5	17.03	16.92	16.96	0.04	0.90%	0.21	0.23	0.02	Short	3	0.70%	1.07	1.18	0.11	17.98	18.14	0.16	3.10%	
Eco19_50	424499	587492	5	16.99	16.89	16.93	0.04	0.80%	0.19	0.21	0.02	Short	3	0.70%	0.99	1.09	0.1	17.88	18.02	0.14	2.80%	
Eco19_55	424500	587487	5	16.96	16.86	16.9	0.04	0.70%	0.18	0.2	0.02	Short	3	0.60%	0.92	1.02	0.09	17.79	17.92	0.13	2.60%	
Eco19_60	424501	587482	5	16.93	16.85	16.88	0.03	0.70%	0.17	0.18	0.02	Short	3	0.60%	0.87	0.96	0.09	17.72	17.84	0.12	2.40%	
Eco19_65	424503	587477	5	16.91	16.83	16.86	0.03	0.60%	0.16	0.17	0.02	Short	3	0.50%	0.82	0.9	0.08	17.65	17.76	0.11	2.20%	
Eco19_70	424504	587472	5	16.89	16.81	16.84	0.03	0.60%	0.15	0.17	0.01	Short	3	0.50%	0.78	0.86	0.08	17.6	17.7	0.1	2.10%	
Eco19_75	424505	587467	5	16.87	16.8	16.83	0.03	0.50%	0.14	0.16	0.01	Short	3	0.50%	0.75	0.82	0.07	17.55	17.64	0.1	1.90%	
Eco19_80	424506	587463	5	16.86	16.79	16.81	0.03	0.50%	0.14	0.15	0.01	Short	3	0.40%	0.71	0.78	0.07	17.5	17.59	0.09	1.90%	
Eco19_85	424507	587458	5	16.84	16.78	16.8	0.03	0.50%	0.13	0.14	0.01	Short	3	0.40%	0.69	0.75	0.06	17.46	17.55	0.09	1.80%	
Eco19_90	424509	587453	5	16.83	16.77	16.79	0.02	0.50%	0.13	0.14	0.01	Short	3	0.40%	0.66	0.72	0.06	17.43	17.51	0.08	1.70%	
Eco19_95	424510	587448	5	16.82	16.76	16.78	0.02	0.50%	0.12	0.13	0.01	Short	3	0.40%	0.64	0.7	0.06	17.4	17.48	0.08	1.60%	
Eco19_100	424511	587443	5	16.81	16.75	16.77	0.02	0.40%	0.12	0.13	0.01	Short	3	0.40%	0.62	0.67	0.06	17.37	17.45	0.08	1.50%	
Eco19_110	424513	587433	5	16.79	16.74	16.76	0.02	0.40%	0.11	0.12	0.01	Short	3	0.30%	0.58	0.63	0.05	17.32	17.39	0.07	1.40%	
Eco19_120	424516	587424	5	16.78	16.73	16.75	0.02	0.40%	0.11	0.12	0.01	Short	3	0.30%	0.55	0.6	0.05	17.28	17.35	0.07	1.40%	
Eco19_130	424518	587414	5	16.77	16.72	16.73	0.02	0.30%	0.1	0.11	0.01	Short	3	0.30%								

Modelled concentrations of NH3 and Nitrogen Deposition at round level and at grade with the road.

NH3 Concentrations (from modelled Roads only) at Grade						NH3 Concentrations (from modelled Roads only) at Ground Level							
Receptor ID	X	Y	Z (Receptor)	DM	DS Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS Impact		
1	417427.97	599719	0	1.38	1.32	-0.06	1	417427.97	599719	25	0.38	0.39	0.01
2	417428.12	599724	0	1.37	1.31	-0.06	2	417428.12	599724	24	0.11	0.25	0.05
3	417428.25	599729	0	1.36	1.30	-0.06	3	417428.25	599729	21	0.08	0.11	0.05
4	417428.41	599734	0	1.35	1.29	-0.06	4	417428.41	599734	19	0.07	0.11	0.04
5	417428.56	599739	0	1.35	1.29	-0.06	5	417428.56	599739	15	0.06	0.08	0.03
6	417428.72	599744	0	1.34	1.28	-0.06	6	417428.72	599744	12	0.05	0.07	0.02
7	417428.88	599749	0	1.34	1.28	-0.06	7	417428.88	599749	9	0.05	0.07	0.02
8	417429	599754	0	1.32	1.27	-0.06	8	417429	599754	7	0.05	0.07	0.02
9	417429.16	599759	0	1.32	1.26	-0.06	9	417429.16	599759	5	0.05	0.07	0.02
10	417429.31	599764	0	1.31	1.26	-0.05	10	417429.31	599764	4	0.05	0.07	0.02
11	417429.47	599769	0	1.31	1.25	-0.05	11	417429.47	599769	3	0.05	0.07	0.02
12	417429.59	599774	0	1.30	1.24	-0.05	12	417429.59	599774	2	0.05	0.07	0.02
13	417429.75	599779	0	1.29	1.24	-0.05	13	417429.75	599779	1	0.05	0.07	0.02
14	417429.91	599784	0	1.28	1.23	-0.05	14	417429.91	599784	1	0.05	0.07	0.02
15	417430.06	599789	0	1.28	1.23	-0.05	15	417430.06	599789	1	0.05	0.07	0.02
16	417430.19	599794	0	1.27	1.22	-0.05	16	417430.19	599794	1	0.05	0.07	0.02
17	417430.34	599799	0	1.26	1.22	-0.05	17	417430.34	599799	1	0.05	0.07	0.02
18	417430.5	599804	0	1.26	1.21	-0.04	18	417430.5	599804	1	0.05	0.07	0.02
19	417430.66	599809	0	1.25	1.21	-0.04	19	417430.66	599809	3	0.05	0.07	0.02
20	417432.97	599719.19	0	0.88	0.90	0.02	20	417432.97	599719.19	26	0.32	0.33	0.01
21	417423.12	599724.19	0	0.87	0.90	0.02	21	417423.12	599724.19	25	0.29	0.31	0.02
22	417423.28	599729.19	0	0.87	0.89	0.02	22	417423.28	599729.19	24	0.21	0.25	0.03
23	417423.41	599734.19	0	0.87	0.89	0.02	23	417423.41	599734.19	19	0.08	0.11	0.04
24	417423.56	599739.19	0	0.86	0.88	0.02	24	417423.56	599739.19	15	0.06	0.08	0.03
25	417423.72	599744.19	0	0.86	0.88	0.02	25	417423.72	599744.19	12	0.06	0.08	0.02
26	417423.88	599749.19	0	0.86	0.88	0.02	26	417423.88	599749.19	9	0.05	0.07	0.02
27	417424	599754.19	0	0.85	0.88	0.02	27	417424	599754.19	6	0.05	0.07	0.02
28	417424.16	599759.12	0	0.85	0.87	0.02	28	417424.16	599759.12	5	0.05	0.07	0.02
29	417424.31	599764.12	0	0.85	0.87	0.02	29	417424.31	599764.12	4	0.05	0.07	0.02
30	417424.47	599769.12	0	0.85	0.87	0.02	30	417424.47	599769.12	3	0.05	0.07	0.02
31	417424.59	599774.12	0	0.84	0.87	0.02	31	417424.59	599774.12	1	0.05	0.07	0.02
32	417424.75	599779.12	0	0.84	0.86	0.02	32	417424.75	599779.12	1	0.05	0.07	0.02
33	417424.91	599784.12	0	0.84	0.86	0.02	33	417424.91	599784.12	1	0.05	0.07	0.02
34	417425.06	599789.12	0	0.84	0.86	0.02	34	417425.06	599789.12	1	0.05	0.07	0.02
35	417425.22	599794.12	0	0.83	0.86	0.02	35	417425.22	599794.12	1	0.05	0.07	0.02
36	417425.34	599799.12	0	0.83	0.85	0.03	36	417425.34	599799.12	1	0.05	0.07	0.02
37	417425.5	599804.12	0	0.83	0.85	0.03	37	417425.5	599804.12	2	0.05	0.07	0.02
38	417417.81	599714.31	0	0.65	0.70	0.05	38	417417.81	599714.31	28	0.20	0.23	0.03
39	417417.97	599719.31	0	0.65	0.69	0.05	39	417417.97	599719.31	28	0.20	0.23	0.03
40	417418.12	599724.31	0	0.65	0.69	0.05	40	417418.12	599724.31	27	0.22	0.25	0.03
41	417418.28	599729.31	0	0.64	0.69	0.05	41	417418.28	599729.31	23	0.16	0.19	0.04
42	417418.41	599734.31	0	0.64	0.69	0.05	42	417418.41	599734.31	17	0.07	0.10	0.03
43	417418.56	599739.31	0	0.64	0.69	0.05	43	417418.56	599739.31	13	0.06	0.08	0.03
44	417418.72	599744.31	0	0.64	0.69	0.05	44	417418.72	599744.31	11	0.06	0.08	0.02
45	417418.88	599749.31	0	0.64	0.69	0.05	45	417418.88	599749.31	9	0.06	0.08	0.02
46	417419	599754.31	0	0.63	0.68	0.05	46	417419	599754.31	6	0.05	0.07	0.02
47	417419.16	599759.31	0	0.63	0.68	0.05	47	417419.16	599759.31	4	0.05	0.07	0.02
48	417419.31	599764.31	0	0.63	0.68	0.05	48	417419.31	599764.31	3	0.05	0.07	0.02
49	417419.47	599769.31	0	0.63	0.68	0.05	49	417419.47	599769.31	1	0.05	0.07	0.02
50	417419.62	599774.31	0	0.63	0.68	0.05	50	417419.62	599774.31	1	0.05	0.07	0.02
51	417419.75	599779.31	0	0.63	0.68	0.05	51	417419.75	599779.31	1	0.05	0.07	0.02
52	417419.91	599784.31	0	0.63	0.67	0.05	52	417419.91	599784.31	1	0.05	0.07	0.02
53	417420.06	599789.31	0	0.62	0.67	0.05	53	417420.06	599789.31	1	0.05	0.07	0.02
54	417420.22	599794.31	0	0.62	0.67	0.05	54	417420.22	599794.31	1	0.05	0.07	0.02
55	417420.34	599799.31	0	0.62	0.67	0.05	55	417420.34	599799.31	1	0.05	0.07	0.02
56	417420.5	599804.31	0	0.62	0.67	0.05	56	417420.5	599804.31	3	0.05	0.07	0.02
57	417412.81	599714.5	0	0.52	0.57	0.06	57	417412.81	599714.5	31	0.12	0.15	0.03
58	417412.97	599719.5	0	0.51	0.57	0.06	58	417412.97	599719.5	31	0.12	0.15	0.03
59	417413.12	599724.5	0	0.51	0.57	0.06	59	417413.12	599724.5	28	0.17	0.20	0.03
60	417413.28	599729.44	0	0.51	0.57	0.06	60	417413.28	599729.44	20	0.10	0.13	0.03
61	417413.41	599734.44	0	0.51	0.57	0.06	61	417413.41	599734.44	15	0.07	0.09	0.03
62	417413.56	599739.44	0	0.51	0.57	0.06	62	417413.56	599739.44	11	0.06	0.08	0.02
63	417413.72	599744.44	0	0.51	0.57	0.06	63	417413.72	599744.44	10	0.06	0.08	0.02
64	417413.88	599749.44	0	0.51	0.57	0.06	64	417413.88	599749.44	7	0.06	0.07	0.02
65	417414.03	599754.44	0	0.51	0.56	0.06	65	417414.03	599754.44	5	0.05	0.07	0.02
66	417414.16	599759.44	0	0.51	0.56	0.06	66	417414.16	599759.44	4	0.05	0.07	0.02
67	417414.31	599764.44	0	0.51	0.56	0.06	67	417414.31	599764.44	2	0.05	0.07	0.02
68	417414.47	599769.44	0	0.50	0.56	0.06	68	417414.47	599769.44	1	0.05	0.07	0.02
69	417414.62	599774.44	0	0.50	0.56	0.06	69	417414.62	599774.44	1	0.05	0.07	0.02
70	417414.75	599779.44	0	0.50	0.56	0.06	70	417414.75	599779.44	1	0.05	0.07	0.02
71	417414.91	599784.44	0	0.50	0.56	0.06	71	417414.91	599784.44	1	0.05	0.07	0.02
72	417415.06	599789.44	0	0.50	0.56	0.06	72	417415.06	599789.44	1	0.05	0.07	0.02
73	417415.22	599794.44	0	0.50	0.56	0.06	73	417415.22	599794.44	1	0.05	0.07	0.02
74	417415.34	599799.44	0	0.50	0.56	0.06	74	417415.34	599799.44	1	0.05	0.07	0.02
75	417407.81	599714.62	0	0.43	0.49	0.06	75	417407.81	599714.62	32	0.11	0.13	0.03
76	417407.97	599719.62	0	0.43	0.49	0.06	76	417407.97	599719.62	31	0.11	0.14	0.03
77	417408.12	599724.62	0	0.43	0.49	0.06	77	417408.12	599724.62	29	0.14	0.17	0.03
78	417408.28	599729.62	0	0.43	0.49	0.06	78	417408.28	599729.62	21	0.11	0.14	0.03
79	417408.44	599734.62	0	0.43	0.49	0.06	79	417408.44	599734.62	16	0.07	0.10	0.03
80	417408.56	599739.62	0	0.43	0.49	0.06	80	417408.56	599739.62	12	0.06	0.08	0.02
81	417408.72	599744.62	0	0.43	0.49	0.06	81	417408.72	599744.62	9	0.06	0.08	0.02
82	417408.88	599749.62	0	0.42	0.48	0.06	82	417408.88	599749.62	7	0.06	0.08	0.02
83	417409.03	599754.62	0	0.42	0.48	0.06	83	417409.03	599754.62	5	0.05	0.07	0.02
84	417409.16	599759.62	0	0.42	0.48	0.06	84	417409.16	599759.62	4	0.05	0.07	0.02
85	417409.31	599764.62	0	0.42	0.48	0.06	85	417409.31	599764.62	1	0.05	0.07	0.02
86	417409.47	599769.62	0	0.42	0.48	0.06	86	417409.47	599769.62	1	0.05	0.07	0.02
87	417409.62	599774.62	0	0.42	0.48	0.06	87	417409.62	599774.62	1	0.05	0.07	0.02</

NH3 Concentrations (from modelled Roads only) at Grade							
Receptor ID	NH3 Concentrations (from modelled Roads only) at Grade		Z (Receptor)	DM	DS	Impact	Impact
	X	Y					
133	417393.12	599750.25	0	0.29	0.35	0.06	
134	417393.28	599730.06	0	0.29	0.35	0.06	
135	417393.44	599750.06	0	0.29	0.35	0.06	
136	417393.59	599740.06	0	0.29	0.35	0.06	
137	417393.72	599745.06	0	0.29	0.34	0.06	
138	417393.88	599750.06	0	0.29	0.34	0.06	
139	417394.03	599755.06	0	0.29	0.34	0.06	
140	417394.19	599760.06	0	0.29	0.34	0.06	
141	417394.31	599765.06	0	0.29	0.34	0.06	
142	417394.47	599770.06	0	0.29	0.34	0.06	
143	417394.62	599775.06	0	0.29	0.34	0.06	
144	417394.78	599780.06	0	0.29	0.34	0.06	
145	417394.91	599785.06	0	0.29	0.34	0.06	
146	417395.06	599790.06	0	0.29	0.34	0.06	
147	417395.21	599795.06	0	0.26	0.32	0.06	
148	417395.36	599800.06	0	0.26	0.32	0.06	
149	417395.51	599805.06	0	0.26	0.32	0.06	
150	417395.66	599810.06	0	0.26	0.32	0.06	
151	417395.81	599815.06	0	0.26	0.32	0.06	
152	417395.96	599820.06	0	0.26	0.32	0.06	
153	417396.11	599825.06	0	0.26	0.32	0.06	
154	417396.26	599830.06	0	0.26	0.32	0.06	
155	417396.41	599835.06	0	0.26	0.32	0.06	
156	417396.56	599840.06	0	0.26	0.32	0.06	
157	417396.71	599845.06	0	0.26	0.32	0.06	
158	417396.86	599850.06	0	0.26	0.31	0.05	
159	417397.01	599855.06	0	0.26	0.31	0.05	
160	417397.16	599860.06	0	0.26	0.31	0.05	
161	417397.31	599865.06	0	0.26	0.31	0.05	
162	417397.46	599870.06	0	0.26	0.31	0.05	
163	417397.61	599875.06	0	0.26	0.31	0.05	
164	417397.76	599880.06	0	0.26	0.31	0.05	
165	417397.91	599885.06	0	0.24	0.29	0.05	
166	417398.06	599890.06	0	0.24	0.29	0.05	
167	417398.21	599895.06	0	0.24	0.29	0.05	
168	417398.36	599900.06	0	0.24	0.29	0.05	
169	417398.51	599905.06	0	0.24	0.29	0.05	
170	417398.66	599910.06	0	0.24	0.29	0.05	
171	417398.81	599915.06	0	0.24	0.29	0.05	
172	417398.96	599920.06	0	0.24	0.29	0.05	
173	417399.11	599925.06	0	0.24	0.29	0.05	
174	417399.26	599930.06	0	0.24	0.29	0.05	
175	417399.41	599935.06	0	0.24	0.29	0.05	
176	417399.56	599940.06	0	0.24	0.29	0.05	
177	417399.71	599945.06	0	0.24	0.29	0.05	
178	417399.86	599950.06	0	0.24	0.29	0.05	
179	417399.99	599955.06	0	0.24	0.29	0.05	
180	417400.14	599960.06	0	0.24	0.29	0.05	
181	417400.29	599965.06	0	0.24	0.29	0.05	
182	417400.44	599970.06	0	0.24	0.29	0.05	
183	417400.59	599975.06	0	0.24	0.29	0.05	
184	417400.74	599980.06	0	0.22	0.27	0.05	
185	417400.89	599985.06	0	0.22	0.27	0.05	
186	417401.04	599990.06	0	0.22	0.27	0.05	
187	417401.19	599995.06	0	0.22	0.27	0.05	
188	417401.34	599999.06	0	0.22	0.27	0.05	
189	417401.49	600003.06	0	0.22	0.27	0.05	
190	417401.64	600007.06	0	0.22	0.27	0.05	
191	417401.79	600011.06	0	0.22	0.27	0.05	
192	417401.94	600015.06	0	0.22	0.27	0.05	
193	417402.09	600019.06	0	0.22	0.27	0.05	
194	417402.24	600023.06	0	0.22	0.27	0.05	
195	417402.39	600027.06	0	0.22	0.27	0.05	
196	417402.54	600031.06	0	0.22	0.27	0.05	
197	417402.69	600035.06	0	0.22	0.27	0.05	
198	417402.84	600039.06	0	0.22	0.27	0.05	
199	417402.99	600043.06	0	0.22	0.27	0.05	
200	417403.14	600047.06	0	0.22	0.27	0.05	
201	417403.29	600051.06	0	0.22	0.27	0.05	
202	417403.44	600055.06	0	0.21	0.26	0.05	
203	417403.59	600059.06	0	0.21	0.26	0.05	
204	417403.74	600063.06	0	0.21	0.26	0.05	
205	417403.89	600067.06	0	0.21	0.26	0.05	
206	417404.04	600071.06	0	0.21	0.25	0.05	
207	417404.19	600075.06	0	0.21	0.25	0.05	
208	417404.34	600079.06	0	0.21	0.25	0.05	
209	417404.49	600083.06	0	0.21	0.25	0.05	
210	417404.64	600087.06	0	0.21	0.25	0.05	
211	417404.79	600091.06	0	0.21	0.25	0.05	
212	417404.94	600095.06	0	0.21	0.25	0.05	
213	417405.09	600099.06	0	0.21	0.25	0.05	
214	417405.24	600103.06	0	0.21	0.25	0.05	
215	417405.39	600107.06	0	0.20	0.25	0.05	
216	417405.54	600111.06	0	0.20	0.25	0.05	
217	417405.69	600115.06	0	0.20	0.25	0.05	
218	417405.84	600119.06	0	0.20	0.25	0.05	
219	417405.99	600123.06	0	0.20	0.25	0.05	
220	417406.14	600127.06	0	0.20	0.25	0.05	
221	417406.29	600131.06	0	0.19	0.24	0.05	
222	417406.44	600135.06	0	0.19	0.24	0.05	
223	417406.59	600139.06	0	0.19	0.24	0.05	
224	417406.74	600143.06	0	0.19	0.24	0.05	
225	417406.89	600147.06	0	0.19	0.24	0.05	
226	417407.04	600151.06	0	0.19	0.24	0.05	
227	417407.19	600155.06	0	0.19	0.24	0.05	
228	417407.34	600159.06	0	0.19	0.24	0.05	
229	417407.49	600163.06	0	0.19	0.24	0.05	
230	417407.64	600167.06	0	0.19	0.24	0.05	
231	417407.79	600171.06	0	0.19	0.24	0.05	
232	417407.94	600175.06	0	0.19	0.24	0.05	
233	417408.09	600179.06	0	0.19	0.24	0.05	
234	417408.24	600183.06	0	0.19	0.24	0.05	
235	417408.39	600187.06	0	0.19	0.24	0.05	
236	417408.54	600191.06	0	0.19	0.24	0.05	
237	417408.69	600195.06	0	0.19	0.24	0.05	
238	417408.84	600199.06	0	0.19	0.24	0.05	
239	417408.99	600203.06	0	0.18	0.23	0.04	
240	417409.14	600207.06	0	0.18	0.23	0.04	
241	417409.29	600211.06	0	0.18	0.23	0.04	
242	417409.44	600215.06	0	0.18	0.23	0.04	
243	417409.59	600219.06	0	0.18	0.23	0.04	
244	417409.74	600223.06	0	0.18	0.23	0.04	
245	417409.89	600227.06	0	0.18	0.23	0.04	
246	417410.04	600231.06	0	0.18	0.23	0.04	
247	417410.19	600235.06	0	0.18	0.23	0.04	
248	417410.34	600239.06	0	0.18	0.23	0.04	
249	417410.49	600243.06	0	0.18	0.23	0.04	
250	417410.64	600247.06	0	0.18	0.22	0.04	
251	417410.79	600251.06	0	0.18	0.22	0.04	
252	417410.94	600255.06	0	0.18	0.22	0.04	
253	417411.09	600259.06	0	0.18	0.22	0.04	
254	417411.24	600263.06	0	0.18	0.22	0.04	
255	417411.39	600267.06	0	0.18	0.22	0.04	
256	417411.54	600271.06	0	0.18	0.22	0.04	
257	417411.69	600275.06	0	0.17	0.22	0.04	
258	417411.84	600279.06	0	0.17	0.22	0.04	
259	417411.99	600283.06	0	0.17	0.21	0.04	
260	417412.14	600287.06	0	0.17	0.21	0.04	
261	417412.29	600291.06	0	0.17	0.21	0.04	
262	417412.44	600295.06	0	0.17	0.21	0.04	
263	417412.59	600299.06	0	0.17	0.21	0.04	
264	417412.74	600303.06	0	0.17	0.21	0.04	
265	417412.89	600307.06	0	0.17	0.21	0.04	

NH3 Concentrations (from modelled Roads only) at Ground Level							
Receptor ID	NH3 Concentrations (from modelled Roads only) at Ground Level		Z (Receptor)	DM	DS	Impact	Impact
	X	Y					
133	417393.12	599725.06	20	0.10	0.12	0.03	
134	417393.28	599730.06	16	0.08	0.10	0.02	
135	417393.44	599735.06	12	0.06	0.09	0.02	
136	417393.59	599740.06	9	0.06	0.08	0.02	
137	417393.72	599745.06	6	0.06	0.07	0.02	
138	417393.88	599750.06	3	0.05	0.07	0.02	
139	417394.03	599755.06	1	0.05	0.07	0.02	
140	417394.19	599760.06	1	0.05	0.07	0.02	
141	417394.31	599765.06	1	0.05	0.07	0.02	
142	417394.47	599770.06	1	0.05	0.07	0.02	
143	417394.62	599775.06	1	0.05	0.07	0.02	
144	417394.78	599780.06	1	0.05	0.07	0.02	
145	417394.91	599785.06	1	0.05	0.07	0.02	
146	417395.06	599790.06	1	0.05	0.07	0.02	
147	417395.21	599795.06	3	0.09	0.11	0.03	
148	417395.36	599800.06	3	0.09	0.12	0.03	
149	417395.51	599805.06	28	0.11	0.13	0.03	
150	417395.66	599810.06	22	0.10	0.13	0.03	
151	417395.81	599815.06	18	0.08	0.11	0.03	
152	417395.96	599820.06	14	0.07	0.09	0.02	
153	417396.11	599825.06	12	0.06</			

NH3 Concentrations (from modelled Roads only) at Grade													
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
399	417323.16	599727.12	0	0.13	0.16	0.03	400	417323.31	599732.12	10	0.06	0.08	0.02
401	417323.47	599737.12	0	0.13	0.16	0.03	402	417323.62	599742.12	4	0.06	0.07	0.02
403	417323.78	599747.12	0	0.13	0.16	0.03	404	417323.93	599752.12	1	0.06	0.07	0.02
405	417324.06	599757.12	0	0.13	0.16	0.03	406	417324.22	599762.12	1	0.06	0.07	0.02
407	417324.34	599767.12	0	0.13	0.16	0.03	408	417324.5	599772.12	2	0.06	0.07	0.02
409	417324.66	599777.12	0	0.13	0.16	0.03	410	417316.81	599682.31	33	0.06	0.08	0.02
411	417316.97	599687.31	0	0.12	0.15	0.03	412	417317.12	599692.31	28	0.07	0.09	0.02
413	417317.28	599697.31	0	0.12	0.15	0.03	414	417317.41	599702.31	22	0.07	0.08	0.02
415	417317.56	599707.31	0	0.12	0.15	0.03	416	417317.72	599712.31	17	0.06	0.08	0.02
417	417317.88	599717.31	0	0.12	0.15	0.03	418	417318.03	599722.31	14	0.06	0.08	0.02
419	417318.16	599727.31	0	0.12	0.15	0.03	420	417318.31	599732.31	10	0.06	0.08	0.02
421	417318.47	599737.31	0	0.12	0.15	0.03	422	417318.62	599742.31	4	0.06	0.07	0.02
423	417318.75	599747.31	0	0.12	0.15	0.03	424	417318.91	599752.31	1	0.06	0.07	0.02
425	417319.06	599757.31	0	0.12	0.15	0.03	426	417319.22	599762.31	1	0.06	0.07	0.02
427	417319.34	599767.31	0	0.12	0.15	0.03	428	417319.5	599772.31	2	0.06	0.07	0.02
429	417319.66	599777.25	0	0.12	0.15	0.03	430	417316.99	599677.5	34	0.06	0.08	0.02
431	417317.81	599682.44	0	0.12	0.15	0.03	432	417318.07	599687.44	33	0.06	0.08	0.02
433	417318.22	599692.44	0	0.12	0.15	0.03	434	417318.38	599697.44	28	0.07	0.08	0.02
435	417318.44	599702.44	0	0.12	0.15	0.03	436	417318.56	599707.44	19	0.07	0.08	0.02
437	417318.72	599712.44	0	0.12	0.15	0.03	438	417318.88	599717.44	16	0.06	0.08	0.02
439	417319.03	599722.44	0	0.12	0.15	0.03	440	417319.16	599727.44	12	0.06	0.08	0.02
441	417319.31	599732.44	0	0.12	0.15	0.03	442	417319.47	599737.44	7	0.06	0.07	0.02
443	417319.62	599742.44	0	0.12	0.15	0.03	444	417319.75	599747.44	4	0.06	0.07	0.02
445	417319.87	599752.44	0	0.12	0.15	0.03	446	417320.06	599762.44	1	0.06	0.07	0.02
447	417320.16	599767.44	0	0.12	0.15	0.03	448	417320.38	599772.44	2	0.06	0.07	0.02
449	417320.56	599777.44	0	0.12	0.15	0.03	450	417314.66	599777.44	5	0.06	0.07	0.02
451	417306.99	599677.62	0	0.11	0.14	0.03	452	417306.84	599682.62	33	0.06	0.08	0.02
453	417307.07	599687.62	0	0.11	0.14	0.03	454	417307.12	599692.62	27	0.07	0.08	0.02
455	417307.28	599697.62	0	0.11	0.14	0.03	456	417307.34	599702.62	21	0.07	0.08	0.02
457	417307.56	599707.62	0	0.11	0.14	0.03	458	417307.72	599712.62	17	0.06	0.08	0.02
459	417307.88	599717.62	0	0.11	0.14	0.03	460	417308.03	599722.62	13	0.06	0.08	0.02
461	417308.16	599727.62	0	0.11	0.14	0.03	462	417308.31	599732.62	8	0.06	0.07	0.02
463	417308.47	599737.56	0	0.11	0.14	0.03	464	417308.62	599742.56	4	0.06	0.07	0.02
465	417308.78	599747.56	0	0.11	0.14	0.03	466	417308.91	599752.56	1	0.06	0.07	0.02
467	417309.06	599757.56	0	0.11	0.14	0.03	468	417309.22	599762.56	1	0.06	0.07	0.02
469	417309.38	599767.56	0	0.11	0.14	0.03	470	417309.56	599772.56	2	0.06	0.07	0.02
471	417309.66	599777.56	0	0.11	0.14	0.03	472	417301.69	599677.75	35	0.06	0.08	0.03
473	417301.84	599682.75	0	0.11	0.14	0.03	474	417301.97	599687.75	29	0.06	0.08	0.02
475	417302.12	599692.75	0	0.11	0.14	0.03	476	417302.28	599697.75	24	0.06	0.08	0.02
477	417302.44	599702.75	0	0.11	0.14	0.03	478	417302.56	599707.75	18	0.06	0.08	0.02
479	417302.72	599712.75	0	0.11	0.14	0.03	480	417302.88	599717.75	15	0.06	0.08	0.02
481	417303.03	599722.75	0	0.11	0.14	0.03	482	417303.19	599727.75	11	0.06	0.08	0.02
483	417303.31	599732.75	0	0.11	0.14	0.03	484	417303.47	599737.75	7	0.06	0.07	0.02
485	417303.62	599742.75	0	0.11	0.14	0.03	486	417303.78	599747.75	4	0.06	0.07	0.02
487	417303.91	599752.75	0	0.11	0.14	0.03	488	417304.06	599757.75	1	0.06	0.07	0.02
489	417304.22	599762.75	0	0.11	0.14	0.03	490	417304.38	599767.75	1	0.06	0.07	0.02
491	417304.5	599772.75	0	0.11	0.14	0.03	492	417304.66	599777.75	4	0.06	0.07	0.02
493	417296.69	599677.94	0	0.11	0.14	0.03	494	417296.84	599682.94	32	0.06	0.08	0.02
495	417296.97	599687.94	0	0.11	0.14	0.03	496	417297.12	599692.94	27	0.06	0.08	0.02
497	417297.28	599697.94	0	0.11	0.14	0.03	498	417297.44	599702.94	20	0.06	0.08	0.02
499	417297.59	599707.88	0	0.11	0.14	0.03	500	417297.72	599712.88	16	0.06	0.08	0.02
501	417297.88	599717.88	0	0.11	0.14	0.03	502	417298.03	599722.88	14	0.06	0.08	0.02
503	417298.19	599732.88	0	0.11	0.14	0.03	504	417298.31	599737.88	12	0.06	0.08	0.02
505	417298.47	599742.88	0	0.11	0.14	0.03	506	417298.62	599747.88	9	0.06	0.07	0.02
507	417298.78	599752.88	0	0.11	0.14	0.03	508	417298.91	599757.88	5	0.06	0.07	0.02
509	417299.06	599767.88	0	0.11	0.14	0.03	510	417299.22	599772.88	2	0.06	0.07	0.02
511	417299.38	599777.88	0	0.11	0.14	0.03	512	417299.5	599782.88	2	0.06	0.07	0.02
513	417299.66	599787.88	0	0.11	0.14	0.03	514	417291.69	599678.06	34	0.06	0.08	0.02
515	417291.84	599683.06	0	0.11	0.13	0.03	516	417292.01	599688.06	29	0.06	0.08	0.02
517	417292.12	599693.06	0	0.11	0.13	0.03	518	417292.28	599698.06	24	0.06	0.08	0.02
519	417292.44	599703.06	0	0.11	0.13	0.03	520	417292.56	599708.06	18	0.06	0.08	0.02
521	417292.72	599713.06	0	0.11	0.13	0.03	522	417292.88	599718.06	15	0.06	0.08	0.02
523	417293.03	599723.06	0	0.10	0.13	0.03	524	417293.19	599728.06	12	0.06	0.08	0.02
525	417293.31	599733.06	0	0.10	0.13	0.03	526	417293.47	599738.06	9	0.06	0.07	0.02
527	417293.62	599743.06	0	0.10	0.13	0.03	528	417293.78	599748.06	6	0.06	0.07	0.02
529	417293.91	599753.06	0	0.10	0.13	0.03	530	417294.06	599758.06	4	0.06	0.07	0.02
531	417294.22	599763.06	0	0.10	0.13	0.03							

NH3 Concentrations (from modelled Roads only) at Ground Level													
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
399	417323.16	599727.12	11	0.06	0.08	0.02	400	417323.31	599732.12	10	0.06	0.08	0.02
401	417323.47	599737.12	7	0.06	0.08	0.02	402	417323.62	599742.12	4	0.06	0.07	0.02
403	417323.78	599747.12	1	0.06	0.07	0.02	404	417323.93	599752.12	1	0.06	0.07	0.02
405	417324.06	599757.12	1	0.06	0.07	0.02	406	417324.22	599762.12	1	0.06	0.07	0.02
407	417324.34	599767.12	1	0.06	0.07	0.02	408	417324.5	599772.12	2	0.06	0.07	0.02
409	417324.66	599777.12	4	0.06	0.07	0.02	410	417316.81	599682.31	33	0.06	0.08	0.02
411	417316.97	599687.31	31	0.07	0.08	0.02	412	417317.12	599692.31	28	0.07	0.09	0.02
413	417317.28	599697.31	26	0.07	0.09	0.02	414	417317.41	599702.31	22	0.07	0.08	0.02
415	417317.56	599707.31	19	0.07	0.08	0.02	416	417317.72	599712.31	17	0.06	0.08	0.02
417	417317.88	599717.31	16	0.06	0.08	0.02	418	417318.03	599722.31	14	0.06	0.08	0.02
419	417318.16	599727.31	12	0.06	0.08	0.02	420	417318.31	599732.31	10	0.06	0.08	0.02
421	417318.47	599737.31	7	0.06	0.08	0.02	422	417318.62	599742.31	4	0.06	0.07	0.02
423	417318.75	599747.31	1	0.06	0.07	0.02	424	417318.91	599752.31	1	0.06	0.07	0.02
425	417319.06	599757.31	1	0.06	0.07	0.02	426	417319.22	599762.31	1	0.06	0.07	0.02
427	417319.34	599767.31	1	0.06	0.07	0.02	428	417319.5	599772.31	2	0.06	0.07	0.02
429	417319.66	599777.25	5	0.06	0.07	0.02	430	417316.99	599677.5	34	0.06	0.08	0.02
431	417317.81	599682.44	33	0.06	0.08	0.02	432	417318.07	599687.44	33	0.06	0.08	0.02
433	417318.22	599692.44	28	0.07	0.08	0.02	434	417318.38	599697.44	28	0.07	0.0	

NH3 Concentrations (from modelled Roads only) at Grade							
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact	
532	417294.38	599768	0	1.04	1.32	0.28	
533	417294.53	599773	0	1.04	1.32	0.28	
534	417294.66	599778	0	1.04	1.32	0.28	
535	417286.69	599678.19	0	1.02	1.29	0.28	
536	417286.84	599683.19	0	1.02	1.29	0.28	
537	417287.12	599688.19	0	1.02	1.29	0.28	
538	417287.12	599693.19	0	1.02	1.29	0.28	
539	417287.28	599698.19	0	1.01	1.29	0.28	
540	417287.44	599703.19	0	1.01	1.29	0.28	
541	417287.59	599708.19	0	1.01	1.29	0.28	
542	417287.72	599713.19	0	1.01	1.29	0.27	
543	417287.88	599718.19	0	1.01	1.29	0.27	
544	417288.03	599723.19	0	1.01	1.29	0.27	
545	417288.19	599728.19	0	1.01	1.29	0.27	
546	417288.31	599733.19	0	1.01	1.29	0.27	
547	417288.47	599738.19	0	1.01	1.29	0.27	
548	417288.62	599743.19	0	1.01	1.29	0.27	
549	417288.78	599748.19	0	1.01	1.28	0.27	
550	417288.94	599753.19	0	1.01	1.28	0.27	
551	417289.06	599758.19	0	1.01	1.28	0.27	
552	417289.22	599763.19	0	1.01	1.28	0.27	
553	417289.38	599768.19	0	1.01	1.28	0.27	
554	417289.53	599773.19	0	1.01	1.28	0.27	
555	417289.66	599778.19	0	1.01	1.28	0.27	
556	417281.69	599678.38	0	0.99	1.26	0.27	
557	417281.84	599683.38	0	0.99	1.26	0.27	
558	417282.12	599688.38	0	0.99	1.26	0.27	
559	417282.12	599693.38	0	0.99	1.26	0.27	
560	417282.28	599698.38	0	0.99	1.26	0.27	
561	417282.44	599703.38	0	0.99	1.26	0.27	
562	417282.59	599708.38	0	0.99	1.26	0.27	
563	417282.72	599713.38	0	0.99	1.26	0.27	
564	417282.88	599718.38	0	0.99	1.26	0.27	
565	417283.03	599723.38	0	0.99	1.26	0.27	
566	417283.19	599728.38	0	0.99	1.26	0.27	
567	417283.34	599733.38	0	0.99	1.25	0.27	
568	417283.47	599738.38	0	0.99	1.25	0.27	
569	417283.62	599743.38	0	0.99	1.25	0.27	
570	417283.78	599748.38	0	0.99	1.25	0.27	
571	417283.94	599753.38	0	0.99	1.25	0.27	
572	417284.06	599758.38	0	0.99	1.25	0.27	
573	417284.22	599763.38	0	0.99	1.25	0.26	
574	417284.38	599768.38	0	0.99	1.25	0.26	
575	417284.53	599773.38	0	0.99	1.25	0.26	
576	417284.66	599778.38	0	0.99	1.25	0.26	
577	417284.81	599783.38	0	0.99	1.25	0.26	
578	417276.69	599678.5	0	0.97	1.23	0.26	
579	417276.84	599683.5	0	0.97	1.23	0.26	
580	417277.12	599688.5	0	0.97	1.23	0.26	
581	417277.12	599693.5	0	0.96	1.23	0.26	
582	417277.28	599698.5	0	0.96	1.23	0.26	
583	417277.44	599703.5	0	0.96	1.23	0.26	
584	417277.59	599708.5	0	0.96	1.23	0.26	
585	417277.75	599713.5	0	0.96	1.23	0.26	
586	417277.88	599718.5	0	0.96	1.23	0.26	
587	417278.03	599723.5	0	0.96	1.22	0.26	
588	417278.19	599728.5	0	0.96	1.22	0.26	
589	417278.34	599733.5	0	0.96	1.22	0.26	
590	417278.47	599738.5	0	0.96	1.22	0.26	
591	417278.62	599743.5	0	0.96	1.22	0.26	
592	417278.78	599748.5	0	0.96	1.22	0.26	
593	417278.94	599753.5	0	0.96	1.22	0.26	
594	417279.06	599758.5	0	0.96	1.22	0.26	
595	417279.22	599763.5	0	0.96	1.22	0.26	
596	417279.38	599768.5	0	0.96	1.22	0.26	
597	417279.53	599773.5	0	0.96	1.22	0.26	
598	417279.69	599778.5	0	0.96	1.22	0.26	
599	417279.81	599783.44	0	0.96	1.22	0.26	
600	417271.69	599678.69	0	0.95	1.20	0.26	
601	417271.84	599683.69	0	0.94	1.20	0.26	
602	417272.16	599688.69	0	0.94	1.20	0.26	
603	417272.16	599693.62	0	0.94	1.20	0.26	
604	417272.28	599698.62	0	0.94	1.20	0.26	
605	417272.44	599703.62	0	0.94	1.20	0.25	
606	417272.59	599708.62	0	0.94	1.20	0.25	
607	417272.75	599713.62	0	0.94	1.19	0.25	
608	417272.88	599718.62	0	0.94	1.19	0.25	
609	417273.03	599723.62	0	0.94	1.19	0.25	
610	417273.19	599728.62	0	0.94	1.19	0.25	
611	417273.34	599733.62	0	0.94	1.19	0.25	
612	417273.47	599738.62	0	0.94	1.19	0.25	
613	417273.62	599743.62	0	0.94	1.19	0.25	
614	417273.78	599748.62	0	0.94	1.19	0.25	
615	417273.94	599753.62	0	0.94	1.19	0.25	
616	417274.09	599758.62	0	0.94	1.19	0.25	
617	417274.22	599763.62	0	0.94	1.19	0.25	
618	417274.38	599768.62	0	0.94	1.19	0.25	
619	417274.53	599773.62	0	0.94	1.19	0.25	
620	417274.69	599778.62	0	0.94	1.19	0.25	
621	417274.81	599783.62	0	0.94	1.19	0.25	
622	417266.69	599678.81	0	0.92	1.17	0.25	
623	417266.84	599683.81	0	0.92	1.17	0.25	
624	417267.12	599688.81	0	0.92	1.17	0.25	
625	417267.12	599693.81	0	0.92	1.17	0.25	
626	417267.28	599698.81	0	0.92	1.17	0.25	
627	417267.44	599703.81	0	0.92	1.17	0.25	
628	417267.59	599708.81	0	0.92	1.17	0.25	
629	417267.75	599713.81	0	0.92	1.17	0.25	
630	417267.88	599718.81	0	0.92	1.17	0.25	
631	417268.03	599723.81	0	0.92	1.17	0.25	
632	417268.19	599728.81	0	0.92	1.17	0.25	
633	417268.34	599733.81	0	0.92	1.17	0.25	
634	417268.5	599738.81	0	0.92	1.17	0.25	
635	417268.62	599743.81	0	0.92	1.17	0.25	
636	417268.78	599748.75	0	0.92	1.17	0.25	
637	417268.94	599753.75	0	0.92	1.17	0.25	
638	417269.09	599758.75	0	0.92	1.17	0.25	
639	417269.22	599763.75	0	0.92	1.16	0.25	
640	417269.38	599768.75	0	0.92	1.16	0.25	
641	417269.53	599773.75	0	0.92	1.16	0.25	
642	417269.69	599778.75	0	0.92	1.16	0.24	
643	417269.81	599783.75	0	0.92	1.16	0.24	
644	417269.97	599788.75	0	0.92	1.16	0.24	
645	417261.69	599678.94	0	0.90	1.15	0.24	
646	417261.84	599683.94	0	0.90	1.15	0.24	
647	417262.16	599688.94	0	0.90	1.14	0.24	
648	417262.16	599693.94	0	0.90	1.14	0.24	
649	417262.28	599698.94	0	0.90	1.14	0.24	
650	417262.44	599703.94	0	0.90	1.14	0.24	
651	417262.59	599708.94	0	0.90	1.14	0.24	
652	417262.75	599713.94	0	0.90	1.14	0.24	
653	417262.88	599718.94	0	0.90	1.14	0.24	
654	417263.03	599723.94	0	0.90	1.14	0.24	
655	417263.19	599728.94	0	0.90	1.14	0.24	
656	417263.34	599733.94	0	0.90	1.14	0.24	
657	417263.5	599738.94	0	0.90	1.14	0.24	
658	417263.62	599743.94	0	0.90	1.14	0.24	
659	417263.78	599748.94	0	0.90	1.14	0.24	
660	417263.94	599753.94	0	0.90	1.14	0.24	
661	417264.09	599758.94	0	0.90	1.14	0.24	
662	417264.22	599763.94	0	0.90	1.14	0.24	
663	417264.38	599768.94	0	0.90	1.14	0.24	
664	417264.53	599773.94	0	0.90	1.14	0.24	

NH3 Concentrations (from modelled Roads only) at Ground Level							
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact	
532	417294.38	599768	1	0.06	0.07	0.02	
533	417294.53	599773	2	0.06	0.07	0.02	
534	417294.66	599778	4	0.06	0.07	0.02	
535	417286.69	599678.19	33	0.06	0.07	0.02	
536	417286.84	599683.19	31	0.06	0.08	0.02	
537	417287.12	599688.19	28	0.06	0.08	0.02	
538	417287.12	599693.19	25	0.06	0.08	0.02	
539	417287.28	599698.19	23	0.06	0.08	0.02	
540	417287.44	599703.19	21	0.06	0.08	0.02	
541	417287.59	599708.19	19	0.06	0.08	0.02	
542	417287.72	599713.19	17	0.06	0.08	0.02	
543	417287.88	599718.19	15	0.06	0.08	0.02	
544	417288.03	599723.19	14	0.06	0.08	0.02	
545	417288.19	599728.19	11	0.06	0.07	0.02	
546	417288.31	599733.19	8	0.06	0.07	0.02	
547	417288.47	599738.19	6	0.06	0.07	0.02	
548	417288.62	599743.19	5	0.06	0.07	0.02	
549	417288.78	599748.19	4	0.06	0.07	0.02	
550	417288.94	599753.19	2	0.06	0.07	0.02	
551	417289.06	599758.19	1	0.06	0.07	0.02	
552	417289.22	599763.19	1	0.06	0.07	0.02	
553	417289.38	599768.19	1	0.06	0.07	0.02	
554	417289.53	599773.19	2	0.06	0.07	0.02	
555	417289.66	599778.19	3	0.06	0.07	0.02	
556	417281.69	599678.38	33	0.06	0.07	0.02	
557							

NH3 Concentrations (from modelled Roads only) at Grade						
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact
665	417264.69	599778.94	0	0.09	0.11	0.02
666	417264.84	599783.94	0	0.09	0.11	0.02
667	417264.97	599788.94	0	0.09	0.11	0.02
668	417265.09	599793.94	0	0.09	0.11	0.02
669	417265.21	599798.94	0	0.09	0.11	0.02
670	417257.16	599689.12	0	0.09	0.11	0.02
671	417257.16	599694.12	0	0.09	0.11	0.02
672	417257.16	599699.12	0	0.09	0.11	0.02
673	417257.44	599704.12	0	0.09	0.11	0.02
674	417257.59	599709.12	0	0.09	0.11	0.02
675	417257.75	599714.12	0	0.09	0.11	0.02
676	417257.91	599719.12	0	0.09	0.11	0.02
677	417258.07	599724.12	0	0.09	0.11	0.02
678	417258.19	599729.12	0	0.09	0.11	0.02
679	417258.34	599734.12	0	0.09	0.11	0.02
680	417258.5	599739.12	0	0.09	0.11	0.02
681	417258.62	599744.12	0	0.09	0.11	0.02
682	417258.78	599749.12	0	0.09	0.11	0.02
683	417258.94	599754.12	0	0.09	0.11	0.02
684	417259.09	599759.12	0	0.09	0.11	0.02
685	417259.25	599764.12	0	0.09	0.11	0.02
686	417259.38	599769.12	0	0.09	0.11	0.02
687	417259.53	599774.12	0	0.09	0.11	0.02
688	417259.69	599779.12	0	0.09	0.11	0.02
689	417259.84	599784.12	0	0.09	0.11	0.02
690	417259.97	599789.12	0	0.09	0.11	0.02
691	417251.72	599679.25	0	0.09	0.11	0.02
692	417251.84	599684.25	0	0.09	0.11	0.02
693	417252	599689.25	0	0.09	0.11	0.02
694	417252.16	599694.25	0	0.09	0.11	0.02
695	417252.31	599699.25	0	0.09	0.11	0.02
696	417252.44	599704.25	0	0.09	0.11	0.02
697	417252.59	599709.25	0	0.09	0.11	0.02
698	417252.71	599714.25	0	0.09	0.11	0.02
699	417252.84	599719.25	0	0.09	0.11	0.02
700	417253.03	599724.25	0	0.09	0.11	0.02
701	417253.19	599729.25	0	0.09	0.11	0.02
702	417253.34	599734.25	0	0.09	0.11	0.02
703	417253.5	599739.25	0	0.09	0.11	0.02
704	417253.66	599744.25	0	0.09	0.11	0.02
705	417253.78	599749.25	0	0.09	0.11	0.02
706	417253.94	599754.25	0	0.09	0.11	0.02
707	417254.09	599759.25	0	0.09	0.11	0.02
708	417254.21	599764.25	0	0.09	0.11	0.02
709	417254.38	599769.25	0	0.09	0.11	0.02
710	417254.53	599774.19	0	0.09	0.11	0.02
711	417254.69	599779.19	0	0.09	0.11	0.02
712	417254.84	599784.19	0	0.09	0.11	0.02
713	417254.97	599789.19	0	0.09	0.11	0.02
714	417255.12	599794.19	0	0.09	0.11	0.02
715	417246.72	599679.44	0	0.09	0.11	0.02
716	417246.84	599684.38	0	0.09	0.11	0.02
717	417247	599689.38	0	0.09	0.11	0.02
718	417247.16	599694.38	0	0.09	0.11	0.02
719	417247.31	599699.38	0	0.09	0.11	0.02
720	417247.44	599704.38	0	0.09	0.11	0.02
721	417247.59	599709.38	0	0.09	0.11	0.02
722	417247.75	599714.38	0	0.09	0.11	0.02
723	417247.91	599719.38	0	0.09	0.11	0.02
724	417248.06	599724.38	0	0.09	0.11	0.02
725	417248.19	599729.38	0	0.09	0.11	0.02
726	417248.34	599734.38	0	0.09	0.11	0.02
727	417248.46	599739.38	0	0.09	0.11	0.02
728	417248.62	599744.38	0	0.09	0.11	0.02
729	417248.78	599749.38	0	0.09	0.11	0.02
730	417248.94	599754.38	0	0.09	0.11	0.02
731	417249.09	599759.38	0	0.09	0.11	0.02
732	417249.25	599764.38	0	0.09	0.11	0.02
733	417249.38	599769.38	0	0.09	0.11	0.02
734	417249.53	599774.38	0	0.09	0.11	0.02
735	417249.69	599779.38	0	0.09	0.11	0.02
736	417249.84	599784.38	0	0.09	0.11	0.02
737	417249.97	599789.38	0	0.09	0.11	0.02
738	417250.12	599794.38	0	0.09	0.11	0.02
739	417241.84	599684.56	0	0.08	0.10	0.02
740	417242	599689.56	0	0.08	0.10	0.02
741	417242.16	599694.56	0	0.08	0.10	0.02
742	417242.31	599699.56	0	0.08	0.10	0.02
743	417242.47	599704.56	0	0.08	0.10	0.02
744	417242.59	599709.56	0	0.08	0.10	0.02
745	417242.75	599714.56	0	0.08	0.10	0.02
746	417242.91	599719.56	0	0.08	0.10	0.02
747	417243.06	599724.56	0	0.08	0.10	0.02
748	417243.19	599729.56	0	0.08	0.10	0.02
749	417243.34	599734.56	0	0.08	0.10	0.02
750	417243.5	599739.56	0	0.08	0.10	0.02
751	417243.66	599744.56	0	0.08	0.10	0.02
752	417243.78	599749.56	0	0.08	0.10	0.02
753	417243.94	599754.56	0	0.08	0.10	0.02
754	417244.09	599759.56	0	0.08	0.10	0.02
755	417244.25	599764.56	0	0.08	0.10	0.02
756	417244.38	599769.56	0	0.08	0.10	0.02
757	417244.53	599774.56	0	0.08	0.10	0.02
758	417244.69	599779.56	0	0.08	0.10	0.02
759	417244.84	599784.56	0	0.08	0.10	0.02
760	417245	599789.56	0	0.08	0.10	0.02
761	417245.12	599794.56	0	0.08	0.10	0.02
762	417245.28	599799.56	0	0.08	0.10	0.02
763	417236.88	599684.69	0	0.08	0.10	0.02
764	417237	599689.69	0	0.08	0.10	0.02
765	417237.16	599694.69	0	0.08	0.10	0.02
766	417237.31	599699.69	0	0.08	0.10	0.02
767	417237.47	599704.69	0	0.08	0.10	0.02
768	417237.59	599709.69	0	0.08	0.10	0.02
769	417237.75	599714.69	0	0.08	0.10	0.02
770	417237.91	599719.69	0	0.08	0.10	0.02
771	417238.06	599724.69	0	0.08	0.10	0.02
772	417238.19	599729.69	0	0.08	0.10	0.02
773	417238.34	599734.69	0	0.08	0.10	0.02
774	417238.5	599739.69	0	0.08	0.10	0.02
775	417238.62	599744.69	0	0.08	0.10	0.02
776	417238.78	599749.69	0	0.08	0.10	0.02
777	417238.94	599754.69	0	0.08	0.10	0.02
778	417239.09	599759.69	0	0.08	0.10	0.02
779	417239.25	599764.69	0	0.08	0.10	0.02
780	417239.38	599769.69	0	0.08	0.10	0.02
781	417239.53	599774.69	0	0.08	0.10	0.02
782	417239.69	599779.69	0	0.08	0.10	0.02
783	417239.84	599784.69	0	0.08	0.10	0.02
784	417240	599789.69	0	0.08	0.10	0.02
785	417240.12	599794.62	0	0.08	0.10	0.02
786	417240.28	599799.62	0	0.08	0.10	0.02
787	417231.88	599684.88	0	0.08	0.10	0.02
788	417232	599689.88	0	0.08	0.10	0.02
789	417232.16	599694.88	0	0.08	0.10	0.02
790	417232.31	599699.88	0	0.08	0.10	0.02
791	417232.47	599704.81	0	0.08	0.10	0.02
792	417232.59	599709.81	0	0.08	0.10	0.02
793	417232.75	599714.81	0	0.08	0.10	0.02
794	417232.91	599719.81	0	0.08	0.10	0.02
795	417233.06	599724.81	0	0.08	0.10	0.02
796	417233.19	599729.81	0	0.08	0.10	0.02
797	417233.34	599734.81	0	0.08	0.10	0.02

NH3 Concentrations (from modelled Roads only) at Ground Level						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
665	417264.69	599778.94	1	0.05	0.07	0.02
666	417264.84	599783.94	1	0.05	0.07	0.02
667	417264.97	599788.94	5	0.05	0.07	0.02
668	417265.09	599793.94	34	0.05	0.07	0.02
669	417265.21	599798.94	31	0.06	0.07	0.01
670	417257.16	599689.12	25	0.06	0.07	0.01
671	417257.16	599694.12	23	0.06	0.07	0.01
672	417257.16	599699.12	21	0.06	0.07	0.01
673	417257.44	599704.12	20	0.06	0.07	0.01
674	417257.59	599709.12	18	0.06	0.07	0.01
675	417257.75	599714.12	17	0.06	0.07	0.01
676	417257.91	599719.12	16	0.06	0.07	0.01
677	417258.07	599724.12	14	0.06	0.07	0.01
678	417258.19	599729.12	13	0.06	0.07	0.01
679	417258.34	599734.12	12	0.06	0.07	0.01
680	417258.5	599739.12	10	0.06	0.07	0.01
681	417258.62	599744.12	8	0.06	0.07	0.01
682	417258.78	599749.12	7	0.05	0.07	0.01
683	417258.94	599754.12	4	0.05	0.07	0.01
684	417259.09	599759.12	2	0.05	0.07	0.01
685	417259.25	599764.12	1	0.05	0.07	0.01
686	417259.38	599769.12	1	0.05	0.07	0.02
687	417259.53	599774.12	1	0.05	0.07	0.02
688	417259.69	599779.12	1	0.05	0.07	0.02
689	417259.84	599784.12	1	0.05	0.07	0.02
690	417259.97	599789.12	3	0.05	0.07	0.02
691	417251.72	599679.25	34	0.05	0.07	0.01
692	417251.84	599684.25	30	0.06	0.07	0.01
693	417252	599689.25	25	0.06	0.07	0.01
694	417252.16	599694.25	23	0.06	0.07	0.01
695	417252.31	599699.25	21	0.06	0.07	0.01
696	417252.44	599704.25	20	0.06	0.07	0.01
697	417252.59	599709.25	18	0.06	0.07	0.01
698	417252.71	599714.25	18</			

NH3 Concentrations (from modelled Roads only) at Grade						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
798	417233.5	599739.8	0	0.80	1.01	0.21
799	417233.66	599744.81	0	0.80	1.01	0.21
800	417233.81	599749.81	0	0.80	1.01	0.21
801	417233.94	599754.81	0	0.80	1.01	0.21
802	417234.09	599759.81	0	0.80	1.01	0.21
803	417234.25	599764.81	0	0.80	1.01	0.21
804	417234.41	599769.81	0	0.80	1.01	0.21
805	417234.53	599774.81	0	0.80	1.01	0.21
806	417234.69	599779.81	0	0.80	1.01	0.21
807	417234.84	599784.81	0	0.80	1.01	0.21
808	417235	599789.81	0	0.80	1.01	0.21
809	417235.12	599794.81	0	0.80	1.01	0.21
810	417235.28	599799.81	0	0.80	1.01	0.21
811	417235.44	599804.81	0	0.80	1.01	0.21
812	417236.88	599885	0	0.79	0.99	0.20
813	417237	599890	0	0.79	0.99	0.20
814	417237.16	599895	0	0.79	0.99	0.20
815	417237.31	599900	0	0.79	0.99	0.20
816	417237.47	599905	0	0.79	0.99	0.20
817	417237.59	599910	0	0.79	0.99	0.20
818	417237.75	599915	0	0.79	0.99	0.20
819	417237.91	599920	0	0.79	0.99	0.20
820	417238.06	599925	0	0.79	0.99	0.20
821	417238.22	599930	0	0.79	0.99	0.20
822	417238.34	599935	0	0.79	0.99	0.20
823	417238.5	599940	0	0.79	0.99	0.20
824	417238.66	599945	0	0.79	0.99	0.20
825	417238.81	599950	0	0.79	0.99	0.20
826	417238.94	599955	0	0.79	0.99	0.20
827	417239.09	599959.94	0	0.79	0.99	0.20
828	417239.25	599964.94	0	0.79	0.99	0.20
829	417239.41	599969.94	0	0.79	0.99	0.20
830	417239.53	599974.94	0	0.79	0.99	0.20
831	417239.69	599979.94	0	0.79	0.99	0.20
832	417239.84	599984.94	0	0.79	0.99	0.21
833	417240	599989.94	0	0.79	0.99	0.21
834	417240.16	599994.94	0	0.79	0.99	0.21
835	417240.28	599999.94	0	0.79	0.99	0.21
836	417240.44	599804.94	0	0.79	0.99	0.21
837	417241.88	599885.12	0	0.77	0.98	0.20
838	417222	599690.12	0	0.77	0.98	0.20
839	417222.16	599695.12	0	0.77	0.98	0.20
840	417222.31	599700.12	0	0.77	0.98	0.20
841	417222.47	599705.12	0	0.77	0.98	0.20
842	417222.62	599710.12	0	0.77	0.98	0.20
843	417222.75	599715.12	0	0.77	0.98	0.20
844	417222.91	599720.12	0	0.77	0.97	0.20
845	417223.06	599725.12	0	0.77	0.97	0.20
846	417223.22	599730.12	0	0.77	0.97	0.20
847	417223.34	599735.12	0	0.77	0.97	0.20
848	417223.5	599740.12	0	0.77	0.97	0.20
849	417223.66	599745.12	0	0.77	0.97	0.20
850	417223.81	599750.12	0	0.77	0.97	0.20
851	417223.94	599755.12	0	0.77	0.97	0.20
852	417224.09	599760.12	0	0.77	0.97	0.20
853	417224.25	599765.12	0	0.77	0.97	0.20
854	417224.41	599770.12	0	0.77	0.97	0.20
855	417224.56	599775.12	0	0.77	0.97	0.20
856	417224.69	599780.12	0	0.77	0.97	0.20
857	417224.84	599785.12	0	0.77	0.97	0.20
858	417225	599790.12	0	0.77	0.97	0.20
859	417225.16	599795.12	0	0.77	0.97	0.20
860	417225.28	599800.12	0	0.77	0.97	0.20
861	417225.44	599805.12	0	0.77	0.97	0.20
862	417463.38	599831.94	0	8.04	21.98	13.94
863	417463.19	599826.94	0	8.04	22.00	13.96
864	417463	599821.94	0	8.03	22.02	13.99
865	417462.81	599816.94	0	8.03	22.04	14.01
866	417462.62	599811.94	0	8.03	22.06	14.03
867	417462.44	599806.94	0	8.03	22.09	14.06
868	417462.25	599801.94	0	8.02	22.12	14.09
869	417462.06	599796.94	0	8.02	22.15	14.13
870	417461.88	599791.94	0	8.02	22.18	14.16
871	417461.69	599786.94	0	8.02	22.21	14.19
872	417461.5	599781.94	0	8.01	22.24	14.22
873	417461.31	599777	0	8.01	22.29	14.26
874	417461.12	599772	0	8.01	22.34	14.33
875	417460.94	599767	0	8.00	22.36	14.35
876	417460.75	599762	0	8.00	22.35	14.35
877	417460.56	599757	0	8.00	22.33	14.33
878	417460.38	599752	0	8.00	22.28	14.28
879	417460.19	599747	0	7.99	22.25	14.25
880	417460	599742	0	7.99	22.20	14.21
881	417459.83	599836.75	0	6.87	15.43	8.56
882	417459.64	599831.75	0	6.87	15.44	8.57
883	417459.46	599826.75	0	6.87	15.45	8.58
884	417459.27	599821.75	0	6.86	15.46	8.60
885	417459.08	599816.75	0	6.86	15.44	8.58
886	417458.89	599811.75	0	6.85	15.45	8.60
887	417458.71	599806.75	0	6.85	15.44	8.61
888	417458.52	599801.75	0	6.85	15.47	8.62
889	417458.34	599796.75	0	6.85	15.49	8.64
890	417458.16	599791.75	0	6.85	15.51	8.65
891	417457.98	599786.75	0	6.84	15.53	8.67
892	417457.8	599781.75	0	6.84	15.55	8.69
893	417457.61	599776.75	0	6.84	15.55	8.71
894	417457.43	599771.75	0	6.84	15.56	8.73
895	417457.25	599766.75	0	6.84	15.57	8.74
896	417457.07	599761.75	0	6.84	15.57	8.74
897	417456.89	599756.75	0	6.83	15.56	8.74
898	417456.71	599751.75	0	6.83	15.57	8.73
899	417456.53	599746.75	0	6.83	15.53	8.70
900	417456.35	599741.75	0	6.83	15.51	8.68
901	417473.72	599841.56	0	6.00	12.09	6.09
902	417473.53	599836.56	0	6.00	12.08	6.09
903	417473.34	599831.56	0	6.00	12.07	6.08
904	417473.16	599826.56	0	6.00	12.07	6.08
905	417472.97	599821.56	0	6.00	12.08	6.08
906	417472.78	599816.56	0	6.00	12.08	6.09
907	417472.59	599811.56	0	6.00	12.09	6.10
908	417472.41	599806.56	0	6.00	12.09	6.11
909	417472.22	599801.56	0	6.00	12.10	6.12
910	417472.03	599796.56	0	6.00	12.11	6.13
911	417471.84	599791.56	0	6.00	12.12	6.14
912	417471.66	599786.56	0	6.00	12.12	6.14
913	417471.47	599781.56	0	6.00	12.13	6.15
914	417471.28	599776.56	0	6.00	12.15	6.17
915	417471.1	599771.56	0	6.00	12.15	6.18
916	417470.92	599766.56	0	6.00	12.16	6.19
917	417470.74	599761.56	0	6.00	12.17	6.20
918	417470.56	599756.56	0	6.00	12.19	6.22
919	417470.38	599751.56	0	6.00	12.22	6.26
920	417470.19	599746.56	0	6.00	12.27	6.31
921	417470	599741.56	0	6.00	12.31	6.35
922	417478.91	599846.38	0	5.32	10.02	4.69
923	417478.72	599841.38	0	5.32	10.02	4.70
924	417478.53	599836.38	0	5.32	10.01	4.70
925	417478.34	599831.38	0	5.32	10.01	4.69
926	417478.16	599826.38	0	5.32	10.00	4.68
927	417477.97	599821.38	0	5.32	9.99	4.67
928	417477.78	599816.38	0	5.31	9.99	4.67
929	417477.59	599811.38	0	5.31	9.99	4.68
930	417477.41	599806.38	0	5.31	9.99	4.68

NH3 Concentrations (from modelled Roads only) at Ground Level						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
798	417233.5	599739.8	10	0.05	0.07	0.01
799	417233.66	599744.81	8	0.05	0.07	0.01
800	417233.81	599749.81	8	0.05	0.07	0.01
801	417233.94	599754.81	7	0.05	0.07	0.01
802	417234.09	599759.81	5	0.05	0.07	0.01
803	417234.25	599764.81	3	0.05	0.07	0.01
804	417234.41	599769.81	1	0.05	0.07	0.01
805	417234.53	599774.81	1	0.05	0.07	0.01
806	417234.69	599779.81	1	0.05	0.07	0.01
807	417234.84	599784.81	1	0.05	0.07	0.01
808	417235	599789.81	1	0.05	0.07	0.01
809	417235.12	599794.81	2	0.05	0.07	0.01
810	417235.28	599799.81	4	0.05	0.07	0.01
811	417235.44	599804.81	6	0.05	0.07	0.02
812	417236.88	599885	34	0.05	0.06	0.01
813	417237	599890	31	0.05	0.07	0.01
814	417237.16	599895	28	0.05	0.07	0.01
815	417237.31	599900	25	0.05	0.07	0.01
816	417237.47	599905	22	0.05	0.07	0.01
817	417237.59	599910	20	0.05	0.07	0.01
818	417237.75	599915	19	0.05	0.07	0.01
819	417237.91	599920	17	0.05	0.07	0.01
820	417238.06	599925	15	0.05	0.07	0.01
821	417238.22	599930	14	0.05	0.07	0.01
822	417238.34	599935	12	0.05	0.07	0.01
823	417238.5	599940	11	0.05	0.07	0.01
824	417238.66	599945	10	0.05	0.07	0.01
825	417238.81	599950	9	0.05	0.07	0.01
826	417238.94	599955	8	0.05	0.07	0.01
827	417239.09	599959.94	7	0.05	0.07	0.01
828	417239.25	599964.94	4	0.05	0.07	0.01
829	417239.41	599969.94	2	0.05	0.07	0.01
830	417239.53	599974.94	1	0.05	0.07	0.01
831	417239.69	599979.94	0	0.05	0.07	0.01
832	41723					

NH3 Concentrations (from modelled Roads only) at Grade											
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact					
931	417477.22	59980.38	0	0.53	1.00	0.47					
932	417477.03	599796.38	0	0.53	1.01	0.47					
933	417476.84	599791.38	3	0.56	1.02	0.47					
934	417476.66	599786.38	0	0.53	1.01	0.48					
935	417476.47	599781.38	0	0.53	1.01	0.48					
936	417476.28	599776.44	0	0.53	1.01	0.48					
937	417476.09	599771.44	0	0.53	1.01	0.48					
938	417475.91	599766.44	0	0.53	1.01	0.48					
939	417475.72	599761.44	0	0.53	1.01	0.48					
940	417475.53	599756.44	0	0.53	1.01	0.48					
941	417475.34	599751.44	0	0.53	1.01	0.48					
942	417475.16	599746.44	0	0.53	1.01	0.48					
943	417474.97	599741.44	0	0.53	1.01	0.48					
944	417474.79	599736.44	0	0.53	1.01	0.48					
945	417483.91	599846.19	0	0.48	0.86	0.38					
946	417483.72	599841.19	0	0.48	0.86	0.38					
947	417483.53	599836.19	0	0.48	0.86	0.38					
948	417483.34	599831.19	0	0.48	0.86	0.38					
949	417483.16	599826.19	0	0.48	0.86	0.38					
950	417482.97	599821.19	0	0.48	0.86	0.38					
951	417482.78	599816.19	0	0.48	0.86	0.38					
952	417482.59	599811.19	0	0.48	0.86	0.38					
953	417482.41	599806.19	0	0.48	0.86	0.38					
954	417482.22	599801.19	0	0.48	0.86	0.38					
955	417482.03	599796.19	0	0.48	0.86	0.38					
956	417481.84	599791.19	0	0.48	0.86	0.38					
957	417481.66	599786.19	0	0.48	0.86	0.38					
958	417481.47	599781.19	0	0.48	0.86	0.38					
959	417481.28	599776.25	0	0.48	0.86	0.39					
960	417481.09	599771.25	0	0.48	0.86	0.39					
961	417480.91	599766.25	0	0.48	0.86	0.39					
962	417480.72	599761.25	0	0.48	0.86	0.39					
963	417480.53	599756.25	0	0.48	0.86	0.39					
964	417480.34	599751.25	0	0.48	0.86	0.39					
965	417480.16	599746.25	0	0.48	0.86	0.39					
966	417479.97	599741.25	0	0.48	0.86	0.39					
967	417479.78	599736.25	0	0.48	0.86	0.39					
968	417479.59	599731.25	0	0.48	0.86	0.39					
969	417479.41	599726.25	0	0.48	0.86	0.39					
970	417479.22	599721.25	0	0.48	0.86	0.39					
971	417479.03	599716.25	0	0.48	0.86	0.39					
972	417478.84	599711.25	0	0.48	0.86	0.39					
973	417478.66	599706.25	0	0.48	0.86	0.39					
974	417478.47	599701.25	0	0.48	0.86	0.39					
975	417478.28	599696.25	0	0.48	0.86	0.39					
976	417478.09	599691.25	0	0.48	0.86	0.39					
977	417477.91	599686.25	0	0.48	0.86	0.39					
978	417477.72	599681.25	0	0.48	0.86	0.39					
979	417477.53	599676.25	0	0.48	0.86	0.39					
980	417477.34	599671.25	0	0.48	0.86	0.39					
981	417477.16	599666.25	0	0.48	0.86	0.39					
982	417476.97	599661.25	0	0.48	0.86	0.39					
983	417476.78	599656.25	0	0.48	0.86	0.39					
984	417476.59	599651.25	0	0.48	0.86	0.39					
985	417476.41	599646.25	0	0.48	0.86	0.39					
986	417476.22	599641.25	0	0.48	0.86	0.39					
987	417476.03	599636.25	0	0.48	0.86	0.39					
988	417475.84	599631.25	0	0.48	0.86	0.39					
989	417475.66	599626.25	0	0.48	0.86	0.39					
990	417475.47	599621.25	0	0.48	0.86	0.39					
991	417475.28	599616.25	0	0.48	0.86	0.39					
992	417475.09	599611.25	0	0.48	0.86	0.39					
993	417474.91	599606.25	0	0.48	0.86	0.39					
994	417474.72	599601.25	0	0.48	0.86	0.39					
995	417474.53	599596.25	0	0.48	0.86	0.39					
996	417474.34	599591.25	0	0.48	0.86	0.39					
997	417474.16	599586.25	0	0.48	0.86	0.39					
998	417473.97	599581.25	0	0.48	0.86	0.39					
999	417473.78	599576.25	0	0.48	0.86	0.39					
1000	417473.59	599571.25	0	0.48	0.86	0.39					

NH3 Concentrations (from modelled Roads only) at Ground Level											
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact					
931	417477.22	59980.38	0	0.06	0.08	0.02					
932	417477.03	599796.38	0	0.06	0.08	0.02					
933	417476.84	599791.38	3	0.06	0.08	0.02					
934	417476.66	599786.38	4	0.06	0.08	0.02					
935	417476.47	599781.38	7	0.06	0.08	0.02					
936	417476.28	599776.44	9	0.07	0.09	0.02					
937	417476.09	599771.44	11	0.07	0.09	0.02					
938	417475.91	599766.44	13	0.08	0.10	0.02					
939	417475.72	599761.44	16	0.09	0.12	0.02					
940	417475.53	599756.44	24	0.19	0.33	0.14					
941	417475.34	599751.44	30	0.16	0.25	0.09					
942	417475.16	599746.44	31	0.15	0.22	0.07					
943	417474.97	599741.44	32	0.14	0.19	0.05					
944	417484.09	599851.19	1	0.06	0.09	0.03					
945	417483.91	599846.19	0	0.06	0.09	0.03					
946	417483.72	599841.19	0	0.06	0.09	0.03					
947	417483.53	599836.19	0	0.06	0.09	0.03					
948	417483.34	599831.19	0	0.06	0.09	0.03					
949	417483.16	599826.19	0	0.06	0.08	0.02					
950	417482.97	599821.19	0	0.06	0.08	0.02					
951	417482.78	599816.19	0	0.06	0.08	0.02					
952	417482.59	599811.19	0	0.06	0.08	0.02					
953	417482.41	599806.19	0	0.06	0.08	0.02					
954	417482.22	599801.19	0	0.06	0.08	0.02					
955	417482.03	599796.19	2	0.06	0.08	0.02					
956	417481.84	599791.19	5	0.06	0.08	0.02					
957	417481.66	599786.19	6	0.06	0.08	0.02					
958	417481.47	599781.19	8	0.07	0.09	0.02					
959	417481.28	599776.25	9	0.07	0.09	0.02					
960	417481.09	599771.25	12	0.07	0.10	0.02					
961	417480.91	599766.25	15	0.09	0.11	0.02					
962	417480.72	599761.25	20	0.13	0.18	0.05					
963	417480.53	599756.25	29	0.17	0.27	0.10					
964	417480.34	599751.25	31	0.14	0.21	0.07					
965	417480.16	599746.25	31	0.14	0.21	0.07					
966	417479.97	599741.25	1	0.06	0.09	0.03					
967	417479.78	599736.25	0	0.06	0.09	0.03					
968	417479.59	599731.25	0	0.06	0.09	0.03					
969	417479.41	599726.25	0	0.06	0.09	0.03					
970	417479.22	599721.25	0	0.06	0.09	0.03					
971	417479.03	599716.25	0	0.06	0.09	0.03					
972	417478.84	599711.25	0	0.06	0.09	0.03					
973	417478.66	599706.25	0	0.06	0.08	0.02					
974	417478.47	599701.25	0	0.06	0.08	0.02					
975	417478.28	599696.25	0	0.06	0.08	0.02					
976	417478.09	599691.25	0	0.06	0.08	0.02					
977	417477.91	599686.25	1	0.06	0.08	0.02					
978	417477.72	599681.25	4	0.06	0.08	0.02					
979	417477.53	599676.25	7	0.06	0.09	0.02					
980	417477.34	599671.25	9	0.07	0.09	0.02					
981	417477.16	599666.25	10	0.07	0.09	0.02					
982	417476.97	599661.25	12	0.08	0.10	0.02					
983	417476.78	599656.25	15	0.09	0.12	0.03					
984	417476.59	599651.25	17	0.12	0.17	0.04					
985	417476.41	599646.25	26	0.17	0.29	0.12					
986	417476.22	599641.25	30	0.15	0.23	0.08					
987	417476.03	599636.25	31	0.14	0.21	0.07					
988	417475.84	599631.25	2	0.06	0.09	0.03					
989	417475.66	599626.25	0	0.06	0.09	0.03					
990	417475.47	599621.25	0	0.06	0.09	0.03					
991	417475.28	599616.25	0	0.06	0.09	0.03					
992	417475.09	599611.25	0	0.06	0.09	0.03					
993	417474.91	599606.25	0	0.06	0.09	0.03					
994	417474.72	599601.25	0	0.06	0.09	0.03					
995	417474.53	599596.25	0	0.06	0.09	0.03					
996	417474.34	599591.25	0	0.06	0.09	0.03					
997	417474.16	599586.25	0	0.06	0.09	0.03					
998	417473.97	599581.25	0	0.06	0.09	0.03					
999	417473.78	599576.25	1	0.06	0.08	0.02					
1000	417473.59	599571.25	2	0.06	0.08	0.02					
1001	417492.03	599795.81	5	0.06	0.08	0.02					
1002	417491.84	599790.81	8	0.07	0.09	0.02					
1003	417491.66	599785.81	10	0.08	0.10	0.02					
1004	417491.47	599780.81	12	0.08	0.10	0.02					
1005	417491.28	599775.81	15	0.09	0.12	0.03					
1006	417491.09	599770.81	19	0.12	0.17	0.05					
1007	417490.91	599765.81	28	0.15	0.25	0.09					
1008	417490.72	599760.81	29	0.15	0.23	0.08					
1009	417490.53	599755.81	31	0.13	0.20	0.07					
1010	417490.34	599750.81	31	0.13	0.20	0.06					
1011	417499.66	599865.62	2	0.06	0.10	0.03					
1012	417499.47	599860.62	1	0.06	0.10	0.03					
1013	417499.28	599855.62	0	0.06	0.10	0.03					
1014	417499.09	599850.62	0	0.06	0.09	0.03					
1015	417498.91	599845.62	0	0.06	0.09	0.03					
1016	417498.72	599840.62	0	0.06	0.09	0.03					
1017	417498.53	599835.62	0	0.06	0.09	0.03					
1018	417498.34	599830.62	0	0.06	0.09	0.03					
1019	417498.16	599825.62	0	0.06	0.09	0.03					
1020	417497.97	599820.62	0	0.06	0.09	0.02					
1021	417497.78	599815.62	0	0.06	0.09	0.02					
1022	417497.59	599810.62	0	0.06	0.09	0.02					
1023	417497.41	599805.62	0	0.06	0.09	0					

NH3 Concentrations (from modelled Roads only) at Grade										NH3 Concentrations (from modelled Roads only) at Ground Level										Nitrogen Deposition (from modelled Roads only) at Grade										Nitrogen Deposition (from modelled Roads only) at Ground Level									
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor name	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact					
1064	417508.53	599835.25	0	0.32	0.52	0.19	1064	417508.53	599835.25	0	0.06	0.09	0.03	1064	417508.53	599835.25	0	3.22	5.16	1.94	1064	417508.53	599835.25	0	0.64	0.92	0.28	1064	417508.53	599835.25	0	0.64	0.92	0.28					
1065	417508.34	599830.25	0	0.32	0.52	0.19	1065	417508.34	599830.25	0	0.06	0.09	0.03	1065	417508.34	599830.25	0	3.22	5.16	1.94	1065	417508.34	599830.25	0	0.64	0.90	0.27	1065	417508.34	599830.25	0	0.64	0.90	0.27					
1066	417508.16	599825.25	0	0.32	0.52	0.19	1066	417508.16	599825.25	2	0.06	0.09	0.03	1066	417508.16	599825.25	0	3.22	5.15	1.94	1066	417508.16	599825.25	2	0.64	0.90	0.26	1066	417508.16	599825.25	2	0.64	0.90	0.26					
1067	417507.97	599820.25	0	0.32	0.52	0.19	1067	417507.97	599820.25	4	0.07	0.09	0.03	1067	417507.97	599820.25	0	3.22	5.15	1.93	1067	417507.97	599820.25	4	0.65	0.91	0.26	1067	417507.97	599820.25	4	0.65	0.91	0.26					
1068	417507.78	599815.25	0	0.32	0.52	0.19	1068	417507.78	599815.25	6	0.07	0.09	0.03	1068	417507.78	599815.25	0	3.22	5.15	1.93	1068	417507.78	599815.25	6	0.67	0.93	0.25	1068	417507.78	599815.25	6	0.67	0.93	0.25					
1069	417507.59	599810.25	0	0.32	0.52	0.19	1069	417507.59	599810.25	8	0.07	0.09	0.03	1069	417507.59	599810.25	0	3.22	5.15	1.93	1069	417507.59	599810.25	8	0.71	0.96	0.26	1069	417507.59	599810.25	8	0.71	0.96	0.26					
1070	417507.41	599805.25	0	0.32	0.52	0.19	1070	417507.41	599805.25	10	0.07	0.09	0.03	1070	417507.41	599805.25	0	3.22	5.15	1.93	1070	417507.41	599805.25	10	0.67	0.93	0.25	1070	417507.41	599805.25	10	0.67	0.93	0.25					
1071	417507.22	599800.25	0	0.32	0.52	0.19	1071	417507.22	599800.25	12	0.07	0.10	0.03	1071	417507.22	599800.25	0	3.22	5.15	1.93	1071	417507.22	599800.25	12	0.71	0.96	0.26	1071	417507.22	599800.25	12	0.71	0.96	0.26					
1072	417507.03	599795.25	0	0.32	0.52	0.19	1072	417507.03	599795.25	14	0.08	0.11	0.03	1072	417507.03	599795.25	0	3.22	5.15	1.93	1072	417507.03	599795.25	14	0.78	1.06	0.28	1072	417507.03	599795.25	14	0.78	1.06	0.28					
1073	417506.84	599790.25	0	0.32	0.52	0.19	1073	417506.84	599790.25	15	0.09	0.13	0.03	1073	417506.84	599790.25	0	3.22	5.15	1.94	1073	417506.84	599790.25	15	0.94	1.29	0.35	1073	417506.84	599790.25	15	0.94	1.29	0.35					
1074	417506.66	599785.25	0	0.32	0.52	0.19	1074	417506.66	599785.25	18	0.11	0.16	0.05	1074	417506.66	599785.25	0	3.22	5.15	1.94	1074	417506.66	599785.25	18	1.09	1.55	0.46	1074	417506.66	599785.25	18	1.09	1.55	0.46					
1075	417506.47	599780.31	0	0.32	0.52	0.19	1075	417506.47	599780.31	25	0.14	0.21	0.08	1075	417506.47	599780.31	0	3.22	5.15	1.94	1075	417506.47	599780.31	25	1.36	2.12	0.76	1075	417506.47	599780.31	25	1.36	2.12	0.76					
1076	417506.28	599775.31	0	0.32	0.52	0.19	1076	417506.28	599775.31	29	0.13	0.20	0.07	1076	417506.28	599775.31	0	3.21	5.15	1.94	1076	417506.28	599775.31	29	1.29	1.98	0.68	1076	417506.28	599775.31	29	1.29	1.98	0.68					
1077	417506.09	599770.31	0	0.32	0.52	0.19	1077	417506.09	599770.31	30	0.13	0.19	0.06	1077	417506.09	599770.31	0	3.21	5.16	1.94	1077	417506.09	599770.31	30	1.25	1.89	0.64	1077	417506.09	599770.31	30	1.25	1.89	0.64					
1078	417505.91	599765.31	0	0.32	0.52	0.19	1078	417505.91	599765.31	30	0.13	0.19	0.06	1078	417505.91	599765.31	0	3.21	5.16	1.94	1078	417505.91	599765.31	30	1.25	1.89	0.64	1078	417505.91	599765.31	30	1.25	1.89	0.64					
1079	417515.99	599875.25	0	0.31	0.48	0.17	1079	417515.99	599875.25	2	0.07	0.10	0.04	1079	417515.99	599875.25	0	3.05	4.80	1.75	1079	417515.99	599875.25	2	0.65	1.04	0.38	1079	417515.99	599875.25	2	0.65	1.04	0.38					
1080	417514.81	599870.06	0	0.31	0.48	0.18	1080	417514.81	599870.06	0	0.07	0.10	0.04	1080	417514.81	599870.06	0	3.05	4.80	1.75	1080	417514.81	599870.06	0	0.65	1.02	0.37	1080	417514.81	599870.06	0	0.65	1.02	0.37					
1081	417514.62	599865.06	0	0.31	0.48	0.18	1081	417514.62	599865.06	0	0.07	0.10	0.03	1081	417514.62	599865.06	0	3.05	4.80	1.75	1081	417514.62	599865.06	0	0.64	1.00	0.36	1081	417514.62	599865.06	0	0.64	1.00	0.36					
1082	417514.44	599860.06	0	0.31	0.48	0.18	1082	417514.44	599860.06	0	0.07	0.10	0.03	1082	417514.44	599860.06	0	3.04	4.80	1.76	1082	417514.44	599860.06	0	0.64	0.98	0.34	1082	417514.44	599860.06	0	0.64	0.98	0.34					
1083	417514.25	599855.06	0	0.31	0.48	0.18	1083	417514.25	599855.06	0	0.07	0.10	0.03	1083	417514.25	599855.06	0	3.04	4.80	1.76	1083	417514.25	599855.06	0	0.64	0.97	0.33	1083	417514.25	599855.06	0	0.64	0.97	0.33					
1084	417514.06	599850.06	0	0.31	0.48	0.18	1084	417514.06	599850.06	0	0.07	0.10	0.03	1084	417514.06	599850.06	0	3.04	4.80	1.76	1084	417514.06	599850.06	0	0.64	0.96	0.32	1084	417514.06	599850.06	0	0.64	0.96	0.32					
1085	417513.88	599845.06	0	0.31	0.48	0.18	1085	417513.88	599845.06	0	0.07	0.10	0.03	1085	417513.88	599845.06	0	3.04	4.80	1.76	1085	417513.88	599845.06	0	0.64	0.95	0.31	1085	417513.88	599845.06	0	0.64	0.95	0.31					
1086	417513.69	599840.06	0	0.31	0.48	0.18	1086	417513.69	599840.06	0	0.07	0.09	0.03	1086	417513.69	599840.06	0	3.04	4.80	1.76	1086	417513.69	599840.06	0	0.64	0.94	0.30	1086	417513.69	599840.06	0	0.64	0.94	0.30					
1087	417513.51	599835.06	0	0.31	0.48	0.18	1087	417513.51	599835.06	0	0.07	0.09	0.03	1087	417513.51	599835.06	0	3.04	4.80	1.76	1087	417513.51	599835.06	0	0.64	0.93	0.29	1087	417513.51	599835.06	0	0.64	0.93	0.29					
1088	417513.32	599830.06	0	0.31	0.48	0.18	1088	417513.32	599830.06	0	0.07	0.09	0.03	1088	417513.32	599830.06	0	3.03	4.80	1.76	1088	417513.32	599830.06	0	0.64	0.92	0.28	1088	417513.32	599830.06	0	0.64	0.92	0.28					
1089	417513.12	599825.06	0	0.31	0.48	0.18	1089	417513.12	599825.06	0	0.07	0.09	0.03	1089	417513.12	599825.06	0	3.03	4.80	1.76	1089	417513.12	599825.06	0	0.64	0.91	0.27	1089	417513.12	599825.06	0	0.64	0.91	0.27					
1090	417512.94	599820.06	0	0.31	0.48	0.18	1090	417512.94	599820.06	3	0.07	0.09	0.03	1090	417512.94	599820.06	0	3.03	4.79	1.76	1090	417512.94	599820.06	3	0.65	0.92	0.27	1090	417512.94	599820.06	3	0.65	0.92	0.27					
1091	417512.78	599815.06	0	0.31	0.48	0.18	1091	417512.78	599815.06	5	0.07	0.09	0.03	1091	417512.78	599815.06	0	3.03	4.79	1.76	1091	417512.78	599815.06	5	0.67	0.94	0.27	1091	417512.78	599815.06	5	0.67	0.94	0.27					
1092	417512.59	599810.06	0	0.31	0.48	0.18	1092	417512.59	599810.06	6	0.07	0.10	0.03	1092	417512.59	599810.06	0	3.03	4.79	1.76	1092	417512.59	599810.06	6	0.68	0.95	0.27	1092	417512.59	599810.06	6	0.68	0.95	0.27					
1093	417512.41	599805.06	0	0.31	0.48	0.18	1093	417512.41	599805.06	8	0.07	0.10	0.03	1093	417512.41	599805.06	0	3.03	4.79	1.76	1093	417512.41	599805.06	8	0.72	0.99	0.27	1093	417512.41	599805.06	8	0.72	0.99	0.27					
1094	417512.22	599800.06	0	0.31	0.48	0.18	1094	417512.22	599800.06	10	0.08	0.10	0.03	1094	417512.22	599800.06	0	3.03	4.79	1.76	1094	417512.22	599800.06	10	0.76	1.04	0.28	1094	417512.22	599800.06	10	0.76	1.04	0.28					
1095	417512.03	599795.06	0	0.31	0.48	0.18	1095	417512.03	599795.06	13	0.09	0.12	0.03	1095	417512.03	599795.06	0	3.03	4.79	1.76	1095	417512.03	599795.06	13	0.86	1.18	0.32	1095	417512.03	599795.06	13	0.86	1.18	0.32					
1096	417511.84	599790.06	0	0.31	0.48	0.18	1096	417511.84	599790.06	18	0.11	0.15	0.05	1096	417511.84	599790.06	0	3.03	4.79	1.76	1096	417511.84	599790.06	18	1.07	1.54	0.46	1096	417511.84	599790.06	18	1.07	1.54	0.46					
1097	417511.66	599785.06	0	0.31	0.48	0.18	1097	417511.66	599785.06	20	0.07	0.09	0.03	1097	417511.66	599785.06	0	3.03	4.79	1.76	1097	417511.66	599785.06	20	0.64	0.93	0.29	1097	417511.										

NH3 Concentrations (from modelled Roads only) at Grade										
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact				
1197	417538.31	599829.12	0	0.24	0.36	0.12				
1198	417538.12	599824.12	0	0.24	0.36	0.12				
1199	417537.94	599819.12	0	0.24	0.36	0.12				
1200	417537.75	599814.12	0	0.24	0.36	0.12				
1201	417537.56	599809.12	0	0.24	0.36	0.12				
1202	417537.38	599804.12	0	0.24	0.36	0.12				
1203	417537.19	599799.12	0	0.24	0.36	0.12				
1204	417537.01	599794.12	0	0.24	0.36	0.12				
1205	417536.81	599789.12	0	0.24	0.36	0.12				
1206	417536.62	599784.12	0	0.24	0.36	0.12				
1207	417536.44	599779.12	0	0.23	0.34	0.11				
1208	417545	599873.88	0	0.23	0.34	0.11				
1209	417544.81	599868.94	0	0.23	0.34	0.11				
1210	417544.62	599863.94	0	0.23	0.34	0.11				
1211	417544.44	599858.94	0	0.23	0.34	0.11				
1212	417544.25	599853.94	0	0.23	0.34	0.11				
1213	417544.06	599848.94	0	0.23	0.34	0.11				
1214	417543.88	599843.94	0	0.23	0.34	0.11				
1215	417543.69	599838.94	0	0.23	0.34	0.11				
1216	417543.51	599833.94	0	0.23	0.34	0.11				
1217	417543.31	599828.94	0	0.23	0.34	0.11				
1218	417543.12	599823.94	0	0.23	0.34	0.11				
1219	417542.94	599818.94	0	0.23	0.34	0.11				
1220	417542.75	599813.94	0	0.23	0.34	0.11				
1221	417542.56	599808.94	0	0.23	0.34	0.11				
1222	417542.38	599803.94	0	0.23	0.34	0.11				
1223	417542.19	599798.94	0	0.23	0.34	0.11				
1224	417542.01	599793.94	0	0.23	0.34	0.11				
1225	417541.81	599788.94	0	0.23	0.34	0.11				
1226	417541.62	599783.94	0	0.22	0.33	0.11				
1227	417541.44	599778.94	0	0.22	0.33	0.11				
1228	417541.25	599773.94	0	0.22	0.33	0.11				
1229	417541.06	599768.94	0	0.22	0.33	0.11				
1230	417540.88	599763.94	0	0.22	0.33	0.11				
1231	417540.69	599758.94	0	0.22	0.33	0.11				
1232	417540.51	599753.94	0	0.22	0.33	0.11				
1233	417540.31	599748.94	0	0.22	0.33	0.11				
1234	417540.12	599743.94	0	0.22	0.33	0.11				
1235	417539.94	599738.94	0	0.22	0.33	0.11				
1236	417539.75	599733.94	0	0.22	0.33	0.11				
1237	417539.56	599728.94	0	0.22	0.33	0.11				
1238	417539.38	599723.94	0	0.22	0.33	0.11				
1239	417539.19	599718.94	0	0.22	0.33	0.11				
1240	417539.01	599713.94	0	0.22	0.33	0.11				
1241	417538.81	599708.94	0	0.22	0.33	0.11				
1242	417538.62	599703.94	0	0.22	0.33	0.11				
1243	417538.44	599698.94	0	0.22	0.33	0.11				
1244	417538.25	599693.94	0	0.22	0.33	0.11				
1245	417538.06	599688.94	0	0.22	0.33	0.11				
1246	417537.88	599683.94	0	0.21	0.31	0.10				
1247	417537.69	599678.94	0	0.21	0.31	0.10				
1248	417537.51	599673.94	0	0.21	0.31	0.10				
1249	417537.31	599668.94	0	0.21	0.31	0.10				
1250	417537.12	599663.94	0	0.21	0.31	0.10				
1251	417536.94	599658.94	0	0.21	0.31	0.10				
1252	417536.75	599653.94	0	0.21	0.31	0.10				
1253	417536.56	599648.94	0	0.21	0.31	0.10				
1254	417536.38	599643.94	0	0.21	0.31	0.10				
1255	417536.19	599638.94	0	0.21	0.31	0.10				
1256	417536.01	599633.94	0	0.21	0.31	0.10				
1257	417535.81	599628.94	0	0.21	0.31	0.10				
1258	417535.62	599623.94	0	0.21	0.31	0.10				
1259	417535.44	599618.94	0	0.21	0.31	0.10				
1260	417535.25	599613.94	0	0.21	0.31	0.10				
1261	417535.06	599608.94	0	0.21	0.31	0.10				
1262	417534.88	599603.94	0	0.21	0.31	0.10				
1263	417534.69	599598.94	0	0.21	0.31	0.10				
1264	417534.51	599593.94	0	0.21	0.31	0.10				
1265	417534.31	599588.94	0	0.21	0.30	0.10				
1266	417534.12	599583.94	0	0.21	0.30	0.10				
1267	417533.94	599578.94	0	0.21	0.30	0.10				
1268	417533.75	599573.94	0	0.21	0.30	0.10				
1269	417533.56	599568.94	0	0.21	0.30	0.10				
1270	417533.38	599563.94	0	0.21	0.30	0.10				
1271	417533.19	599558.94	0	0.21	0.30	0.10				
1272	417533.01	599553.94	0	0.21	0.30	0.10				
1273	417532.81	599548.94	0	0.21	0.30	0.10				
1274	417532.62	599543.94	0	0.21	0.30	0.10				
1275	417532.44	599538.94	0	0.21	0.30	0.10				
1276	417532.25	599533.94	0	0.21	0.30	0.10				
1277	417532.06	599528.94	0	0.21	0.30	0.10				
1278	417531.88	599523.94	0	0.21	0.30	0.10				
1279	417531.69	599518.94	0	0.21	0.30	0.10				
1280	417531.51	599513.94	0	0.21	0.30	0.10				
1281	417531.31	599508.94	0	0.21	0.30	0.10				
1282	417531.12	599503.94	0	0.21	0.30	0.10				
1283	417530.94	599498.94	0	0.20	0.29	0.09				
1284	417530.75	599493.94	0	0.20	0.29	0.09				
1285	417530.56	599488.94	0	0.20	0.29	0.09				
1286	417530.38	599483.94	0	0.20	0.29	0.09				
1287	417530.19	599478.94	0	0.20	0.29	0.09				
1288	417530.01	599473.94	0	0.20	0.29	0.09				
1289	417529.81	599468.94	0	0.20	0.29	0.09				
1290	417529.62	599463.94	0	0.20	0.29	0.09				
1291	417529.44	599458.94	0	0.20	0.29	0.09				
1292	417529.25	599453.94	0	0.20	0.29	0.09				
1293	417529.06	599448.94	0	0.20	0.29	0.09				
1294	417528.88	599443.94	0	0.20	0.29	0.09				
1295	417528.69	599438.94	0	0.20	0.29	0.09				
1296	417528.51	599433.94	0	0.20	0.29	0.09				
1297	417528.31	599428.94	0	0.20	0.29	0.09				
1298	417528.12	599423.94	0	0.20	0.29	0.09				
1299	417527.94	599418.94	0	0.20	0.29	0.09				
1300	417527.75	599413.94	0	0.20	0.29	0.09				
1301	417527.56	599408.94	0	0.20	0.29	0.09				
1302	417527.38	599403.94	0	0.20	0.29	0.09				
1303	417527.19	599398.94	0	0.19	0.28	0.09				
1304	417527.01	599393.94	0	0.19	0.28	0.09				
1305	417526.81	599388.94	0	0.19	0.28	0.09				
1306	417526.62	599383.94	0	0.19	0.28	0.09				
1307	417526.44	599378.94	0	0.19	0.28	0.09				
1308	417526.25	599373.94	0	0.19	0.28	0.09				
1309	417526.06	599368.94	0	0.19	0.28	0.09				
1310	417525.88	599363.94	0	0.19	0.28	0.09				
1311	417525.69	599358.94	0	0.19	0.28	0.09				
1312	417525.51	599353.94	0	0.19	0.28	0.09				
1313	417525.31	599348.94	0	0.19	0.28	0.09				
1314	417525.12	599343.94	0	0.19	0.28	0.09				
1315	417524.94	599338.94	0	0.19	0.28	0.09				
1316	417524.75	599333.94	0	0.19	0.28	0.09				
1317	417524.56	599328.94	0	0.19	0.28	0.09				
1318	417524.38	599323.94	0	0.19	0.28	0.09				
1319	417524.19	599318.94	0	0.19	0.28	0.09				
1320	417524.01	599313.94	0	0.19	0.28	0.09				
1321	417523.81	599308.94	0	0.19	0.27	0.09				
1322	417523.62	599303.94	0	0.19	0.27	0.09				
1323	417523.44	599298.94	0	0.19	0.27	0.09				
1324	417523.25	599293.94	0	0.19	0.27	0.09				
1325	417523.06	599288.94	0	0.19	0.27	0.09				
1326	417522.88	599283.94	0	0.19	0.27	0.09				
1327	417522.69	599278.94	0	0.19	0.27	0.09				
1328	417522.51	599273.94	0	0.19	0.27	0.09				
1329	417522.31	599268.94	0	0.19	0.27	0.09				

NH3 Concentrations (from modelled Roads only) at Ground Level										
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact				

NH3 Concentrations (from modelled Roads only) at Grade							NH3 Concentrations (from modelled Roads only) at Ground Level							Nitrogen Deposition (from modelled Roads only) at Grade							Nitrogen Deposition (from modelled Roads only) Ground Level						
Receptor ID	X	Y	Z (receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor name	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
1330	147574.03	599847.81	0	0.19	0.27	0.08	1330	147574.03	599847.81	6	0.08	0.11	0.04	1330	147574.03	599847.81	0	1.86	2.69	0.83	1330	147574.03	599847.81	6	0.76	1.12	0.35
1331	147573.84	599842.81	0	0.19	0.27	0.08	1331	147573.84	599842.81	8	0.08	0.11	0.04	1331	147573.84	599842.81	0	1.86	2.69	0.83	1331	147573.84	599842.81	8	0.78	1.14	0.36
1332	147573.66	599837.81	0	0.19	0.27	0.08	1332	147573.66	599837.81	10	0.08	0.12	0.04	1332	147573.66	599837.81	0	1.86	2.69	0.83	1332	147573.66	599837.81	10	0.80	1.17	0.36
1333	147573.47	599832.81	0	0.19	0.27	0.08	1333	147573.47	599832.81	12	0.08	0.12	0.04	1333	147573.47	599832.81	0	1.86	2.69	0.83	1333	147573.47	599832.81	12	0.83	1.20	0.37
1334	147573.28	599827.81	0	0.19	0.27	0.08	1334	147573.28	599827.81	14	0.09	0.13	0.04	1334	147573.28	599827.81	0	1.86	2.69	0.83	1334	147573.28	599827.81	14	0.85	1.24	0.38
1335	147573.09	599822.81	0	0.19	0.27	0.08	1335	147573.09	599822.81	17	0.09	0.13	0.04	1335	147573.09	599822.81	0	1.86	2.69	0.83	1335	147573.09	599822.81	17	0.89	1.30	0.40
1336	147572.91	599817.81	0	0.19	0.27	0.08	1336	147572.91	599817.81	19	0.09	0.13	0.04	1336	147572.91	599817.81	0	1.86	2.69	0.83	1336	147572.91	599817.81	19	0.92	1.33	0.42
1337	147572.72	599812.81	0	0.19	0.27	0.08	1337	147572.72	599812.81	22	0.10	0.14	0.04	1337	147572.72	599812.81	0	1.86	2.69	0.83	1337	147572.72	599812.81	22	0.94	1.37	0.43
1338	147572.53	599807.81	0	0.19	0.27	0.08	1338	147572.53	599807.81	25	0.10	0.14	0.04	1338	147572.53	599807.81	0	1.86	2.69	0.83	1338	147572.53	599807.81	25	0.95	1.38	0.43
1339	147572.34	599802.81	0	0.19	0.27	0.08	1339	147572.34	599802.81	27	0.10	0.14	0.04	1339	147572.34	599802.81	0	1.86	2.69	0.83	1339	147572.34	599802.81	27	0.94	1.37	0.43
1340	147572.16	599797.81	0	0.19	0.27	0.08	1340	147572.16	599797.81	28	0.09	0.14	0.04	1340	147572.16	599797.81	0	1.86	2.69	0.83	1340	147572.16	599797.81	28	0.93	1.35	0.42
1341	147580.72	599892.56	0	0.18	0.26	0.08	1341	147580.72	599892.56	1	0.08	0.12	0.04	1341	147580.72	599892.56	0	1.80	2.60	0.80	1341	147580.72	599892.56	1	0.74	1.15	0.41
1342	147580.53	599887.56	0	0.18	0.26	0.08	1342	147580.53	599887.56	0	0.08	0.12	0.04	1342	147580.53	599887.56	0	1.80	2.60	0.80	1342	147580.53	599887.56	0	0.74	1.17	0.43
1343	147580.34	599882.56	0	0.18	0.26	0.08	1343	147580.34	599882.56	0	0.08	0.12	0.04	1343	147580.34	599882.56	0	1.80	2.60	0.80	1343	147580.34	599882.56	0	0.74	1.14	0.40
1344	147580.16	599877.56	0	0.18	0.26	0.08	1344	147580.16	599877.56	0	0.08	0.11	0.04	1344	147580.16	599877.56	0	1.80	2.60	0.80	1344	147580.16	599877.56	0	0.75	1.14	0.40
1345	147579.97	599872.62	0	0.18	0.26	0.08	1345	147579.97	599872.62	0	0.08	0.11	0.04	1345	147579.97	599872.62	0	1.80	2.60	0.80	1345	147579.97	599872.62	0	0.74	1.13	0.39
1346	147579.78	599867.62	0	0.18	0.26	0.08	1346	147579.78	599867.62	0	0.08	0.11	0.04	1346	147579.78	599867.62	0	1.80	2.60	0.80	1346	147579.78	599867.62	0	0.74	1.12	0.38
1347	147579.59	599862.62	0	0.18	0.26	0.08	1347	147579.59	599862.62	0	0.08	0.11	0.04	1347	147579.59	599862.62	0	1.80	2.60	0.80	1347	147579.59	599862.62	0	0.74	1.11	0.37
1348	147579.41	599857.62	0	0.18	0.26	0.08	1348	147579.41	599857.62	2	0.08	0.11	0.04	1348	147579.41	599857.62	0	1.80	2.60	0.80	1348	147579.41	599857.62	2	0.75	1.10	0.36
1349	147579.22	599852.62	0	0.18	0.26	0.08	1349	147579.22	599852.62	5	0.08	0.11	0.04	1349	147579.22	599852.62	0	1.80	2.61	0.80	1349	147579.22	599852.62	5	0.76	1.12	0.36
1350	147579.03	599847.62	0	0.18	0.26	0.08	1350	147579.03	599847.62	7	0.08	0.11	0.04	1350	147579.03	599847.62	0	1.80	2.61	0.80	1350	147579.03	599847.62	7	0.77	1.13	0.36
1351	147578.84	599842.62	0	0.18	0.26	0.08	1351	147578.84	599842.62	9	0.08	0.12	0.04	1351	147578.84	599842.62	0	1.80	2.61	0.80	1351	147578.84	599842.62	9	0.79	1.15	0.36
1352	147578.66	599837.62	0	0.18	0.26	0.08	1352	147578.66	599837.62	11	0.08	0.12	0.04	1352	147578.66	599837.62	0	1.80	2.61	0.80	1352	147578.66	599837.62	11	0.81	1.18	0.37
1353	147578.47	599832.62	0	0.18	0.26	0.08	1353	147578.47	599832.62	12	0.08	0.12	0.04	1353	147578.47	599832.62	0	1.81	2.60	0.80	1353	147578.47	599832.62	12	0.82	1.19	0.37
1354	147578.28	599827.62	0	0.18	0.26	0.08	1354	147578.28	599827.62	14	0.09	0.12	0.04	1354	147578.28	599827.62	0	1.81	2.60	0.80	1354	147578.28	599827.62	14	0.85	1.23	0.38
1355	147578.09	599822.62	0	0.18	0.26	0.08	1355	147578.09	599822.62	17	0.09	0.13	0.04	1355	147578.09	599822.62	0	1.81	2.60	0.80	1355	147578.09	599822.62	17	0.88	1.28	0.40
1356	147577.91	599817.62	0	0.18	0.26	0.08	1356	147577.91	599817.62	20	0.09	0.13	0.04	1356	147577.91	599817.62	0	1.81	2.60	0.79	1356	147577.91	599817.62	20	0.91	1.33	0.41
1357	147577.72	599812.62	0	0.18	0.26	0.08	1357	147577.72	599812.62	23	0.09	0.14	0.04	1357	147577.72	599812.62	0	1.80	2.60	0.80	1357	147577.72	599812.62	23	0.93	1.35	0.42
1358	147577.53	599807.62	0	0.18	0.26	0.08	1358	147577.53	599807.62	25	0.09	0.14	0.04	1358	147577.53	599807.62	0	1.80	2.60	0.80	1358	147577.53	599807.62	25	0.93	1.36	0.42
1359	147577.34	599802.62	0	0.18	0.26	0.08	1359	147577.34	599802.62	27	0.09	0.14	0.04	1359	147577.34	599802.62	0	1.80	2.60	0.80	1359	147577.34	599802.62	27	0.92	1.34	0.42
1360	147577.16	599797.62	0	0.18	0.26	0.08	1360	147577.16	599797.62	28	0.09	0.13	0.04	1360	147577.16	599797.62	0	1.80	2.60	0.80	1360	147577.16	599797.62	28	0.92	1.33	0.41
1361	147585.72	599892.38	0	0.18	0.25	0.08	1361	147585.72	599892.38	1	0.08	0.12	0.04	1361	147585.72	599892.38	0	1.75	2.52	0.77	1361	147585.72	599892.38	1	0.75	1.18	0.43
1362	147585.53	599887.38	0	0.18	0.25	0.08	1362	147585.53	599887.38	0	0.08	0.12	0.04	1362	147585.53	599887.38	0	1.75	2.52	0.77	1362	147585.53	599887.38	0	0.75	1.17	0.42
1363	147585.34	599882.38	0	0.18	0.25	0.08	1363	147585.34	599882.38	0	0.08	0.12	0.04	1363	147585.34	599882.38	0	1.75	2.52	0.77	1363	147585.34	599882.38	0	0.75	1.18	0.43
1364	147585.16	599877.38	0	0.18	0.25	0.08	1364	147585.16	599877.38	0	0.08	0.11	0.04	1364	147585.16	599877.38	0	1.75	2.52	0.77	1364	147585.16	599877.38	0	0.75	1.14	0.40
1365	147584.97	599872.44	0	0.18	0.25	0.08	1365	147584.97	599872.44	0	0.08	0.11	0.04	1365	147584.97	599872.44	0	1.75	2.52	0.77	1365	147584.97	599872.44	0	0.75	1.13	0.39
1366	147584.78	599867.44	0	0.18	0.25	0.08	1366	147584.78	599867.44	0	0.08	0.11	0.04	1366	147584.78	599867.44	0	1.75	2.52	0.77	1366	147584.78	599867.44	0	0.75	1.12	0.38
1367	147584.59	599862.44	0	0.18	0.25	0.08	1367	147584.59	599862.44	0	0.08	0.11	0.04	1367	147584.59	599862.44	0	1.75	2.52	0.77	1367	147584.59	599862.44	0	0.75	1.11	0.37
1368	147584.41	599857.44	0	0.18	0.25	0.08	1368	147584.41	599857.44	2	0.08	0.11	0.04	1368	147584.41	599857.44	0	1.75	2.52	0.77	1368	147584.41	599857.44	2	0.75	1.11	0.36
1369	147584.22	599852.44	0	0.18	0.25	0.08	1369	147584.22	599852.44	5	0.08	0.11	0.04	1369	147584.22	599852.44	0	1.75	2.52	0.77	1369	147584.22	599852.44	5	0.76	1.12	0.36
1370	147584.03	599847.44	0	0.18	0.25	0.08	1370	147584.03	599847.44	7	0.08	0.11	0.04	1370	147584.03	599847.44	0	1.76	2.52	0.77	1370	147584.03	599847.44	7	0.77	1.13	0.36
1371	147583.84	599842.44	0	0.18	0.25	0.08	1371	147583.84	599842.44	9	0.08	0.12	0.04	1371	147583.84	599842.44	0	1.76	2.52	0.77	1371	147583.84	599842.44	9	0.79	1.15	0.36
1372	147583.66	599837.44	0	0.18	0.25	0.08	1372	147583.66	599837.44																		

NH3 Concentrations (from modelled Roads only) at Grade						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
1463	417602.16	599796.69	0	0.16	0.22	0.07
1464	417610.88	599896.44	0	0.16	0.22	0.06
1465	417610.69	599891.44	0	0.16	0.22	0.06
1466	417610.55	599886.44	0	0.16	0.22	0.06
1467	417610.31	599881.44	0	0.16	0.22	0.06
1468	417610.12	599876.5	0	0.16	0.22	0.06
1469	417609.94	599871.5	0	0.16	0.22	0.06
1470	417609.75	599866.5	0	0.16	0.22	0.06
1471	417609.56	599861.5	0	0.16	0.22	0.06
1472	417609.38	599856.5	0	0.16	0.22	0.06
1473	417609.19	599851.5	0	0.16	0.22	0.06
1474	417609	599846.5	0	0.16	0.22	0.06
1475	417608.81	599841.5	0	0.16	0.22	0.06
1476	417608.62	599836.5	0	0.16	0.22	0.06
1477	417608.44	599831.5	0	0.16	0.22	0.06
1478	417608.25	599826.5	0	0.16	0.22	0.06
1479	417608.06	599821.5	0	0.16	0.22	0.06
1480	417607.88	599816.5	0	0.16	0.22	0.06
1481	417607.69	599811.5	0	0.16	0.22	0.06
1482	417607.5	599806.5	0	0.16	0.22	0.06
1483	417607.31	599801.5	0	0.16	0.22	0.06
1484	417607.12	599796.5	0	0.16	0.22	0.06
1485	417615.88	599896.25	0	0.15	0.21	0.06
1486	417615.69	599891.25	0	0.15	0.21	0.06
1487	417615.5	599886.25	0	0.15	0.21	0.06
1488	417615.31	599881.25	0	0.15	0.21	0.06
1489	417615.12	599876.31	0	0.15	0.21	0.06
1490	417614.94	599871.31	0	0.15	0.21	0.06
1491	417614.75	599866.31	0	0.15	0.21	0.06
1492	417614.56	599861.31	0	0.15	0.21	0.06
1493	417614.38	599856.31	0	0.15	0.21	0.06
1494	417614.19	599851.31	0	0.15	0.21	0.06
1495	417614	599846.31	0	0.15	0.21	0.06
1496	417613.81	599841.31	0	0.15	0.21	0.06
1497	417613.62	599836.31	0	0.15	0.21	0.06
1498	417613.44	599831.31	0	0.15	0.21	0.06
1499	417613.25	599826.31	0	0.15	0.21	0.06
1500	417613.06	599821.31	0	0.15	0.21	0.06
1501	417612.88	599816.31	0	0.15	0.21	0.06
1502	417612.69	599811.31	0	0.15	0.21	0.06
1503	417612.5	599806.31	0	0.15	0.21	0.06
1504	417612.31	599801.31	0	0.15	0.21	0.06
1505	417612.12	599796.31	0	0.15	0.21	0.06
1506	417611.94	599791.31	0	0.15	0.21	0.06
1507	417611.75	599786.31	0	0.15	0.21	0.06
1508	417611.56	599781.31	0	0.15	0.21	0.06
1509	417611.38	599776.31	0	0.15	0.21	0.06
1510	417611.19	599771.31	0	0.15	0.21	0.06
1511	417611.01	599766.31	0	0.15	0.21	0.06
1512	417610.82	599761.31	0	0.15	0.21	0.06
1513	417610.64	599756.31	0	0.15	0.21	0.06
1514	417610.45	599751.31	0	0.15	0.21	0.06
1515	417610.27	599746.31	0	0.15	0.21	0.06
1516	417610.08	599741.31	0	0.15	0.21	0.06
1517	417609.89	599736.31	0	0.15	0.21	0.06
1518	417609.71	599731.31	0	0.15	0.21	0.06
1519	417609.52	599726.31	0	0.15	0.21	0.06
1520	417609.34	599721.31	0	0.15	0.21	0.06
1521	417609.15	599716.31	0	0.15	0.21	0.06
1522	417608.96	599711.31	0	0.15	0.21	0.06
1523	417608.78	599706.31	0	0.15	0.21	0.06
1524	417608.59	599701.31	0	0.15	0.21	0.06
1525	417617.55	599806.12	0	0.15	0.21	0.06
1526	417617.37	599801.12	0	0.15	0.21	0.06
1527	417617.12	599796.12	0	0.15	0.21	0.06
1528	417616.88	599791.12	0	0.15	0.21	0.06
1529	417616.63	599786.12	0	0.15	0.21	0.06
1530	417616.38	599781.12	0	0.15	0.21	0.06
1531	417616.13	599776.12	0	0.15	0.21	0.06
1532	417615.88	599771.12	0	0.15	0.21	0.06
1533	417615.63	599766.12	0	0.15	0.21	0.06
1534	417615.38	599761.12	0	0.15	0.21	0.06
1535	417615.13	599756.12	0	0.15	0.21	0.06
1536	417614.88	599751.12	0	0.15	0.21	0.06
1537	417614.63	599746.12	0	0.15	0.21	0.06
1538	417614.38	599741.12	0	0.15	0.21	0.06
1539	417614.13	599736.12	0	0.15	0.21	0.06
1540	417613.88	599731.12	0	0.15	0.21	0.06
1541	417613.63	599726.12	0	0.15	0.21	0.06
1542	417613.38	599721.12	0	0.15	0.21	0.06
1543	417613.13	599716.12	0	0.15	0.21	0.06
1544	417612.88	599711.12	0	0.15	0.21	0.06
1545	417612.63	599706.12	0	0.15	0.21	0.06
1546	417612.38	599701.12	0	0.15	0.21	0.06
1547	417612.13	599696.12	0	0.15	0.21	0.06
1548	417611.88	599691.12	0	0.15	0.21	0.06
1549	417611.63	599686.12	0	0.15	0.21	0.06
1550	417611.38	599681.12	0	0.15	0.21	0.06
1551	417611.13	599676.12	0	0.15	0.21	0.06
1552	417610.88	599671.12	0	0.15	0.21	0.06
1553	417610.63	599666.12	0	0.15	0.21	0.06
1554	417610.38	599661.12	0	0.15	0.21	0.06
1555	417610.13	599656.12	0	0.15	0.21	0.06
1556	417609.88	599651.12	0	0.15	0.21	0.06
1557	417609.63	599646.12	0	0.15	0.21	0.06
1558	417609.38	599641.12	0	0.15	0.21	0.06
1559	417609.13	599636.12	0	0.15	0.21	0.06
1560	417608.88	599631.12	0	0.15	0.21	0.06
1561	417608.63	599626.12	0	0.15	0.21	0.06
1562	417608.38	599621.12	0	0.15	0.21	0.06
1563	417608.13	599616.12	0	0.15	0.21	0.06
1564	417607.88	599611.12	0	0.15	0.21	0.06
1565	417607.63	599606.12	0	0.15	0.21	0.06
1566	417607.38	599601.12	0	0.15	0.21	0.06
1567	417607.13	599596.12	0	0.15	0.21	0.06
1568	417606.88	599591.12	0	0.15	0.21	0.06
1569	417606.63	599586.12	0	0.15	0.21	0.06
1570	417606.38	599581.12	0	0.15	0.21	0.06
1571	417606.13	599576.12	0	0.15	0.21	0.06
1572	417605.88	599571.12	0	0.15	0.21	0.06
1573	417635.88	599895.5	0	0.14	0.20	0.05
1574	417635.69	599890.5	0	0.14	0.20	0.05
1575	417635.5	599885.5	0	0.14	0.20	0.05
1576	417635.31	599880.5	0	0.14	0.20	0.05
1577	417635.12	599875.5	0	0.14	0.20	0.05
1578	417634.94	599870.5	0	0.14	0.20	0.05
1579	417634.75	599865.5	0	0.14	0.20	0.05
1580	417634.56	599860.5	0	0.14	0.20	0.05
1581	417634.38	599855.5	0	0.14	0.20	0.05
1582	417634.19	599850.5	0	0.14	0.20	0.05
1583	417634	599845.5	0	0.14	0.20	0.05
1584	417633.81	599840.5	0	0.14	0.20	0.05
1585	417633.62	599835.5	0	0.14	0.20	0.05
1586	417633.44	599830.5	0	0.14	0.20	0.05
1587	417633.25	599825.5	0	0.14	0.20	0.05
1588	417633.06	599820.5	0	0.14	0.20	0.05
1589	417632.88	599815.5	0	0.14	0.20	0.05
1590	417632.69	599810.5	0	0.14	0.19	0.05
1591	417632.5	599805.5	0	0.14	0.19	0.05
1592	417632.31	599800.5	0	0.14	0.19	0.05
1593	417632.12	599795.5	0	0.14	0.19	0.05
1594	417640.84	599895.31	0	0.14	0.19	0.05
1595	417640.66	599890.31	0	0.14	0.19	0.05

NH3 Concentrations (from modelled Roads only) at Ground Level						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
1463	417602.16	599796.69	28	0.09	0.12	0.04
1464	417610.88	599896.44	1	0.08	0.12	0.04
1465	417610.69	599891.44	0	0.08	0.12	0.04
1466	417610.55	599886.44	0	0.08	0.12	0.04
1467	417610.31	599881.44	0	0.08	0.11	0.04
1468	417610.12	599876.5	0	0.08	0.11	0.04
1469	417609.94	599871.5	0	0.08	0.11	0.04
1470	417609.75	599866.5	1	0.08	0.11	0.04
1471	417609.56	599861.5	3	0.08	0.11	0.04
1472	417609.38	599856.5	4	0.08	0.11	0.04
1473	417609.19	599851.5	4	0.08	0.11	0.03
1474	417609	599846.5	5	0.08	0.11	0.03
1475	417608.81	599841.5	6	0.08	0.11	0.03
1476	417608.62	599836.5	8	0.08	0.11	0.03
1477	417608.44	599831.5	10	0.08	0.11	0.03
1478	417608.25	599826.5	13	0.08	0.12	0.03
1479	417608.06	599821.5	16	0.08	0.12	0.04
1480	417607.88	599816.5	19	0.09	0.12	0.04
1481	417607.69	599811.5	23	0.09	0.12	0.04
1482	417607.5	599806.5	25	0.09	0.12	0.04
1483	417607.31	599801.5	27	0.09	0.12	0.04
1484	417607.12	599796.5	28	0.09	0.12	0.04
1485	417615.88	599896.25	0	0.08	0.12	0.04
1486	417615.69	599891.25	0	0.08	0.12	0.04
1487	417615.5	599886.25	0	0.08	0.12	0.04
1488	417615.31	599881.25	0	0.08	0.12	0.04
1489	417615.12	599876.31	0	0.08	0.11	0.04
1490	417614.94	599871.31	0	0.08	0.11	0.04
1491	417614.75	599866.31	1	0.08	0.11	0.04
1492	417614.56	599861.31	1	0.08	0.11	0.04
1493	417614.38	599856.31	4	0.08	0.11	0.04
1494	417614.19	599851.31	4	0.08	0.11	0.03
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NH3 Concentrations (from modelled Roads only) at Grade							NH3 Concentrations (from modelled Roads only) at Ground Level							Nitrogen Deposition (from modelled Roads only) at Grade							Nitrogen Deposition (from modelled Roads only) Ground Level						
Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact	Receptor name	X	Y	Z (Receptor)	DM	DS	Impact	Receptor ID	X	Y	Z (Receptor)	DM	DS	Impact
1596	417640.5	599885.31	0	0.14	0.19	0.05	1596	417640.5	599885.31	0	0.08	0.11	0.04	1596	417640.5	599885.31	0	1.37	1.90	0.54	1596	417640.5	599885.31	0	0.75	1.14	0.38
1597	417640.31	599880.38	0	0.14	0.19	0.05	1597	417640.31	599880.38	0	0.08	0.11	0.04	1597	417640.31	599880.38	0	1.37	1.90	0.54	1597	417640.31	599880.38	0	0.75	1.13	0.37
1598	417640.12	599875.38	0	0.14	0.19	0.05	1598	417640.12	599875.38	0	0.08	0.11	0.04	1598	417640.12	599875.38	0	1.37	1.90	0.54	1598	417640.12	599875.38	0	0.75	1.13	0.37
1599	417639.94	599870.38	0	0.14	0.19	0.05	1599	417639.94	599870.38	0	0.08	0.11	0.04	1599	417639.94	599870.38	0	1.37	1.90	0.54	1599	417639.94	599870.38	0	0.75	1.13	0.37
1600	417639.75	599865.38	0	0.14	0.19	0.05	1600	417639.75	599865.38	0	0.08	0.11	0.04	1600	417639.75	599865.38	0	1.37	1.90	0.54	1600	417639.75	599865.38	1	0.75	1.13	0.35
1601	417639.56	599860.38	0	0.14	0.19	0.05	1601	417639.56	599860.38	1	0.08	0.11	0.03	1601	417639.56	599860.38	0	1.37	1.90	0.54	1601	417639.56	599860.38	1	0.75	1.10	0.35
1602	417639.38	599855.38	0	0.14	0.19	0.05	1602	417639.38	599855.38	2	0.08	0.11	0.03	1602	417639.38	599855.38	0	1.37	1.90	0.54	1602	417639.38	599855.38	2	0.75	1.10	0.34
1603	417639.19	599850.38	0	0.14	0.19	0.05	1603	417639.19	599850.38	3	0.08	0.11	0.03	1603	417639.19	599850.38	0	1.37	1.90	0.54	1603	417639.19	599850.38	3	0.75	1.09	0.34
1604	417639.01	599845.38	0	0.14	0.19	0.05	1604	417639.01	599845.38	3	0.08	0.11	0.03	1604	417639.01	599845.38	0	1.37	1.90	0.54	1604	417639.01	599845.38	3	0.75	1.09	0.33
1605	417638.83	599840.38	0	0.14	0.19	0.05	1605	417638.83	599840.38	3	0.08	0.11	0.03	1605	417638.83	599840.38	0	1.37	1.90	0.54	1605	417638.83	599840.38	3	0.75	1.08	0.33
1606	417638.65	599835.38	0	0.14	0.19	0.05	1606	417638.65	599835.38	4	0.08	0.11	0.03	1606	417638.65	599835.38	0	1.37	1.90	0.54	1606	417638.65	599835.38	4	0.76	1.08	0.32
1607	417638.47	599830.38	0	0.14	0.19	0.05	1607	417638.47	599830.38	5	0.08	0.11	0.03	1607	417638.47	599830.38	0	1.37	1.90	0.54	1607	417638.47	599830.38	5	0.76	1.08	0.32
1608	417638.29	599825.38	0	0.14	0.19	0.05	1608	417638.29	599825.38	8	0.08	0.11	0.03	1608	417638.29	599825.38	0	1.37	1.90	0.54	1608	417638.29	599825.38	8	0.77	1.09	0.32
1609	417638.11	599820.38	0	0.14	0.19	0.05	1609	417638.11	599820.38	11	0.08	0.11	0.03	1609	417638.11	599820.38	0	1.37	1.90	0.54	1609	417638.11	599820.38	11	0.78	1.10	0.32
1610	417637.93	599815.38	0	0.14	0.19	0.05	1610	417637.93	599815.38	14	0.08	0.11	0.03	1610	417637.93	599815.38	0	1.37	1.90	0.54	1610	417637.93	599815.38	14	0.79	1.12	0.33
1611	417637.75	599810.38	0	0.14	0.19	0.05	1611	417637.75	599810.38	17	0.08	0.11	0.03	1611	417637.75	599810.38	0	1.37	1.90	0.54	1611	417637.75	599810.38	17	0.80	1.13	0.33
1612	417637.57	599805.38	0	0.14	0.19	0.05	1612	417637.57	599805.38	21	0.08	0.11	0.03	1612	417637.57	599805.38	0	1.37	1.90	0.54	1612	417637.57	599805.38	21	0.80	1.14	0.34
1613	417637.39	599800.38	0	0.14	0.19	0.05	1613	417637.39	599800.38	24	0.08	0.11	0.03	1613	417637.39	599800.38	0	1.37	1.90	0.54	1613	417637.39	599800.38	24	0.80	1.14	0.34
1614	417637.21	599795.38	0	0.14	0.19	0.05	1614	417637.21	599795.38	27	0.08	0.11	0.03	1614	417637.21	599795.38	0	1.37	1.90	0.54	1614	417637.21	599795.38	27	0.80	1.13	0.33
1615	417636.94	599790.44	0	0.14	0.19	0.05	1615	417636.94	599790.44	28	0.08	0.11	0.03	1615	417636.94	599790.44	0	1.37	1.90	0.54	1615	417636.94	599790.44	28	0.79	1.12	0.33
1616	417645.84	599895.12	0	0.14	0.19	0.05	1616	417645.84	599895.12	1	0.08	0.12	0.04	1616	417645.84	599895.12	0	1.34	1.87	0.52	1616	417645.84	599895.12	1	0.76	1.15	0.39
1617	417645.66	599890.12	0	0.14	0.19	0.05	1617	417645.66	599890.12	0	0.08	0.11	0.04	1617	417645.66	599890.12	0	1.34	1.87	0.52	1617	417645.66	599890.12	0	0.76	1.14	0.39
1618	417645.47	599885.12	0	0.14	0.19	0.05	1618	417645.47	599885.12	0	0.08	0.11	0.04	1618	417645.47	599885.12	0	1.34	1.87	0.52	1618	417645.47	599885.12	0	0.75	1.13	0.38
1619	417645.29	599880.12	0	0.14	0.19	0.05	1619	417645.29	599880.12	0	0.08	0.11	0.04	1619	417645.29	599880.12	0	1.34	1.87	0.52	1619	417645.29	599880.12	0	0.75	1.13	0.38
1620	417645.09	599875.19	0	0.14	0.19	0.05	1620	417645.09	599875.19	0	0.08	0.11	0.04	1620	417645.09	599875.19	0	1.34	1.87	0.52	1620	417645.09	599875.19	0	0.75	1.12	0.36
1621	417644.91	599870.19	0	0.14	0.19	0.05	1621	417644.91	599870.19	0	0.08	0.11	0.04	1621	417644.91	599870.19	0	1.34	1.87	0.52	1621	417644.91	599870.19	0	0.75	1.11	0.36
1622	417644.72	599865.19	0	0.14	0.19	0.05	1622	417644.72	599865.19	0	0.08	0.11	0.03	1622	417644.72	599865.19	0	1.34	1.87	0.52	1622	417644.72	599865.19	0	0.75	1.10	0.35
1623	417644.53	599860.19	0	0.14	0.19	0.05	1623	417644.53	599860.19	1	0.08	0.11	0.03	1623	417644.53	599860.19	0	1.34	1.87	0.52	1623	417644.53	599860.19	1	0.75	1.10	0.35
1624	417644.34	599855.19	0	0.14	0.19	0.05	1624	417644.34	599855.19	1	0.08	0.11	0.03	1624	417644.34	599855.19	0	1.34	1.87	0.52	1624	417644.34	599855.19	1	0.75	1.09	0.34
1625	417644.16	599850.19	0	0.14	0.19	0.05	1625	417644.16	599850.19	1	0.08	0.11	0.03	1625	417644.16	599850.19	0	1.34	1.87	0.52	1625	417644.16	599850.19	2	0.75	1.09	0.34
1626	417643.97	599845.19	0	0.14	0.19	0.05	1626	417643.97	599845.19	2	0.08	0.11	0.03	1626	417643.97	599845.19	0	1.34	1.87	0.52	1626	417643.97	599845.19	2	0.75	1.08	0.33
1627	417643.81	599840.19	0	0.14	0.19	0.05	1627	417643.81	599840.19	3	0.08	0.11	0.03	1627	417643.81	599840.19	0	1.34	1.87	0.52	1627	417643.81	599840.19	3	0.75	1.08	0.33
1628	417643.62	599835.19	0	0.14	0.19	0.05	1628	417643.62	599835.19	4	0.08	0.11	0.03	1628	417643.62	599835.19	0	1.34	1.87	0.52	1628	417643.62	599835.19	4	0.75	1.08	0.32
1629	417643.44	599830.19	0	0.14	0.19	0.05	1629	417643.44	599830.19	5	0.08	0.11	0.03	1629	417643.44	599830.19	0	1.34	1.87	0.52	1629	417643.44	599830.19	5	0.76	1.08	0.32
1630	417643.25	599825.19	0	0.14	0.19	0.05	1630	417643.25	599825.19	7	0.08	0.11	0.03	1630	417643.25	599825.19	0	1.34	1.87	0.52	1630	417643.25	599825.19	7	0.76	1.08	0.32
1631	417643.06	599820.19	0	0.14	0.19	0.05	1631	417643.06	599820.19	10	0.08	0.11	0.03	1631	417643.06	599820.19	0	1.34	1.86	0.52	1631	417643.06	599820.19	10	0.77	1.09	0.32
1632	417642.88	599815.19	0	0.14	0.19	0.05	1632	417642.88	599815.19	13	0.08	0.11	0.03	1632	417642.88	599815.19	0	1.34	1.86	0.52	1632	417642.88	599815.19	13	0.78	1.10	0.32
1633	417642.69	599810.19	0	0.14	0.19	0.05	1633	417642.69	599810.19	16	0.08	0.11	0.03	1633	417642.69	599810.19	0	1.34	1.86	0.52	1633	417642.69	599810.19	16	0.79	1.11	0.33
1634	417642.51	599805.19	0	0.14	0.19	0.05	1634	417642.51	599805.19	20	0.08	0.11	0.03	1634	417642.51	599805.19	0	1.34	1.86	0.52	1634	417642.51	599805.19	22	0.80	1.13	0.33
1635	417642.33	599800.19	0	0.14	0.19	0.05	1635	417642.33	599800.19	25	0.08	0.11	0.03	1635	417642.33	599800.19	0	1.34	1.86	0.52	1635	417642.33	599800.19	25	0.79	1.12	0.33
1636	417642.15	599795.19	0	0.14	0.19	0.05	1636	417642.15	599795.19	27	0.08	0.11	0.03	1636	417642.15	599795.19	0	1.34	1.86	0.52	1636	417642.15	599795.19	27	0.79	1.11	0.33
1637	417641.97	599790.25	0	0.14	0.19	0.05																					

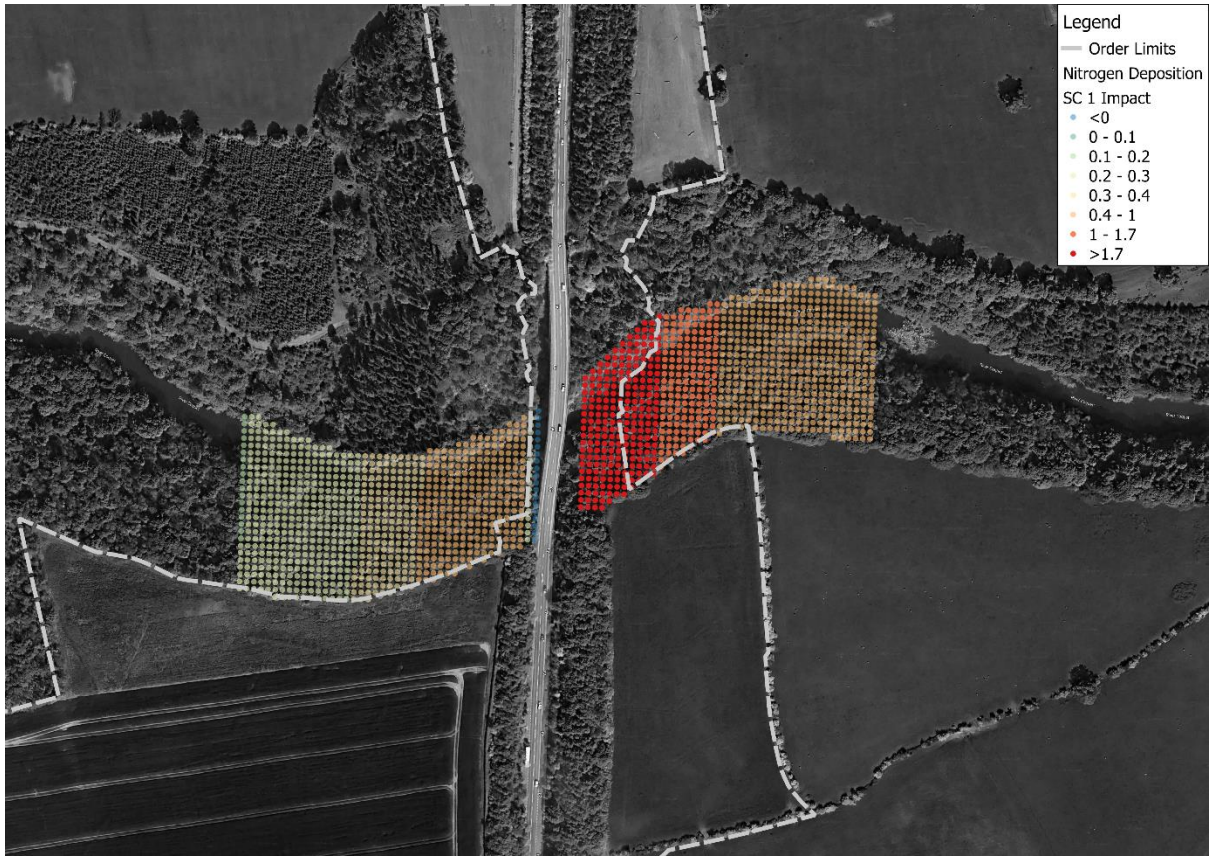


Figure 1: Scheme impacts on Nitrogen Deposition (values shown in Kg N/ha/yr) at grade with the road.

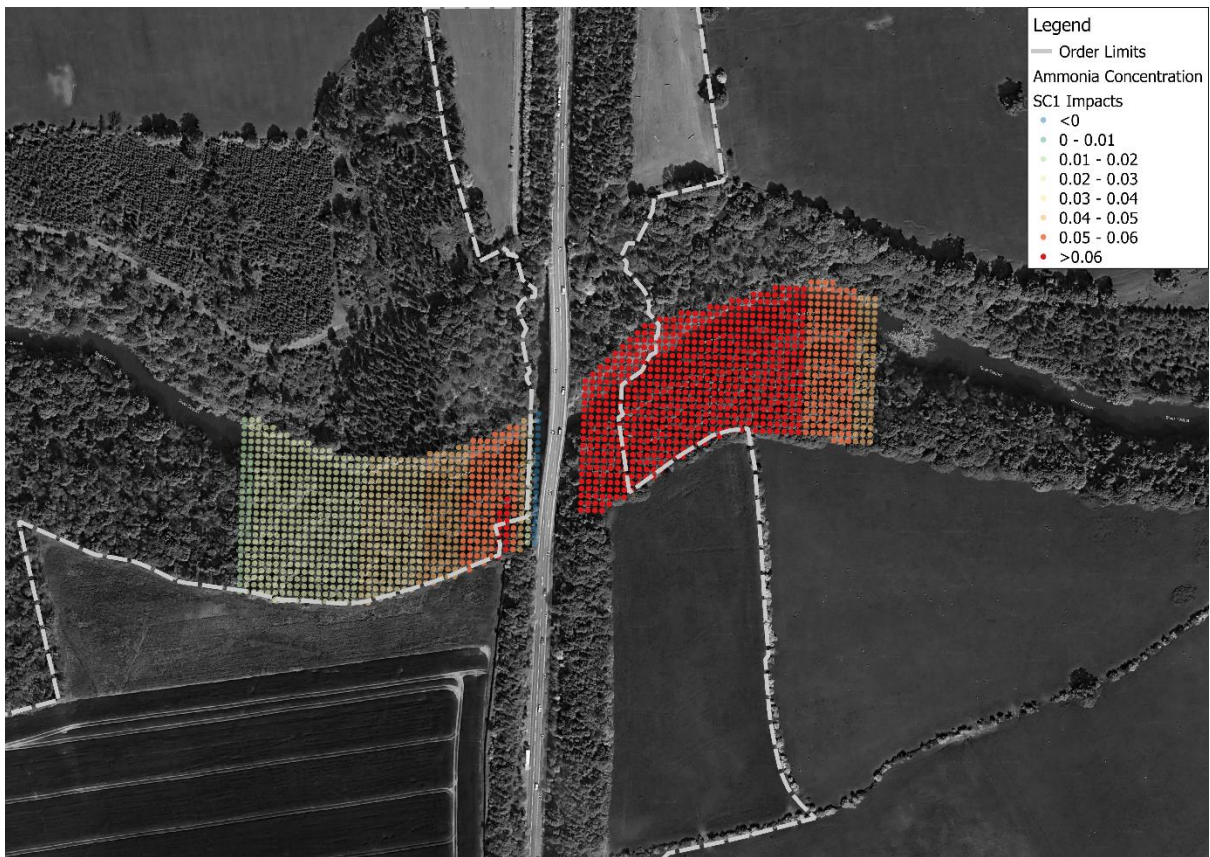


Figure 2: Scheme impacts on ammonia concentrations (values shown in $\mu\text{g}/\text{m}^3$) at grade with the road.

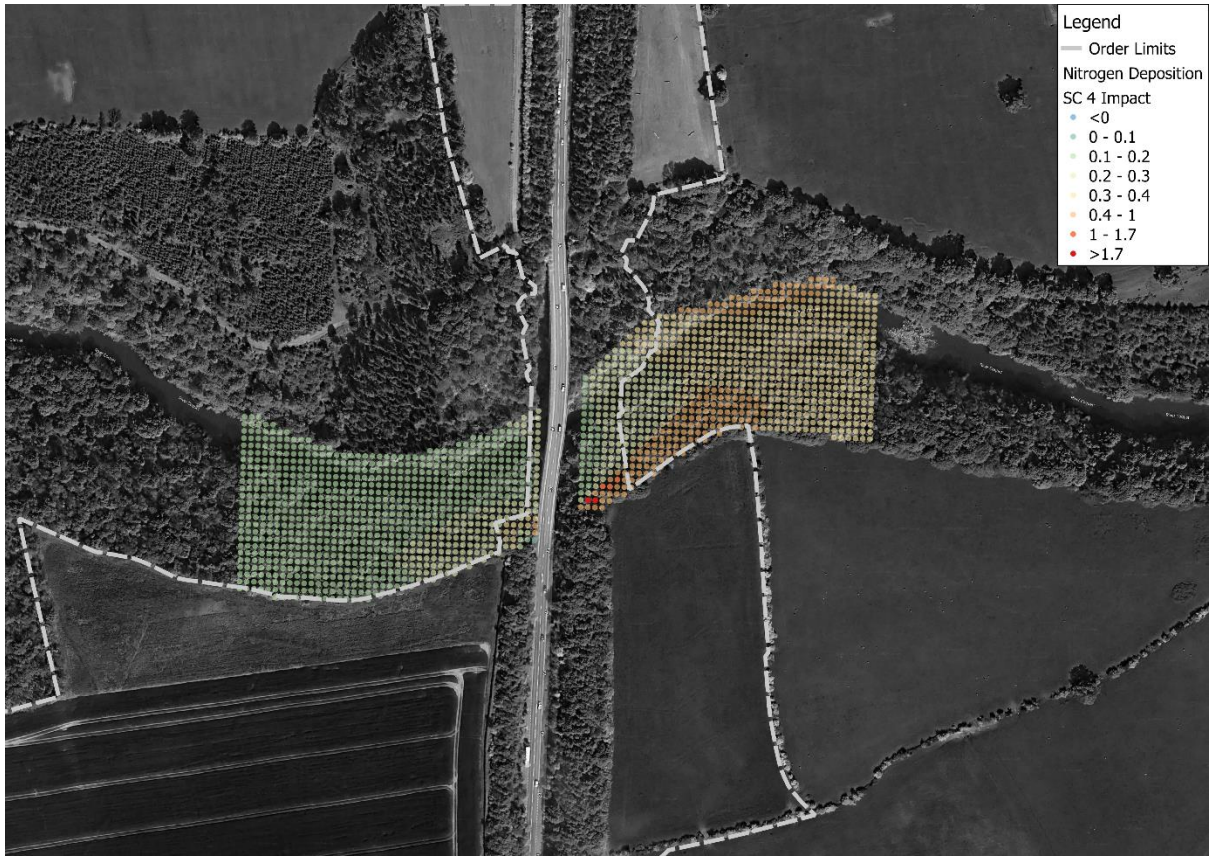


Figure 3: Scheme impacts on Nitrogen Deposition (values shown in Kg N/ha/yr) at ground level.

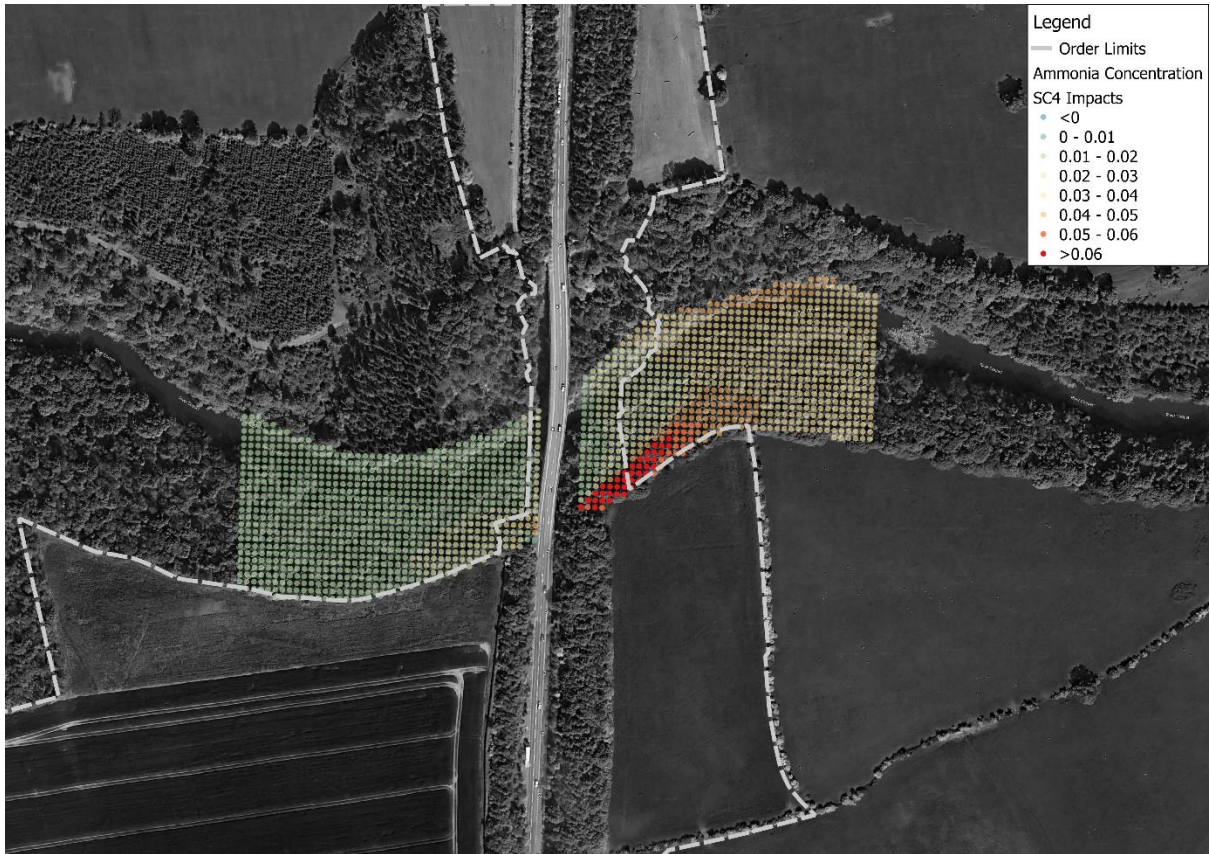


Figure 4: Scheme impacts on ammonia concentrations (values shown in $\mu\text{g}/\text{m}^3$) at ground level.

12 ANNEX B – QUALITATIVE ASSESSMENT OF CHANGES IN TRAFFIC FLOWS

INTRODUCTION

The DCO submission of the economic and environmental case for the scheme was based on the Stage 3 Appraisal. The Stage 3 Appraisal was based on NTEM7 and RTF2015, (with a sensitivity test undertaken with RTF2018) and an opening year of 2023. The DCO decision is currently being awaited having been postponed.

During the DCO examination, the Stage 4 appraisal was undertaken. The latest Stage 4 appraisal was updated during 2021 and was also based on NTEM7 and RTF2018, though with an opening year of 2025.

At the time it was expected that the Stage 4 appraisal would also be applicable to Stage 5, which was anticipated to run immediately subsequent to Stage 4.

Due to the postponement of the DCO decision, a significant amount of time has elapsed. In that time, new growth data has been released via NTEM8 and RTP2022, as well as updated TAG parameters. Furthermore, the opening year of 2025 is no longer feasible for the scheme and a later opening year of 2029 is expected.

Notwithstanding some wider changes, in any pending decisions the Secretary of State is primarily focussed on Air Quality aspects. An update to the AQ assessment is recommended due to the development and significant shift in guidance and what should be assessed for ammonia, as part of the nitrogen deposition.

This note considers the potential implications of traffic flow changes and the implications that they will have on Air Quality along the alignment. The SoS needs to make a safe decision in this respect, notwithstanding any other potential updates.

TRAFFIC GROWTH COMPARISONS

The traffic growth from RTF2015 and RTF2018 from the model base year of 2015 to the Stage 4 scheme design year of 2040 has been compared with the growth from RTP2022.

Forecast Traffic Growth for Trunk Roads North East England – 2015 to 2040

	RTF2015	RTP2022
	DCO - Stage 3	Current
Car	1.26	1.20
LGV	1.64	1.47
HGV	1.19	1.12
All	1.30	1.23

The table above shows that, for all vehicle types, the RTP2022 traffic growth is lower than that for RTF2015. This also applies to other forecast years as the RTP2022 growth is lower throughout. Therefore, an updated model will give lower overall growth for the same future years. This in turn means that the traffic expected to use the A1 both without the improvement as well as with the improvement is expected to be less.

REASSIGNMENT CHANGES

As the forecast traffic is expected to be lower than estimated for the DCO, it is expected that the traffic reassignment onto the improved A1 due to the widening will also be less, as there is less traffic to reassign.

OPENING YEAR CHANGES

As indicated in the comparison of traffic growth above, for any given year, the forecast growth is expected to be significantly lower.

The opening year of the scheme assumed during the DCO was 2023. The current estimate of the opening year is 2029.

The expected traffic growth from 2023 to 2029 is given in the table below.

Forecast Traffic Growth for Trunk Roads North East England – 2023 to 2029

	RTP2022 – 2023 to 2029
	Current
Car	1.06
LGV	1.06
HGV	1.03
All	1.05

There is expected to be a significant traffic growth from 2023 to 2029.

A further comparison of the total growth from the 2015 base year to the 2023 DCO opening year using RTF2015 growth and the total growth from the 2015 base year to the 2029 opening year using RTP2022 growth indicates that the updated growth is slightly higher due to the later opening year, as show in the table below.

Forecast Traffic Growth for Trunk Roads North East England

	RTF2015 – 2015 to 2023	RTP2022 – 2015 to 2029
	DCO - Stage 3	Current
Car	1.10	1.10
LGV	1.22	1.28
HGV	1.06	1.07
All	1.11	1.13

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