Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Addendum to Environmental Statement Chapter 20 Onshore Ecology and Ornithology

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Glossary of Acronyms

AADT	Annual Average Daily Traffic
CWS	County Wildlife Site
DCO	Development Consent Order
DEFRA	Department for the Environment and Rural Affairs
DEL	Dudgeon Extension Limited
DEP	Dudgeon Offshore Wind Farm Extension Project
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
HGV	Heavy Goods Vehicle
km	Kilometre
NRMM	Non-Road Mobile Machinery
SAC	Special Area of Conservation
SEL	Scira Extension Limited
SEP	Sheringham Offshore Wind Farm Extension Project
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation, potential Special Protection Areas, Special Protection Areas, Ramsar sites, proposed Ramsar sites and sites compensating for damage to a European site and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017, although some of the sites listed here are afforded equivalent policy protection under the National Planning Policy Framework (2021) (paragraph 176) and joint Defra/Welsh Government/Natural England/NRW Guidance (February 2021).
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.

Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
The Applicant	Equinor New Energy Limited. As the owners of SEP and DEP, Scira Extension Limited and Dudgeon Extension Limited are the named undertakers that have the benefit of the DCO. References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

1 Introduction

1. This Addendum to Environmental Statement (ES) **Chapter 20 Onshore Ecology and Ornithology** [APP-106] provides a more detailed presentation of the existing assessment of the potential effects of air quality changes on ecological receptors.
2. As the owners of the Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP), Scira Extension Limited (SEL) and Dudgeon Extension Limited (DEL) are the named undertakers that have the benefit of the Development Consent Order (DCO). References in this document to obligations on, or commitments by, 'the Applicant' are given on behalf of SEL and DEL as the undertakers of SEP and DEP.

1.1 The Examining Authority's Written Question on Air Quality and Ecological Receptors

3. This Addendum has been prepared and is submitted in response to the **Examining Authority's Written Questions (WQ1)** [PD-010] that contained a specific question (WQ1.13.3.2), directed at the Applicant, that concerned air quality effects on ecological receptors.
4. The text of Written Question WQ1.13.3.2 is:

   The large exceedances shown in Tables 22.47 and 22.53 [APP-108] are dismissed because "only a small percentage of impacts at almost all sites is due to the contribution from SEP and DEP together concurrently. Furthermore, as previously discussed, impacts from SEP and DEP would be experienced only during construction."

   ES Chapter 22 suggests that where affected designated sites were above the 1% Critical Load, they were assessed in ES Chapter 20 [APP-106]. It is not readily clear to the ExA which paragraphs or sections of ES Chapter 20 explicitly deal with this, and it does not appear explicitly in the summary tables/ list of impacts at the end of that chapter.

   The Applicant is therefore requested to signpost / set out which parts of ES Chapter 20 directly address the effects of NO2, NOx and NH3 on ecological receptors and set out the mitigations for this. In addition, the Applicant should set out clearly and conclusively whether designated ecological assets would suffer degradation or eutrophication as a result of exposure to NO2, NOx, NH3 arising from the Proposed Development in isolation or in-combination with other projects.
5. The Applicant's initial answer to this Written Question was a response submitted at Deadline 1 (see **The Applicant's Responses to the Examining Authority's First Written Questions** [REP1-036] which committed to provide a more detailed response at Deadline 2.The Applicant has provided this information as an Addendum to the ES as it considers this to be classed as "further information" under the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

1.2 The Ecological Receptors Addressed in this Addendum

6. The following ecological receptors are addressed in the Addendum:
   - Statutory designated nature conservation sites

- Non-statutory designated nature conservation sites
- Habitats
  - Arable
  - Grassland
  - Woodland
  - Scrub
  - Hedgerow
  - Watercourse
- Species
  - Badger
  - Bats (roosting and non-roosting)
  - Birds (breeding and over-wintering)
  - Great crested newt
  - Rare invertebrates / fish
  - Reptiles

7. The outcome of the assessment on these receptors is summarised in **Section 7**.

2 Signposting of Information in ES Chapters

8. Part of Written Question WQ1.13.3.2 was that the Applicant was requested to provide signposting to where information on the assessment of impacts on ecological receptors was drawn from the ES chapters.

9. **ES Chapter 22 Air Quality** [APP-108] provides information on:
   - The ecological receptor assessment methodology (Section 22.4.3.3.6);
   - The identification of ecological receptors (Section 22.5.4.1.2 and 22.5.4.3.2);
   - Project related contributions to airborne pollutants at the locations of designated nature conservation sites (Section 22.6.1.3.1.2 and 22.6.1.3.2.2);
   - Critical level and load values for designated nature conservation sites and their qualifying features (Appendix 22.4 [APP-262]); and
   - Threshold exceedances at designated nature conservation sites (Appendix 22.5 [APP-263]).

10. **ES Chapter 24 Traffic and Transport** [APP-110] provides information on:
    - The number and distribution of construction vehicles across the highway network (Appendix 24.1 [APP-268] Section 24.1.4).

3 Approach to the Assessment

3.1 Sources of Airborne Pollutants

11. This assessment of potential impacts considers construction vehicles and machinery as sources of airborne pollutants that have the potential to have negative

effects on ecological receptors either directly on valued habitats or species, or indirectly acting through those habitats on which valued species depend. The operational phase as a source of airborne pollutants was scoped out (Section 22.6.2 of **ES Chapter 22 Air Quality** [APP-108]) and the decommissioning phase as a source of pollutants was considered to be similar to those during construction (Section 22.6.2 of **ES Chapter 22 Air Quality** [APP-108]).

12. Increased acid deposition, nutrient nitrogen deposition and ammonia within the air or the deposition of nitrogen on to vegetation can result in the degradation of habitats through eutrophication or direct toxicity.

13. The assessment considers three sources of airborne pollutant emissions arising from the construction process:

- Construction Vehicles on the Road Network;
- Construction Vehicles on the Haul Road; and
- Non-Road Mobile Machinery.

3.2 Methodology

14. For each of the above three sources of airborne pollutants there was a separate methodology applied and for each source consideration was given to the screening of ecological receptors and the determination of the scale of any potential effect.

3.2.1 Construction Vehicles on the Road Network

15. For construction vehicles on the road network the screening stage considered the distance between the road under consideration (the 'link') and the ecological receptor (Section 22.4.3.3.6 of **ES Chapter 22 Air Quality** [APP-108]). It applied a 200m screening threshold (Paragraph 125 of **ES Chapter 22 Air Quality** [APP-108]).

16. For the detailed assessment stage, it applied the method of Chapman and Kite (2021a and 2021b) that used a 'Decision Making Threshold' of an increase by 0.15% or more of existing vehicle numbers, expressed as the Annual Average Daily Traffic (AADT). Those 'Decision Making Threshold' values are listed in Table 22.10 of **ES Chapter 22 Air Quality** [APP-108]. Section 22.4.3.3 of **ES Chapter 22 Air Quality** [APP-108] describes Natural England's view that the 'Decision Making Threshold' equates to a 1% change in the Critical Load or Critical Level, the threshold of insignificance. Locations of ecological receptors that fall below this threshold have been assessed as being subject to an adverse impact that is of no greater than negligible magnitude.

17. As set out within paragraph 132 of **ES Chapter 22 Air Quality** [APP-108] which states that the exceedance of a threshold is not decisive in and of itself, nor does it suggest that damage is likely to occur (in the case of Site of Special Scientific Interest (SSSIs)) or that it will not be possible to avoid adverse effects to site integrity (in the case of European sites (Chapman & Kite, 2021a) should exceedance of a threshold occur.

18. Those ecological receptors where the 'Decision Making Threshold' was exceeded and that have habitats/features sensitive to air pollutants are listed in Table 22.35 of **ES Chapter 22 Air Quality** [APP-108]. For each of these ecological receptors

there is then a more detailed site-specific assessment that accounts for the distance between the road under consideration and the ecological receptor, and its habitat type, to provide a quantitative indication of what increase in AADT would lead to a 1% increase in the Critical Load or Critical Level. This relationship is presented in Tables 22.18 and 22.19 of **ES Chapter 22 Air Quality** [APP-108].

3.2.2 Construction Vehicles on the Haul Road

19. The assessment of vehicle emissions when they are not on the public highway, that is when they are on the haul road, is presented in Section 22.4.3.3.6.3.2 of **ES Chapter 22 Air Quality** [APP-108]. The assessment methodology takes the same screening approach as for the public highway network, considering first the distance between the ecological receptor and the haul road and applies a 200 m screening threshold (Paragraph 144 of **ES Chapter 22 Air Quality** [APP-108]).

20. It then applies the information from Chapman and Kite (2021a and 2021b) on the increase in AADT that corresponds to a 1% change in Critical Level or Critical Load at the respective distance. The values are presented in Table 22.22 and it is concluded that since the 1% value is not exceeded in any case, then all potential impacts will be insignificant.

3.2.3 Non-Road Mobile Machinery

21. A qualitative assessment of Non-Road Mobile Machinery (NRMM) was carried out accounting for the: number and type of plant used; working hours; distance to the receptor; and existing air quality conditions (Section 22.4.3.2 of **ES Chapter 22 Air Quality** [APP-108]). This concluded that with the low background concentrations, the limited emissions from the NRMM (accounting for the emission controls applied), working hours and the temporary nature of the works (both temporally and spatially), project contributions would not exceed the 1% threshold value (Section 22.6.1.2 of **ES Chapter 22 Air Quality** [APP-108]) at any screened in location and all potential impacts would be insignificant.

3.3 Application of Precaution in the Assessment

3.3.1 The Realistic Worst-Case Scenario

22. Section 22.3.2 of **ES Chapter 22 Air Quality** [APP-108] describes the Realistic Worst-Case Scenario applied in the assessment. This is summarised in Table 22.2. In addition, account is taken of the build out of the project with concurrent construction of SEP and DEP being identified as that which gives rise to the greater peak daily traffic movements (Section 24.1.4 of **ES Chapter 24 Appendix 24.1 Transport Assessment** [APP-268]) and hence greater peak critical loads or critical levels of pollutants that might potentially affect ecological receptors.

23. The worst-case assumptions regarding how the traffic flows have been derived or are distributed across the network are described in **ES Chapter 24 Traffic and Transport** [APP-110].

24. The worst-case assumptions are listed in Table 24.2 of **ES Chapter 24 Traffic and Transport** [APP-110] and given further detail in **ES Chapter 24 Appendix 24.1**

Transport Assessment [APP-268]. Those that are relevant to this consideration of airborne pollutants generated by construction vehicles are:

- Employee movements are based on 1 employee per vehicle. In actuality, there is the potential for car sharing and contractor supplied minibuses that would reduce employee traffic.
- All traffic is assumed to be new on the network rather than re-assigned. In actuality, a large percentage of HGVs would already be operating on the local road network and would simply be re-assigned onto this Project.
- Construction materials are assumed to be supplied from coastal ports rather than within the local area. In actuality, a proportion of materials would be sourced locally.
- In relation to assessing airborne pollutants sourced from construction vehicles moving along the haul road, it is assumed that on every occurrence the haul road is located at the nearest edge of the Order Limits to the boundary of the sensitive ecological receptor. In reality this is unlikely in all cases.
- For the cumulative assessment (Section 24.7 of **ES Chapter 24 Traffic and Transport** [APP-110]) it was assumed that the peak of construction activity of all cumulative projects would be occurring concurrently. In reality, this is unlikely.

4 Impact Assessment

4.1 Statutory Designated Nature Conservation Sites

25. This assessment considers direct effects on the habitats that are qualifying features of statutory designated nature conservation sites. Qualifying features that are species are assessed in the species sections below.

26. The Project embedded mitigation is described in Section 22.3.3 of **ES Chapter Air Quality** [APP-108] and that relevant to statutory designated nature conservation sites is the avoidance of valued sites.

4.1.1 Construction Damage, Destruction or Disturbance to Statutory Designated Nature Conservation Sites: Construction Vehicles on the Road Network

27. Twenty two statutory designated nature conservation sites were screened in based on proximity to the road network links carrying construction vehicles:

- Alderford Common SSSI
- Ant Broads and Marshes SSSI
- Barnby Broad & Marshes SSSI
- Broadland Special Protection Area (SPA)
- Broadland Ramsar
- Breydon Water SSSI
- Breydon Water SPA
- Breydon Water Ramsar

- Buxton Heath SSSI
- Cawston and Marsham Heaths SSSI
- Damgate Marshes, Acle SSSI
- East Winch Common SSSI
- Felbrigg Wood SSSI
- Holly Farm Meadow, Wendling SSSI
- Holt Lowes SSSI
- Kelling Heath SSSI
- Norfolk Valley Fens Special Area of Conservation (SAC)
- Potter & Scarning Fens, East Dereham SSSI
- River Wensum SSSI
- River Wensum SAC
- The Broads SAC
- Trinity Broads SSSI

4.1.1.1 Magnitude of Effect – SEP or DEP all scenarios

28. The detailed air quality impact assessment identified that 14 of the screened in statutory designated nature conservation sites had exceedances of a Critical Load or a Critical Level through a contribution from the Project that was >1% but less than 3.5% (sites where there was no exceedance are evaluated as being subject to a negligible magnitude impact). These sites are:

- Breydon Water SSSI
- Breydon Water SPA
- Breydon Water Ramsar
- Damgate Marshes, Acle SSSI
- East Winch Common SSSI
- Felbrigg Wood SSSI
- Holly Farm Meadow, Wendling SSSI
- Holt Lowes SSSI
- Norfolk Valley Fens SAC
- Potter & Scarning Fens, East Dereham SSSI
- River Wensum SSSI
- River Wensum SAC
- The Broads SAC
- Trinity Broads SSSI

29. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature.

30. All of the listed sites above are evaluated as being subject to a temporary minor magnitude of effect.

4.1.1.2 Impact Significance – all scenarios

31. A minor magnitude of effect on these high importance receptors represents a temporary impact of **moderate adverse** significance.

4.1.1.3 Mitigation

32. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.1.1.4 Residual Impacts – SEP or DEP all scenarios

33. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these high importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.1.2 Construction Damage, Destruction or Disturbance to Statutory Designated Nature Conservation Sites: Construction Vehicles on the Haul Road

34. Three statutory designated nature conservation sites were screened in based on proximity to the haul roads:

- Alderford Common SSSI
- River Wensum SAC
- River Wensum SSSI

4.1.2.1 Magnitude of Effect – SEP or DEP all scenarios

35. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.1.2.2 Impact Significance – all scenarios

36. A negligible magnitude of effect on these high importance receptors represents a temporary impact of **minor adverse** significance.

4.1.2.3 Mitigation

37. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.1.2.4 Residual Impacts – SEP or DEP all scenarios

38. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.1.3 Construction Damage, Destruction or Disturbance to Statutory Designated Nature Conservation Sites: Non- Road Mobile Machinery

39. NRMM operate at the locations of the compounds, trenchless crossings, cable duct installation and cable pulls and screening is equivalent to that carried out for the haul road. Three statutory designated nature conservation sites were screened in on this basis:

- Alderford Common SSSI
- River Wensum SAC
- River Wensum SSSI

4.1.3.1 Magnitude of Effect – SEP or DEP all scenarios

40. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.1.3.2 Impact Significance – all scenarios

41. A negligible magnitude of effect on these high importance receptors represents a temporary impact of **minor adverse** significance.

4.1.3.3 Mitigation

42. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

43. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.1.3.4 Residual Impacts – SEP or DEP all scenarios

44. Following the implementation of the mitigation measures as outlined above, there would be a reduction in the magnitude of effect from temporary minor negative to negligible on these high importance receptors, representing a temporary residual impact of **minor adverse** significance.

4.2 Non-Statutory Designated Nature Conservation Sites

45. This assessment considers direct effects on the habitats that are qualifying features of non-statutory designated nature conservation sites. Qualifying features that are species are assessed in the species sections below.

46. The Project embedded mitigation is described in Section 22.3.3 of **ES Chapter Air Quality** [APP-108] and that relevant to non-statutory designated nature conservation sites is the avoidance of valued sites.

4.2.1 Construction Damage, Destruction or Disturbance to Non-Statutory Designated Nature Conservation Sites: Construction Vehicles on the Road Network

47. Nineteen non-statutory designated nature conservation sites were screened in based on proximity to the road network links carrying construction vehicles:

- Blacks Grove ancient woodland
- Bulfer Grove ancient woodland
- Foxburrow Wood ancient woodland
- Great Wood ancient woodland
- Mileplain Plantation ancient woodland
- Mouse Wood ancient woodland
- Oak Wood ancient woodland
- Pereers Wood ancient woodland
- Primrose Grove ancient woodland
- Raveningham Covert ancient woodland
- Reffley Wood ancient woodland
- Smeeth Wood ancient woodland
- Sprowston Wood ancient woodland
- Unnamed ancient woodland ID1
- Unnamed ancient woodland ID2
- Unnamed ancient woodland ID3
- Unnamed ancient woodland ID4
- Unnamed ancient woodland ID5
- Unnamed ancient woodland ID6

48. These are all ancient woodland sites since the screening methodology for the road network, that was carried out across a large area, considered statutory designated nature conservation sites and ancient woodlands only (Section 22.5.4.3 of **ES Chapter 22 Air Quality** [APP-108]).

4.2.1.1 Magnitude of Effect – SEP or DEP all scenarios

49. The detailed air quality impact assessment identified that 8 of the screened in non-statutory designated nature conservation sites had exceedances of a Critical Load

or a Critical Level through a contribution from the Project that was >1% but less than 5.5% (sites where there was no exceedance are evaluated as being subject to a negligible magnitude impact). These sites are:

- Foxburrow Wood ancient woodland
- Great Wood ancient woodland
- Mouse Wood ancient woodland
- Raveningham Covert ancient woodland
- Reffley Wood ancient woodland
- Unnamed ancient woodland ID1
- Unnamed ancient woodland ID3
- Unnamed ancient woodland ID6

50. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature. All of the listed sites above are evaluated as being subject to a temporary minor magnitude of effect.

4.2.1.2 Impact Significance – all scenarios

51. A minor magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.2.1.3 Mitigation

52. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.2.1.4 Residual Impacts – SEP or DEP all scenarios

53. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these medium importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.2.2 Construction Damage, Destruction or Disturbance to Non-Statutory Designated Nature Conservation Sites: Construction Vehicles on the Haul Road

54. Five non-statutory designated nature conservation sites were screened in based on proximity to the haul roads:

- Cawston Wood ancient woodland
- Colton Wood ancient woodland
- Smeeth Wood ancient woodland
- Un-named ancient woodland (ID 6)
- Yare Valley (Colton Woods) County Wildlife Site (CWS)

4.2.2.1 Magnitude of Effect – SEP or DEP all scenarios

55. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.2.2.2 Impact Significance – all scenarios

56. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.2.2.3 Mitigation

57. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.2.2.4 Residual Impacts – SEP or DEP all scenarios

58. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.2.3 Construction Damage, Destruction or Disturbance to Non-Statutory Designated Nature Conservation Sites: Non- Road Mobile Machinery

59. NRMM operate at the locations of the compounds, trenchless crossings, cable duct installation and cable pulls and screening is equivalent to that carried out for the haul road. Five non- statutory designated nature conservation sites were screened in on this basis:

- Cawston Wood ancient woodland
- Colton Wood ancient woodland
- Smeeth Wood ancient woodland
- Un-named ancient woodland (ID 6)
- Yare Valley (Colton Woods) CWS

4.2.3.1 Magnitude of Effect – SEP or DEP all scenarios

60. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.2.3.2 Impact Significance – all scenarios

61. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.2.3.3 Mitigation

62. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

63. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.2.3.4 Residual Impacts – SEP or DEP all scenarios

64. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.3 Habitats

65. This assessment considers direct effects on habitats. Where such habitats support valued species any effects on those habitats are assessed as indirect effects in the species sections below.

66. The Project embedded mitigation is described in Section 22.3.3 of **ES Chapter Air Quality** [APP-108] and that relevant to habitats is the avoidance of valued habitats.

4.3.1 Construction Damage, Destruction or Disturbance to Arable Habitats: Construction Vehicles on the Road Network

67. Arable habitats are not listed as sensitive to air quality changes in the Air Pollution Information System and in their function as productive farmland arable fields receive in the order of 200-250 kg of nitrogen fertiliser applied per hectare per annum.

4.3.1.1 Magnitude of Effect – SEP or DEP all scenarios

68. Since arable habitats are not sensitive to air quality changes, the magnitude of effect is negligible.

4.3.1.2 Impact Significance – all scenarios

69. A negligible magnitude of effect on these negligible importance receptors represents a temporary impact of **negligible** significance.

4.3.1.3 Mitigation

70. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.1.4 Residual Impacts – SEP or DEP all scenarios

71. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case the habitat is not sensitive and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.2 Construction Damage, Destruction or Disturbance to Arable Habitats: Construction Vehicles on the Haul Road

72. Arable habitats are not listed as sensitive to air quality changes in the Air Pollution Information System and in their function as productive farmland arable fields receive in the order of 200-250 kg of nitrogen fertiliser applied per hectare per annum.

4.3.2.1 Magnitude of Effect – SEP or DEP all scenarios

73. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.2.2 Impact Significance – all scenarios

74. A negligible magnitude of effect on these negligible importance receptors represents a temporary impact of **negligible** significance.

4.3.2.3 Mitigation

75. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.2.4 Residual Impacts – SEP or DEP all scenarios

76. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.3 Construction Damage, Destruction or Disturbance to Arable Habitats: Non-Road Mobile Machinery

77. Arable habitats are not listed as sensitive to air quality changes in the Air Pollution Information System and in their function as productive farmland arable fields receive in the order of 200-250 kg of nitrogen fertiliser applied per hectare per annum.

4.3.3.1 Magnitude of Effect – SEP or DEP all scenarios

78. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions

would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.3.2 Impact Significance – all scenarios

79. A negligible magnitude of effect on these negligible importance receptors represents a temporary impact of **negligible** significance.

4.3.3.3 Mitigation

80. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

81. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.3.4 Residual Impacts – SEP or DEP all scenarios

82. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.4 Construction Damage, Destruction or Disturbance to Grassland Habitats: Construction Vehicles on the Road Network

83. Grasslands of high importance within 200m of the road network used by construction vehicles represent the most sensitive grasslands with potential to be affected and the assessment of such grasslands represents the worst-case scenario. Such grasslands are present as qualifying features of SACs or SSSIs (within the Order Limits there are no such high importance grasslands and the large majority are low importance improved and poor semi-improved grasslands).

84. Those SACs and SSSIs with grassland qualifying features that are within 200m of the road network used by construction vehicles are:

- Alderford Common SSSI
- Holly Farm Meadow, Wendling SSSI
- Norfolk Valley Fens SAC
- The Broads SAC

4.3.4.1 Magnitude of Effect – SEP or DEP all scenarios

85. The detailed air quality impact assessment identified that three of these screened in statutory designated nature conservation sites with grassland qualifying features had exceedances of a Critical Load or a Critical Level through a contribution from the Project that was >1%. These sites are:

- Holly Farm Meadow, Wendling SSSI
- Norfolk Valley Fens SAC
- The Broads SAC

86. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature. All of the listed sites above are evaluated as being subject to a temporary minor magnitude of effect.

4.3.4.2 Impact Significance – all scenarios

87. A minor magnitude of effect on these high importance receptors represents a temporary impact of **moderate adverse** significance.

4.3.4.3 Mitigation

88. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.4.4 Residual Impacts – SEP or DEP all scenarios

89. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these high importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.3.5 Construction Damage, Destruction or Disturbance to Grassland Habitats: Construction Vehicles on the Haul Road

90. Within the Order Limits there are improved, poor semi-improved and semi-improved grassland habitats. In area, these comprise improved grassland 23.14ha, poor semi-improved grassland 13.0ha and semi-improved grassland 4.11ha and of the latter grassland type 2.76ha is avoided by using a trenchless technique. The assessment of semi-improved grassland represents the worst-case scenario.

4.3.5.1 Magnitude of Effect – SEP or DEP all scenarios

91. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.5.2 Impact Significance – all scenarios

92. A negligible magnitude of effect on these low or negligible importance receptors represents a temporary impact of **negligible** significance.

4.3.5.3 Mitigation

93. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.5.4 Residual Impacts – SEP or DEP all scenarios

94. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.6 Construction Damage, Destruction or Disturbance to Grassland Habitats: Non- Road Mobile Machinery

95. Within the Order Limits there are improved, poor semi-improved and semi-improved grassland habitats. In area, these comprise improved grassland 23.14ha, poor semi-improved grassland 13.0ha and semi-improved grassland 4.11ha and of the latter grassland type 2.76ha is avoided by using a trenchless technique. The assessment of semi-improved grassland represents the worst-case scenario.

4.3.6.1 Magnitude of Effect – SEP or DEP all scenarios

96. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.6.2 Impact Significance – all scenarios

97. A negligible magnitude of effect on these low or negligible importance receptors represents a temporary impact of **negligible** significance.

4.3.6.3 Mitigation

98. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

99. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.6.4 Residual Impacts – SEP or DEP all scenarios

100. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and

no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.7 Construction Damage, Destruction or Disturbance to Woodland Habitats: Construction Vehicles on the Road Network

101. Woodlands of high importance within 200m of the road network used by construction vehicles represent the most sensitive woodlands with potential to be affected and the assessment of such woodlands represents the worst case scenario. Such woodlands are present as qualifying features of SACs or SSSIs (within the Order Limits there are no such high importance woodlands).

102. Those SACs and SSSIs with woodland qualifying features that are within 200m of the road network used by construction vehicles are:

- Alderford Common SSSI
- Ant Broads and Marshes SSSI
- Felbrigg Wood
- Norfolk Valley Fens SAC
- The Broads SAC
- Trinity Broads SSSI

4.3.7.1 Magnitude of Effect – SEP or DEP all scenarios

103. The detailed air quality impact assessment identified that four of these screened in statutory designated nature conservation sites with woodland qualifying features had exceedances of a Critical Load or a Critical Level through a contribution from the Project that was >1%. These sites are:

- Felbrigg Wood
- Norfolk Valley Fens SAC
- The Broads SAC
- Trinity Broads SSSI

104. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature. All of the listed sites above are evaluated as being subject to a temporary minor magnitude of effect.

4.3.7.2 Impact Significance – all scenarios

105. A minor magnitude of effect on these high importance receptors represents a temporary impact of **moderate adverse** significance.

4.3.7.3 Mitigation

106. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.7.4 Residual Impacts – SEP or DEP all scenarios

107. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these high importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.3.8 Construction Damage, Destruction or Disturbance to Woodland Habitats: Construction Vehicles on the Haul Road

108. Within the Order Limits there are 6.08ha semi-natural broadleaved woodland, 5.26ha plantation broadleaved woodland, 11.19ha plantation coniferous woodland, 3.03ha semi-natural mixed woodland and 2.04ha plantation mixed woodland. Of this woodland, 8.11ha will be crossed via an open trench technique. All ancient woodland is avoided by the cable corridor route. Ancient woodland has been assessed above and this represents the worst-case scenario.

4.3.8.1 Magnitude of Effect – SEP or DEP all scenarios

109. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.8.2 Impact Significance – all scenarios

110. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.3.8.3 Mitigation

111. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.8.4 Residual Impacts – SEP or DEP all scenarios

112. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.3.9 Construction Damage, Destruction or Disturbance to Woodland Habitats: Non- Road Mobile Machinery

113. Within the Order Limits there are 6.08ha semi-natural broadleaved woodland, 5.26ha plantation broadleaved woodland, 11.19ha plantation coniferous woodland, 3.03ha semi-natural mixed woodland and 2.04ha plantation mixed woodland. Of this woodland, 8.11ha will be crossed via an open trench technique. All ancient woodland is avoided by the cable corridor route. Ancient woodland has been assessed above and this represents the worst-case scenario.

4.3.9.1 Magnitude of Effect – SEP or DEP all scenarios

114. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.9.2 Impact Significance – all scenarios

115. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.3.9.3 Mitigation

116. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

117. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.9.4 Residual Impacts – SEP or DEP all scenarios

118. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.3.10 Construction Damage, Destruction or Disturbance to Scrub Habitats: Construction Vehicles on the Road Network

119. Scrub habitats are not qualifying features of those SACs or SSSIs within 200m of the road network and as such a worst case assessment as carried out for grassland and woodland habitats above is not applicable. For a precautionary assessment it is assumed that scrub habitats do occur within 200m of the road network and that they are subject to air quality changes to the same extent as other habitats already specifically assessed above.

4.3.10.1 Magnitude of Effect – SEP or DEP all scenarios

120. The precautionary assessment is that scrub habitats are subject to a temporary minor magnitude of effect as other habitats specifically assessed above.

4.3.10.2 Impact Significance – all scenarios

121. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.3.10.3 Mitigation

122. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.10.4 Residual Impacts – SEP or DEP all scenarios

123. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.3.11 Construction Damage, Destruction or Disturbance to Scrub Habitats: Construction Vehicles on the Haul Road

124. Within the Order Limits are 1.68ha of scrub habitat, of which 1.19ha will be removed and 0.49ha avoided by the use of trenchless techniques.

4.3.11.1 Magnitude of Effect – SEP or DEP all scenarios

125. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.11.2 Impact Significance – all scenarios

126. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.3.11.3 Mitigation

127. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.11.4 Residual Impacts – SEP or DEP all scenarios

128. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.12 Construction Damage, Destruction or Disturbance to Scrub Habitats: Non-Road Mobile Machinery

129. Within the Order Limits are 1.68ha of scrub habitat, of which 1.19ha will be removed and 0.49ha avoided by the use of trenchless techniques.

4.3.12.1 Magnitude of Effect – SEP or DEP all scenarios

130. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.12.2 Impact Significance – all scenarios

131. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.3.12.3 Mitigation

132. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

133. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.12.4 Residual Impacts – SEP or DEP all scenarios

134. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.13 Construction Damage, Destruction or Disturbance to Hedgerow Habitats: Construction Vehicles on the Road Network

135. Hedgerow habitats are not qualifying features of those SACs or SSSIs within 200m of the road network and as such a worst case assessment as carried out for grassland and woodland habitats above is not applicable. For a precautionary assessment it is assumed that hedgerow habitats do occur within 200m of the road network and that they are subject to air quality changes to the same extent as other habitats already specifically assessed above.

4.3.13.1 Magnitude of Effect – SEP or DEP all scenarios

136. The precautionary assessment is that hedgerow habitats are subject to a temporary minor magnitude of effect as other habitats specifically assessed above.

137. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature.

4.3.13.2 Impact Significance – all scenarios

138. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.3.13.3 Mitigation

139. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.13.4 Residual Impacts – SEP or DEP all scenarios

140. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.3.14 Construction Damage, Destruction or Disturbance to Hedgerow Habitats: Construction Vehicles on the Haul Road

141. Within the Order Limits approximately 237 hedgerows are crossed which in total equates to 22,807m in length. Through the commitment to trenchless techniques, 7,778m of these hedgerows have been avoided. The remaining 15,029m of hedgerows, would be subject direct impacts as a result of short-term construction activity involving the excavation of cable trenches, the haul road etc.

4.3.14.1 Magnitude of Effect – SEP or DEP all scenarios

142. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.14.2 Impact Significance – all scenarios

143. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.3.14.3 Mitigation

144. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.14.4 Residual Impacts – SEP or DEP all scenarios

145. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and

no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.15 Construction Damage, Destruction or Disturbance to Hedgerow Habitats: Non- Road Mobile Machinery

146. Within the Order Limits approximately 237 hedgerows are crossed which in total equates to 22,807m in length. Through the commitment to trenchless techniques, 7,778m of these hedgerows have been avoided. The remaining 15,029m of hedgerows, would be subject direct impacts as a result of short-term construction activity involving the excavation of cable trenches, the haul road etc.

4.3.15.1 Magnitude of Effect – SEP or DEP all scenarios

147. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.15.2 Impact Significance – all scenarios

148. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.3.15.3 Mitigation

149. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

150. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.15.4 Residual Impacts – SEP or DEP all scenarios

151. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.3.16 Construction Damage, Destruction or Disturbance to Watercourse Habitats: Construction Vehicles on the Road Network

152. Watercourse habitats of high importance within 200m of the road network used by construction vehicles represent the most sensitive watercourse habitats with potential to be affected and the assessment of such watercourse habitats represents the worst-case scenario. Such watercourse habitats are present as qualifying features of SACs or SSSIs.

153. Those SACs and SSSIs with watercourse habitat qualifying features that are within 200m of the road network used by construction vehicles are:

- River Wensum SSSI
- River Wensum SAC

4.3.16.1 Magnitude of Effect – SEP or DEP all scenarios

154. The detailed air quality impact assessment identified that these two screened in statutory designated nature conservation sites with watercourse habitat qualifying features had exceedances of a Critical Load or a Critical Level through a contribution from the Project that was >1%.

155. The >1% exceedance occurs over the short time period of the construction process occurs as a result of a short-term peak in airborne pollutants from the construction vehicles and is therefore temporary in nature. These two sites are evaluated as being subject to a temporary minor magnitude of effect.

4.3.16.2 Impact Significance – all scenarios

156. A minor magnitude of effect on these high importance receptors represents a temporary impact of **moderate adverse** significance.

4.3.16.3 Mitigation

157. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.16.4 Residual Impacts – SEP or DEP all scenarios

158. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these high importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.3.17 Construction Damage, Destruction or Disturbance to Watercourse Habitats: Construction Vehicles on the Haul Road

159. The River Wensum, a watercourse habitat of high importance, is located within 200m of the Haul Road and the assessment of this habitat represents the worst-case scenario (other minor watercourses and drainage ditches are of low importance).

4.3.17.1 Magnitude of Effect – SEP or DEP all scenarios

160. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.3.17.2 Impact Significance – all scenarios

161. A negligible magnitude of effect on the River Wensum, a high importance receptor, represents a temporary impact of **minor adverse** significance.

4.3.17.3 Mitigation

162. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.3.17.4 Residual Impacts – SEP or DEP all scenarios

163. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance for the River Wensum.

4.3.18 Construction Damage, Destruction or Disturbance to Watercourse Habitats: Non- Road Mobile Machinery

164. The River Wensum, a watercourse habitat of high importance, is located within 200m of the potential operation of NRMM as trenchless techniques are used to cross this watercourse. The assessment of this habitat represents the worst-case scenario (other minor watercourses and drainage ditches are of low importance).

4.3.18.1 Magnitude of Effect – SEP or DEP all scenarios

165. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.3.18.2 Impact Significance – all scenarios

166. A negligible magnitude of effect on the River Wensum, a high importance receptor, represents a temporary impact of **minor adverse** significance.

4.3.18.3 Mitigation

167. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

168. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.3.18.4 Residual Impacts – SEP or DEP all scenarios

169. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance for the River Wensum.

4.4 Species

4.4.1 Construction Damage, Destruction or Disturbance to Badger Features: Construction Vehicles on the Road Network

170. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

171. Badgers depend on grassland, woodland, scrub and hedgerow habitats for sett building and foraging. Air quality changes will not affect the sett building properties of these habitats. Air quality changes have the potential to affect the quality of grassland, woodland, scrub and hedgerow habitats and potentially to affect the quantity of food available to badger.

172. The habitats grassland, woodland, scrub and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on badger through an indirect effect acting on those habitats that provide its food resources.

4.4.1.1 Magnitude of Effect – SEP or DEP all scenarios

173. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.1.2 Impact Significance – all scenarios

174. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.4.1.3 Mitigation

175. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.1.4 Residual Impacts – SEP or DEP all scenarios

176. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.4.2 Construction Damage, Destruction or Disturbance to Badger Features: Construction Vehicles on the Haul Road

177. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

178. The dependency of badger on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.2.1 Magnitude of Effect – SEP or DEP all scenarios

179. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.2.2 Impact Significance – all scenarios

180. A negligible magnitude of effect on this low importance receptor represents a temporary impact of **negligible** significance.

4.4.2.3 Mitigation

181. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.2.4 Residual Impacts – SEP or DEP all scenarios

182. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.3 Construction Damage, Destruction or Disturbance to Badger Features: Non-Road Mobile Machinery

183. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

184. The dependency of badger on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.3.1 Magnitude of Effect – SEP or DEP all scenarios

185. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.3.2 Impact Significance – all scenarios

186. A negligible magnitude of effect on this low importance receptor represents a temporary impact of **negligible** significance.

4.4.3.3 Mitigation

187. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

188. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.3.4 Residual Impacts – SEP or DEP all scenarios

189. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.4 Construction Damage, Destruction or Disturbance to Bat Roosts: Construction Vehicles on the Road Network

190. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features within which bats roost that support populations of this species and hence it is considering indirect effects.

191. Bat roosts occur in trees in woodland and along hedgerows (roosts in buildings are not applicable to this air quality assessment). Air quality changes have the potential to affect trees in woodland and along hedgerows.

192. The habitats woodland and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on roosting bats through an indirect effect acting on those habitats that provide their roosting features.

4.4.4.1 Magnitude of Effect – SEP or DEP all scenarios

193. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.4.2 Impact Significance – all scenarios

194. A minor magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.4.4.3 Mitigation

195. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.4.4 Residual Impacts – SEP or DEP all scenarios

196. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these medium importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.5 Construction Damage, Destruction or Disturbance to Bat Roosts: Construction Vehicles on the Haul Road

197. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features within which bats roost that support populations of this species and hence it is considering indirect effects.

198. The dependency of roosting bats on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.5.1 Magnitude of Effect – SEP or DEP all scenarios

199. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.5.2 Impact Significance – all scenarios

200. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.4.5.3 Mitigation

201. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.5.4 Residual Impacts – SEP or DEP all scenarios

202. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.6 Construction Damage, Destruction or Disturbance to Bat Roosts: Non- Road Mobile Machinery

203. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features within which bats roost that support populations of this species and hence it is considering indirect effects.

204. The dependency of roosting bats on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.6.1 Magnitude of Effect – SEP or DEP all scenarios

205. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.6.2 Impact Significance – all scenarios

206. A negligible magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.4.6.3 Mitigation

207. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

208. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.6.4 Residual Impacts – SEP or DEP all scenarios

209. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.7 Construction Damage, Destruction or Disturbance to Non-Roosting Bat Features: Construction Vehicles on the Road Network

210. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features that bats use to forage at, or commute along, that support populations of this species and hence it is considering indirect effects.

211. Bats depend on grassland, woodland, scrub and hedgerow habitats for commuting building and foraging. Air quality changes have the potential to affect the quality of

grassland, woodland, scrub and hedgerow habitats and potentially to affect the quantity of food available to bats.

212. The habitats grassland, woodland, scrub and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on bats through an indirect effect acting on those habitats that provide its food resources.

4.4.7.1 Magnitude of Effect – SEP or DEP all scenarios

213. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.7.2 Impact Significance – all scenarios

214. A minor magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.4.7.3 Mitigation

215. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.7.4 Residual Impacts – SEP or DEP all scenarios

216. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these medium importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.8 Construction Damage, Destruction or Disturbance to Non-Roosting Bat Features: Construction Vehicles on the Haul Road

217. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features that bats use to forage at, or commute along, that support populations of this species and hence it is considering indirect effects.

218. The dependency of foraging and commuting bats on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.8.1 Magnitude of Effect – SEP or DEP all scenarios

219. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.8.2 Impact Significance – all scenarios

220. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.8.3 Mitigation

221. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.8.4 Residual Impacts – SEP or DEP all scenarios

222. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.9 Construction Damage, Destruction or Disturbance to Non-Roosting Bat Features: Non- Road Mobile Machinery

223. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features that bats use to forage at, or commute along, that support populations of this species and hence it is considering indirect effects.

224. The dependency of foraging and commuting bats on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.9.1 Magnitude of Effect – SEP or DEP all scenarios

225. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.9.2 Impact Significance – all scenarios

226. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.9.3 Mitigation

227. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

228. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological

receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.9.4 Residual Impacts – SEP or DEP all scenarios

229. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.10 Construction Damage, Destruction or Disturbance to Breeding Birds: Construction Vehicles on the Road Network

230. There is no evidence that there is a direct effect of airborne pollutants on breeding birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of breeding birds and hence it is considering indirect effects.

231. Breeding birds depend on arable, grassland, woodland, scrub and hedgerow habitats for nesting and foraging. Air quality changes have the potential to affect the quality of grassland, woodland, scrub and hedgerow habitats (but not arable as already assessed above) and potentially to affect the quantity of food available to breeding birds.

232. The habitats grassland, woodland, scrub and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on breeding birds through an indirect effect acting on those habitats that provide its food resources.

4.4.10.1 Magnitude of Effect – SEP or DEP all scenarios

233. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.10.2 Impact Significance – all scenarios

234. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.4.10.3 Mitigation

235. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.10.4 Residual Impacts – SEP or DEP all scenarios

236. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.4.11 Construction Damage, Destruction or Disturbance to Breeding Birds: Construction Vehicles on the Haul Road

237. There is no evidence that there is a direct effect of airborne pollutants on breeding birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of breeding birds and hence it is considering indirect effects.

238. The dependency of breeding birds on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.11.1 Magnitude of Effect – SEP or DEP all scenarios

239. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.11.2 Impact Significance – all scenarios

240. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.11.3 Mitigation

241. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.11.4 Residual Impacts – SEP or DEP all scenarios

242. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.12 Construction Damage, Destruction or Disturbance to Breeding Birds: Non-Road Mobile Machinery

243. There is no evidence that there is a direct effect of airborne pollutants on breeding birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of breeding birds and hence it is considering indirect effects.

244. The dependency of breeding birds on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.12.1 Magnitude of Effect – SEP or DEP all scenarios

245. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.12.2 Impact Significance – all scenarios

246. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.12.3 Mitigation

247. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

248. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.12.4 Residual Impacts – SEP or DEP all scenarios

249. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.13 Construction Damage, Destruction or Disturbance to Over-Wintering Birds: Construction Vehicles on the Road Network

250. There is no evidence that there is a direct effect of airborne pollutants on over-wintering birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of over-wintering birds and hence it is considering indirect effects.

251. The over-wintering population of pink-footed geese is of high importance, being a qualifying feature of the North Norfolk Coast SPA. Surveys found no pink-footed geese within the Order Limits. Pink-footed geese forage on arable farmland which, as noted in the assessment above, is not sensitive to air quality changes. For these two reasons this over-wintering bird species is screened out of this assessment.

252. Over-wintering birds other than pink-footed goose can include farmland birds such as skylark and yellowhammer that depend on habitats such as grassland, woodland, scrub and hedgerows that have been assessed above and those assessments are used to identify if there is a significant adverse effect on over-wintering birds through an indirect effect acting on those habitats that provide its food resources.

4.4.13.1 Magnitude of Effect – SEP or DEP all scenarios

253. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.13.2 Impact Significance – all scenarios

254. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.4.13.3 Mitigation

255. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.13.4 Residual Impacts – SEP or DEP all scenarios

256. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.4.14 Construction Damage, Destruction or Disturbance to Over-Wintering Birds: Construction Vehicles on the Haul Road

257. There is no evidence that there is a direct effect of airborne pollutants on over-wintering birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of over-wintering birds and hence it is considering indirect effects.

258. The dependency of over-wintering birds on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.14.1 Magnitude of Effect – SEP or DEP all scenarios

259. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.14.2 Impact Significance – all scenarios

260. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.14.3 Mitigation

261. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.14.4 Residual Impacts – SEP or DEP all scenarios

262. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.15 Construction Damage, Destruction or Disturbance to Over-Wintering Birds: Non- Road Mobile Machinery

263. There is no evidence that there is a direct effect of airborne pollutants on over-wintering birds at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of over-wintering birds and hence it is considering indirect effects.

264. The dependency of over-wintering birds on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.15.1 Magnitude of Effect – SEP or DEP all scenarios

265. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.15.2 Impact Significance – all scenarios

266. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.15.3 Mitigation

267. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

268. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.15.4 Residual Impacts – SEP or DEP all scenarios

269. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.16 Construction Damage, Destruction or Disturbance to Great Crested Newt Features: Construction Vehicles on the Road Network

270. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

271. Great crested newts depend on ponds for breeding and grassland, woodland, scrub and hedgerow habitats for foraging and hibernating. Air quality changes have the potential to affect the quality of grassland, woodland, scrub and hedgerow habitats and potentially to affect the quantity of food available to great crested newt.

272. The habitats grassland, woodland, scrub and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on great crested newt through an indirect effect acting on those habitats that provide its food resources.

4.4.16.1 Magnitude of Effect – SEP or DEP all scenarios

273. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.16.2 Impact Significance – all scenarios

274. A minor magnitude of effect on these medium importance receptors represents a temporary impact of **minor adverse** significance.

4.4.16.3 Mitigation

275. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.16.4 Residual Impacts – SEP or DEP all scenarios

276. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these medium importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.17 Construction Damage, Destruction or Disturbance to Great Crested Newt Features: Construction Vehicles on the Haul Road

277. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

278. The dependency of great crested newts on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.17.1 Magnitude of Effect – SEP or DEP all scenarios

279. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.17.2 Impact Significance – all scenarios

280. A negligible magnitude of effect on this medium importance receptor represents a temporary impact of **minor adverse** significance.

4.4.17.3 Mitigation

281. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.17.4 Residual Impacts – SEP or DEP all scenarios

282. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.18 Construction Damage, Destruction or Disturbance to Great Crested Newt Features: Non- Road Mobile Machinery

283. There is no evidence that there is a direct effect of airborne pollutants on this species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of this species and hence it is considering indirect effects.

284. The dependency of great crested newts on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.18.1 Magnitude of Effect – SEP or DEP all scenarios

285. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.18.2 Impact Significance – all scenarios

286. A negligible magnitude of effect on this medium importance receptor represents a temporary impact of **minor adverse** significance.

4.4.18.3 Mitigation

287. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and

secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

288. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.18.4 Residual Impacts – SEP or DEP all scenarios

289. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.19 Construction Damage, Destruction or Disturbance to Rare Invertebrate / Fish Features: Construction Vehicles on the Road Network

290. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly aquatic habitats) that support populations of these species and hence it is considering indirect effects.

291. The rare invertebrates and fish are the interest features of the River Wensum SSSI and River Wensum SAC that have been assessed above and this assessment of indirect effects on rare invertebrates and fish derives from that assessment of the SSSI and SAC.

4.4.19.1 Magnitude of Effect – SEP or DEP all scenarios

292. The River Wensum SSSI and River Wensum SAC have been evaluated above as being subject to a temporary minor magnitude of effect.

4.4.19.2 Impact Significance – all scenarios

293. A minor magnitude of effect on these high importance receptors represents a temporary impact of **moderate adverse** significance.

4.4.19.3 Mitigation

294. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.19.4 Residual Impacts – SEP or DEP all scenarios

295. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these high importance receptors. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.20 Construction Damage, Destruction or Disturbance to Rare Invertebrate / Fish Features: Construction Vehicles on the Haul Road

296. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly aquatic habitats) that support populations of these species and hence it is considering indirect effects.

297. The dependency of rare invertebrates / fish on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.20.1 Magnitude of Effect – SEP or DEP all scenarios

298. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.20.2 Impact Significance – all scenarios

299. A negligible magnitude of effect on these high importance receptors represents a temporary impact of **minor adverse** significance.

4.4.20.3 Mitigation

300. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.20.4 Residual Impacts – SEP or DEP all scenarios

301. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.21 Construction Damage, Destruction or Disturbance to Rare Invertebrate / Fish Features: Non- Road Mobile Machinery

302. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly aquatic habitats) that support populations of these species and hence it is considering indirect effects.

303. The dependency of rare invertebrates / fish on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.21.1 Magnitude of Effect – SEP or DEP all scenarios

304. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.21.2 Impact Significance – all scenarios

305. A negligible magnitude of effect on these high importance receptors represents a temporary impact of **minor adverse** significance.

4.4.21.3 Mitigation

306. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

307. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.21.4 Residual Impacts – SEP or DEP all scenarios

308. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **minor adverse** significance.

4.4.22 Construction Damage, Destruction or Disturbance to Reptile Features: Construction Vehicles on the Road Network

309. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of these species and hence it is considering indirect effects.

310. Reptiles depend on grassland, woodland, scrub and hedgerow habitats for foraging and hibernation. Air quality changes have the potential to affect the quality of grassland, woodland, scrub and hedgerow habitats and potentially to affect the quantity of food available to reptiles.

311. The habitats grassland, woodland, scrub and hedgerow have been assessed above and those assessments are used to identify if there is a significant adverse effect on reptiles through an indirect effect acting on those habitats that provide its food resources.

4.4.22.1 Magnitude of Effect – SEP or DEP all scenarios

312. The habitats listed above have been evaluated as being subject to a temporary minor magnitude of effect.

4.4.22.2 Impact Significance – all scenarios

313. A minor magnitude of effect on these low importance receptors represents a temporary impact of **minor adverse** significance.

4.4.22.3 Mitigation

314. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.22.4 Residual Impacts – SEP or DEP all scenarios

315. The implementation of the mitigation measures outlined above would give a reduction in air emissions, reducing the magnitude from temporary minor to negligible on these low importance receptors. The outcome is a temporary residual impact of **negligible** significance.

4.4.23 Construction Damage, Destruction or Disturbance to Reptile Features: Construction Vehicles on the Haul Road

316. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of these species and hence it is considering indirect effects.

317. The dependency of reptiles on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.23.1 Magnitude of Effect – SEP or DEP all scenarios

318. The assessment based on the consideration of the number of vehicles travelling along the haul road and whether or not this corresponded to an exceedance of a 1% change in Critical Level or Critical Load was that such an exceedance did not occur and the magnitude of the effect was negligible.

4.4.23.2 Impact Significance – all scenarios

319. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.23.3 Mitigation

320. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

4.4.23.4 Residual Impacts – SEP or DEP all scenarios

321. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

4.4.24 Construction Damage, Destruction or Disturbance to Reptile Features: Non-Road Mobile Machinery

322. There is no evidence that there is a direct effect of airborne pollutants on these species at the levels found as a result of the construction processes for this Project. This assessment considers effects on those features (particularly habitats) that support populations of these species and hence it is considering indirect effects.

323. The dependency of reptiles on particular habitats and the assessment of those habitats, as already carried out, are described above.

4.4.24.1 Magnitude of Effect – SEP or DEP all scenarios

324. The assessment based on the consideration of the number and type of NRMM, their working hours and existing air quality conditions concluded that project contributions would not exceed the 1% threshold value and that the magnitude of the effect was negligible.

4.4.24.2 Impact Significance – all scenarios

325. A negligible magnitude of effect on these low importance receptors represents a temporary impact of **negligible** significance.

4.4.24.3 Mitigation

326. Measures to minimise air emissions are set out in the updated **Outline Code of Construction Practice (Revision B)** submitted at Deadline 1 [REP1-023] and secured via the updated **Draft Development Consent Order (Revision D)** [document reference 3.1].

327. The cable duct installation is conducted in a sectionalised approach, working on sections of up to 1km at a time. This minimises the duration of works on any given section of the route and hence means that exposure of location specific ecological receptors, such as designated sites and ancient woodland, to pollutant loads sourced from NRMM is short term.

4.4.24.4 Residual Impacts – SEP or DEP all scenarios

328. The implementation of the mitigation measures outlined above would give a reduction in air emissions but in this case they are already below the threshold and no further change in the significance of impacts occurs. The outcome is a temporary residual impact of **negligible** significance.

5 Assessment of Cumulative Impacts

329. Set out above is a detailed presentation of the Project alone impacts on ecological receptors of changes in air quality. The conclusions remain as presented in **ES Chapter 20 Onshore Ecology and Ornithology** [APP-106]. As a result, the conclusions of the cumulative impact assessment presented in Section 20.7.3 of **ES Chapter 20 Onshore Ecology and Ornithology** [APP-106] remain as presented in that section and as summarised in Table 20-19.

6 Conclusion

330. The more detailed presentation of the existing assessment of the potential effects of air quality changes on ecological receptors provided in this Addendum allows the Examining Authority and Interested Parties to follow the process of the assessment of each screened-in ecological receptor. It does not change the outcome of the assessment that was presented in the **ES Chapter 20 Onshore Ecology and Ornithology** [APP-106] that no ecological receptor is subject to an adverse impact that is significant in EIA terms when the project is considered alone and cumulatively.

7 Assessment Summary

331. The summary table for the assessment of the effects of air quality changes on ecological receptors is presented below in **Table 1**.

Table 1: Summary of potential impacts of air quality changes on ecological receptors

Potential impact	Receptor	Source of pollutant	Pre-mitigation impact	Residual impact	Cumulative residual impact
Damage to statutory designated sites	Breydon Water SSSI Breydon Water SPA Breydon Water Ramsar Damgate Marshes, Acle SSSI East Winch Common SSSI Felbrigg Wood SSSI Holly Farm Meadow, Wendling SSSI Holt Lowes SSSI Norfolk Valley Fens SAC Potter & Scarning Fens, East Dereham SSSI River Wensum SSSI River Wensum SAC The Broads SAC Trinity Broads SSSI	Vehicles on the road network	Moderate adverse	Minor adverse	None predicted
	Alderford Common SSSI River Wensum SAC River Wensum SSSI	Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
	Alderford Common SSSI River Wensum SAC River Wensum SSSI	Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
Damage to non-statutory designated sites	Foxburrow Wood ancient woodland Great Wood ancient woodland Mouse Wood ancient woodland Raveningham Covert ancient woodland Reffley Wood ancient woodland Unnamed ancient woodland ID1 Unnamed ancient woodland ID3 Unnamed ancient woodland ID6	Vehicles on the road network	Minor adverse	Minor adverse	None predicted

Potential impact	Receptor	Source of pollutant	Pre-mitigation impact	Residual impact	Cumulative residual impact
	Cawston Wood ancient woodland Colton Wood ancient woodland Smeeth Wood ancient woodland Un-named ancient woodland (ID 6) Yare Valley (Colton Woods) CWS	Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
	Cawston Wood ancient woodland Colton Wood ancient woodland Smeeth Wood ancient woodland Un-named ancient woodland (ID 6) Yare Valley (Colton Woods) CWS	Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
Damage to habitats	Arable	Vehicles on the road network	Negligible	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Grassland	Vehicles on the road network	Moderate adverse	Minor adverse	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Woodland	Vehicles on the road network	Moderate adverse	Minor adverse	None predicted
		Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
		Non-road mobile machinery	Minor adverse	Minor adverse	None predicted

Potential impact	Receptor	Source of pollutant	Pre-mitigation impact	Residual impact	Cumulative residual impact
	Scrub	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Hedgerow	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Watercourse	Vehicles on the road network	Moderate adverse	Minor adverse	None predicted
		Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
		Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
Damage to species	Badger	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Bats roosting	Vehicles on the road network	Minor adverse	Minor adverse	None predicted

Potential impact	Receptor	Source of pollutant	Pre-mitigation impact	Residual impact	Cumulative residual impact
		Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
		Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
	Bats non-roosting	Vehicles on the road network	Minor adverse	Minor adverse	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Birds breeding	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Birds over-wintering	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted
	Great crested newt	Vehicles on the road network	Minor adverse	Minor adverse	None predicted
		Vehicles on the haul road	Minor adverse	Minor adverse	None predicted

Potential impact	Receptor	Source of pollutant	Pre-mitigation impact	Residual impact	Cumulative residual impact
		Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
	Rare invertebrates / fish	Vehicles on the road network	Moderate adverse	Minor adverse	None predicted
		Vehicles on the haul road	Minor adverse	Minor adverse	None predicted
		Non-road mobile machinery	Minor adverse	Minor adverse	None predicted
	Reptiles	Vehicles on the road network	Minor adverse	Negligible	None predicted
		Vehicles on the haul road	Negligible	Negligible	None predicted
		Non-road mobile machinery	Negligible	Negligible	None predicted

References

Chapman, C. and Kite, B. (2021a). Guidance on Decision-Making Thresholds for Air Pollution. JNCC Report No. 696 (Main Report), JNCC, Peterborough, ISSN 0963- 8091.

Chapman, C. and Kite, B. (2021b). Decision-Making Thresholds for Air Pollution. JNCC Report No. 696 (Technical Report), JNCC, Peterborough, ISSN 0963-8091.