DOGGER BANK D WIND FARM

Preliminary Environmental Information Report

Volume 2
Appendix 20.5 Construction Road Vehicle Exhaust Emissions Assessment – Ecological Transect Results

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Glossary

Term	Definition
Ancient Woodland	Typically, a woodland that has existed continuously since 1600 or before (this can include areas where trees have been cut down and / or replanted).
Birkhill Wood Substation	The onshore grid connection point for DBD identified through the Holistic Network Design process. Birkhill Wood Substation which is being developed by National Grid Electricity Transmission and does not form part of the Project.
Energy Storage and Balancing Infrastructure (ESBI)	A range of technologies such as battery banks to be co-located with the Onshore Converter Station, which provide valuable services to the electrical grid such as storing energy to meet periods of peak demand and improving overall reliability.
Landfall	The area on the coastline, south-east of Skipsea, at which the offshore export cables are brought ashore, connecting to the onshore export cables at the transition joint bay above Mean High Water Springs.
Onshore Converter Station (OCS)	A compound containing electrical equipment required to stabilise and convert electricity generated by the wind turbines and transmitted by the export cables into a more suitable voltage for grid connection into Birkhill Wood Substation.
Onshore Converter Station (OCS) Zone	The area within which the Onshore Converter Station and Energy Storage and Balancing Infrastructure will be located in vicinity of Birkhill Wood Substation.
Onshore Development Area	The area in which all onshore infrastructure associated with the Project will be located, including any temporary works area required during construction and permanent land required for mitigation and enhancement areas, which extends landward of Mean Low Water Springs. There is an overlap with the Offshore Development Area in the intertidal zone.
Onshore Export Cable Corridor (ECC)	The area within which the onshore export cables will be located, extending from the landfall to the Onshore Converter Station zone and onwards to Birkhill Wood Substation.
The Applicant	SSE Renewables and Equinor acting through 'Doggerbank Offshore Wind Farm Project 4 Projco Limited'.
The Project	Dogger Bank D (DBD) Offshore Wind Farm Project, also referred to as DBD in this PEIR.
Special Area of Conservation (SAC)	Area(s) of protected habitat(s) and species as defined in the European Union Habitat Directive (92/43/EEC).

Term	Definition
Special Protection Area (SPA)	A designated area for birds under the European Union Directive on the Conservation of Wild Birds (2009/147/EC).
Site of Special Scientific Interest (SSSI)	A geological or biological conservation designation denoting a nationally protected area in the UK.

20.5 Construction Road Vehicle Exhaust Emissions Assessment – Ecological Transect Results

20.5.1 Introduction

1. This appendix to the Dogger Bank D (DBD) Offshore Wind Farm (hereafter 'the Project') Preliminary Environmental Information Report (PEIR) supports **Volume 1, Chapter 20 Air Quality and Dust.** This appendix forms part of the PEIR for the onshore elements of the Project.

2. The purpose of this appendix is to provide the full results for each ecological receptor transect detailed in **Section 20.7.1.3.2** of **Volume 1, Chapter 20 Air Quality**.

20.5.2 Critical Levels

3. **Table 20.5-1** to **Table 20.5-2** present the potential contribution of the Project (i.e. Project's construction) and the in-combination contribution (i.e. Project traffic, in-combination with 2023 to 2029 traffic growth), respectively, for ecological receptor transects reported in **Section 20.7.1.3.2** of **Volume 1, Chapter 20 Air Quality and Dust** in relation to NO_X and NH_3.

4. Predicted total pollutant concentrations (including the relevant background pollutant concentrations) at the ecological receptor locations alone and in-combination are detailed in **Table 20.5-1** to **Table 20.5-2.** Values in exceedance of 100% of the Critical Level (CLe) are shown in in bold text.

5. Where habitats had multiple receptors transects modelled, the two transects with the highest predicted pollutants have been presented in the tables below.

Table 20.5-1 NO_x Critical Level Results

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_X Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
Humber Estuary SAC, SSSI, SPA, Ramsar								
Salt marshes	24	HE_SM3_10m	0.14	1.95	0.46%	**6.50%**	12.02	40.06%
Salt marshes		HE_SM3_15m	0.11	1.60	0.38%	**5.33%**	11.67	38.89%
Salt marshes		HE_SM3_20m	0.10	1.36	0.33%	**4.53%**	11.42	38.08%
Salt marshes		HE_SM3_25m	0.09	1.18	0.29%	**3.95%**	11.25	37.50%
Salt marshes		HE_SM3_30m	0.08	1.05	0.26%	**3.50%**	11.12	37.05%
Salt marshes		HE_SM3_40m	0.06	0.86	0.21%	**2.86%**	10.92	36.41%
Salt marshes		HE_SM3_50m	0.06	0.73	0.18%	**2.42%**	10.79	35.97%
Salt marshes		HE_SM3_60m	0.05	0.63	0.16%	**2.10%**	10.70	35.66%
Salt marshes	24	HE_SM4_8m	0.13	1.88	0.45%	**6.28%**	11.95	39.83%
Salt marshes		HE_SM4_13m	0.11	1.55	0.37%	**5.17%**	11.62	38.72%
Salt marshes		HE_SM4_18m	0.10	1.32	0.32%	**4.40%**	11.39	37.96%
Salt marshes		HE_SM4_23m	0.08	1.15	0.28%	**3.84%**	11.22	37.40%
Salt marshes		HE_SM4_28m	0.08	1.02	0.25%	**3.41%**	11.09	36.97%
Salt marshes		HE_SM4_38m	0.06	0.84	0.21%	**2.79%**	10.90	36.35%
Salt marshes		HE_SM4_48m	0.05	0.71	0.18%	**2.37%**	10.78	35.92%
Salt marshes	80	HE_SM8_0m	0.01	0.07	0.05%	0.21%	8.0	26.55%
Salt marshes		HE_SM8_10m	0.01	0.06	0.05%	0.21%	7.97	26.56%
Salt marshes		HE_SM8_20m	0.01	0.06	0.05%	0.22%	7.97	26.56%
Salt marshes		HE_SM8_30m	0.01	0.07	0.05%	0.22%	7.97	26.56%
Salt marshes		HE_SM8_40m	0.02	0.07	0.05%	0.22%	7.97	26.57%

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_x Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
Salt marshes		HE_SM8_50m	0.02	0.07	0.05%	0.22%	7.97	26.57%
Salt marshes		HE_SM8_60m	0.01	0.07	0.05%	0.22%	7.97	26.57%
Salt marshes		HE_SM8_70m	0.01	0.07	0.05%	0.22%	7.97	26.56%
Salt marshes		HE_SM8_80m	0.01	0.07	0.05%	0.22%	7.97	26.56%
Salt marshes		HE_SM8_90m	0.01	0.07	0.05%	0.22%	7.97	26.56%
Salt marshes		HE_SM8_100m	0.01	0.06	0.05%	0.21%	7.97	26.56%
Salt marshes		HE_SM8_110m	0.01	0.06	0.05%	0.21%	7.97	26.55%
Salt marshes		HE_SM8_120m	0.01	0.06	0.05%	0.21%	7.97	26.55%
Salt marshes		HE_SM8_130m	0.01	0.06	0.05%	0.20%	7.97	26.55%
Salt marshes		HE_SM8_140m	0.01	0.06	0.05%	0.20%	7.96	26.54%
Salt marshes		HE_SM8_150m	0.01	0.06	0.04%	0.20%	7.96	26.54%
Salt marshes		HE_SM8_160m	0.01	0.06	0.04%	0.19%	7.96	26.54%
Salt marshes		HE_SM8_170m	0.01	0.06	0.04%	0.19%	7.96	26.53%
Salt marshes		HE_SM8_180m	0.01	0.06	0.04%	0.19%	7.96	26.53%
Salt marshes		HE_SM8_190m	0.01	0.06	0.04%	0.18%	7.96	26.53%
Salt marshes		HE_SM8_200m	0.01	0.06	0.04%	0.18%	7.96	26.52%
Mudflats	24	HE_MU1_10m	0.13	1.79	0.42%	**5.97%**	11.86	39.52%
Mudflats		HE_MU1_130m	0.03	0.34	0.10%	**1.12%**	10.40	34.68%
Mudflats		HE_MU1_150m	0.03	0.32	0.09%	**1.05%**	10.38	34.61%
Mudflats		HE_MU1_140m	0.03	0.32	0.09%	**1.05%**	10.38	34.61%
Mudflats		HE_MU1_150m	0.03	0.32	0.09%	**1.05%**	10.38	34.61%
Mudflats		HE_MU1_160m	0.03	0.28	0.08%	0.94%	10.35	34.49%

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_x Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
Mudflats		HE_MU1_170m	0.02	0.27	0.08%	0.89%	10.33	34.45%
Mudflats		HE_MU1_180m	0.02	0.25	0.08%	0.85%	10.32	34.40%
Mudflats		HE_MU1_190m	0.02	0.24	0.07%	0.81%	10.31	34.37%
Mudflats		HE_MU1_200m	0.02	0.23	0.07%	0.78%	10.30	34.33%
Mudflats		HE_MU2_5m	0.20	2.92	0.68%	**9.75%**	12.99	43.30%
Mudflats		HE_MU2_110m	0.03	0.39	0.11%	**1.31%**	10.46	34.86%
Mudflats		HE_MU2_120m	0.03	0.36	0.10%	**1.21%**	10.43	34.77%
Mudflats		HE_MU2_130m	0.03	0.34	0.10%	**1.13%**	10.41	34.69%
Mudflats		HE_MU2_140m	0.03	0.32	0.09%	**1.06%**	10.39	34.62%
Mudflats		HE_MU2_150m	0.03	0.30	0.09%	**1.00%**	10.37	34.56%
Mudflats		HE_MU2_160m	0.03	0.28	0.08%	0.95%	10.35	34.50%
Mudflats		HE_MU2_170m	0.02	0.27	0.08%	0.90%	10.34	34.45%
Mudflats		HE_MU2_180m	0.02	0.26	0.08%	0.86%	10.32	34.41%
Mudflats		HE_MU2_190m	0.02	0.25	0.08%	0.82%	10.31	34.37%
Mudflats		HE_MU2_200m	0.02	0.23	0.07%	0.78%	10.3	34.34%
Mudflats	80	HE_MU9_0m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_10m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_20m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_30m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_40m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_50m	0.03	0.22	0.08%	0.74%	9.74	32.47%
Mudflats		HE_MU9_60m	0.03	0.22	0.08%	0.73%	9.74	32.47%

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_x Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
Mudflats		HE_MU9_70m	0.03	0.22	0.08%	0.73%	9.74	32.47%
Mudflats		HE_MU9_80m	0.03	0.22	0.08%	0.73%	9.74	32.46%
Mudflats		HE_MU9_90m	0.03	0.22	0.08%	0.73%	9.74	32.46%
Mudflats		HE_MU9_100m	0.03	0.22	0.08%	0.72%	9.74	32.46%
Mudflats		HE_MU9_110m	0.03	0.22	0.08%	0.72%	9.74	32.45%
Mudflats		HE_MU9_120m	0.03	0.21	0.08%	0.71%	9.73	32.45%
Mudflats		HE_MU9_130m	0.02	0.21	0.08%	0.71%	9.73	32.44%
Mudflats		HE_MU9_140m	0.02	0.21	0.08%	0.70%	9.73	32.43%
Mudflats		HE_MU9_150m	0.02	0.21	0.08%	0.69%	9.73	32.43%
Mudflats		HE_MU9_160m	0.02	0.21	0.08%	0.69%	9.73	32.42%
Mudflats		HE_MU9_170m	0.02	0.20	0.08%	0.68%	9.72	32.41%
Mudflats		HE_MU9_180m	0.02	0.20	0.08%	0.67%	9.72	32.41%
Mudflats		HE_MU9_190m	0.02	0.20	0.08%	0.67%	9.72	32.40%
Mudflats		HE_MU9_200m	0.02	0.20	0.08%	0.66%	9.72	32.39%
Mudflats	26	HE_MU11_77m	0.08	0.36	0.25%	**1.20%**	19.62	65.40%
Mudflats		HE_MU11_90m	0.07	0.32	0.23%	**1.06%**	19.58	65.26%
Mudflats		HE_MU11_100m	0.06	0.29	0.21%	0.97%	19.55	65.16%
Mudflats		HE_MU11_110m	0.06	0.27	0.19%	0.89%	19.53	65.09%
Mudflats		HE_MU11_120m	0.05	0.25	0.18%	0.83%	19.51	65.03%
Bentley Moor Ancient Woodland								
Broadleaved Deciduous woodland	12	AW_01_165m	0.07	0.11	0.22%	0.35%	6.94	23.13%

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_x Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
Broadleaved Deciduous woodland		AW_01_170m	0.07	0.10	0.22%	0.35%	6.94	23.12%
Broadleaved Deciduous woodland		AW_01_180m	0.06	0.10	0.22%	0.34%	6.93	23.12%
Broadleaved Deciduous woodland		AW_01_190m	0.06	0.10	0.21%	0.33%	6.93	23.11%
Humber Bridge Local Nature Reserve								
-	22	HB_LNR_02_150m	0.11	0.37	0.38%	**1.24%**	10.54	35.15%
-		HB_LNR_02_160m	0.11	0.36	0.36%	**1.19%**	10.53	35.10%
-		HB_LNR_02_170m	0.10	0.34	0.33%	**1.15%**	10.52	35.06%
-		HB_LNR_02_180m	0.09	0.33	0.31%	**1.11%**	10.51	35.02%
-		HB_LNR_02_190m	0.09	0.33	0.30%	**1.08%**	10.50	34.99%
-		HB_LNR_02_200m	0.08	0.32	0.28%	**1.06%**	10.49	34.97%
-	80	HB_LNR_01_35m	0.06	0.67	0.20%	**2.23%**	10.19	33.96%
-		HB_LNR_01_40m	0.06	0.67	0.20%	**2.24%**	10.19	33.97%
-		HB_LNR_01_50m	0.06	0.68	0.21%	**2.26%**	10.20	33.99%
-		HB_LNR_01_60m	0.06	0.68	0.21%	**2.28%**	10.20	34.02%
-		HB_LNR_01_70m	0.06	0.69	0.21%	**2.31%**	10.21	34.04%
-		HB_LNR_01_80m	0.06	0.70	0.21%	**2.35%**	10.22	34.08%
-		HB_LNR_01_90m	0.06	0.72	0.21%	**2.39%**	10.24	34.12%
-		HB_LNR_01_100m	0.06	0.73	0.22%	**2.44%**	10.25	34.18%
-		HB_LNR_01_110m	0.07	0.75	0.22%	**2.51%**	10.27	34.24%

Feature Name	Road Link	Transect ID and Starting Distance from Road Link	Maximum NO_x Contribution				Total NOx Concentration including Background	
			Change in NO_x Concentration ($\mu g.m^{-3}$)		Change as % of CLe		With Project In-Combination* ($\mu g.m^{-3}$)	% of CLe
			Contribution from Project Alone	Contribution from Project In-combination*	Project Alone Contribution	Project In-Combination*		
-		HB_LNR_01_120m	0.07	0.78	0.22%	**2.58%**	10.30	34.32%
-		HB_LNR_01_130m	0.07	0.80	0.23%	**2.67%**	10.32	34.40%
-		HB_LNR_01_140m	0.07	0.83	0.23%	**2.76%**	10.35	34.49%
-		HB_LNR_01_150m	0.07	0.86	0.24%	**2.86%**	10.38	34.60%
-		HB_LNR_01_160m	0.07	0.89	0.25%	**2.98%**	10.41	34.71%
-		HB_LNR_01_170m	0.08	0.93	0.26%	**3.10%**	10.45	34.83%
-		HB_LNR_01_180m	0.08	0.97	0.27%	**3.24%**	10.49	34.97%
-		HB_LNR_01_190m	0.08	1.02	0.28%	**3.39%**	10.54	35.13%
-		HB_LNR_01_200m	0.09	1.07	0.29%	**3.58%**	10.59	35.31%

AADT change shown are inclusive of the Project-generated traffic, in-combination traffic growth (from 2023 to 2029). Any relevant cumulative project traffic will be included at ES stage.

Table 20.5-2 NH_3 Critical Level Results

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
Humber Estuary SAC, SSSI, SPA, Ramsar											
Salt marshes	24	HE_SM3_10m	0.039	0.209	**3.86%**	**1.29%**	**20.91%**	**6.97%**	2.05	**204.91%**	68.30%
Salt marshes		HE_SM3_15m	0.032	0.171	**3.18%**	**1.06%**	**17.15%**	**5.72%**	2.01	**201.15%**	67.05%
Salt marshes		HE_SM3_20m	0.027	0.146	**2.71%**	0.90%	**14.57%**	**4.86%**	1.99	**198.57%**	66.19%
Salt marshes		HE_SM3_25m	0.024	0.127	**2.37%**	0.79%	**12.70%**	**4.23%**	1.97	**196.70%**	65.57%
Salt marshes		HE_SM3_30m	0.021	0.113	**2.10%**	0.70%	**11.26%**	**3.75%**	1.95	**195.26%**	65.09%
Salt marshes		HE_SM3_40m	0.017	0.092	**1.73%**	0.58%	**9.20%**	**3.07%**	1.93	**193.20%**	64.40%
Salt marshes		HE_SM3_50m	0.015	0.078	**1.47%**	0.49%	**7.79%**	**2.60%**	1.92	**191.79%**	63.93%
Salt marshes		HE_SM3_60m	0.013	0.068	**1.29%**	0.43%	**6.77%**	**2.26%**	1.91	**190.77%**	63.59%
Salt marshes	24	HE_SM4_8m	0.037	0.202	**3.73%**	**1.24%**	**20.20%**	**6.73%**	2.04	**204.20%**	68.07%
Salt marshes		HE_SM4_13m	0.031	0.166	**3.08%**	**1.03%**	**16.61%**	**5.54%**	2.01	**200.61%**	66.87%
Salt marshes		HE_SM4_18m	0.026	0.142	**2.63%**	0.88%	**14.17%**	**4.72%**	1.98	**198.17%**	66.06%
Salt marshes		HE_SM4_23m	0.023	0.124	**2.30%**	0.77%	**12.36%**	**4.12%**	1.96	**196.36%**	65.45%
Salt marshes		HE_SM4_28m	0.021	0.110	**2.05%**	0.68%	**10.98%**	**3.66%**	1.95	**194.98%**	64.99%
Salt marshes		HE_SM4_38m	0.017	0.090	**1.69%**	0.56%	**8.99%**	**3.00%**	1.93	**192.99%**	64.33%
Salt marshes		HE_SM4_48m	0.014	0.076	**1.44%**	0.48%	**7.61%**	**2.54%**	1.92	**191.61%**	63.87%
Salt marshes	80	HE_SM8_0m	0.002	0.007	0.19%	0.06%	0.74%	0.25%	1.99	**198.74%**	66.25%
Salt marshes		HE_SM8_10m	0.002	0.008	0.20%	0.07%	0.76%	0.25%	1.99	**198.76%**	66.25%
Salt marshes		HE_SM8_20m	0.002	0.008	0.20%	0.07%	0.78%	0.26%	1.99	**198.78%**	66.26%
Salt marshes		HE_SM8_30m	0.002	0.008	0.20%	0.07%	0.79%	0.26%	1.99	**198.79%**	66.26%
Salt marshes		HE_SM8_40m	0.002	0.008	0.20%	0.07%	0.80%	0.27%	1.99	**198.80%**	66.27%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
Salt marshes		HE_SM8_50m	0.002	0.008	0.20%	0.07%	0.80%	0.27%	1.99	**198.80%**	66.27%
Salt marshes		HE_SM8_60m	0.002	0.008	0.20%	0.07%	0.79%	0.26%	1.99	**198.79%**	66.26%
Salt marshes		HE_SM8_70m	0.002	0.008	0.20%	0.07%	0.79%	0.26%	1.99	**198.79%**	66.26%
Salt marshes		HE_SM8_80m	0.002	0.008	0.20%	0.07%	0.78%	0.26%	1.99	**198.78%**	66.26%
Salt marshes		HE_SM8_90m	0.002	0.008	0.20%	0.07%	0.77%	0.26%	1.99	**198.77%**	66.26%
Salt marshes		HE_SM8_100m	0.002	0.008	0.20%	0.07%	0.76%	0.25%	1.99	**198.76%**	66.25%
Salt marshes		HE_SM8_110m	0.002	0.007	0.19%	0.06%	0.75%	0.25%	1.99	**198.75%**	66.25%
Salt marshes		HE_SM8_120m	0.002	0.007	0.19%	0.06%	0.74%	0.25%	1.99	**198.74%**	66.25%
Salt marshes		HE_SM8_130m	0.002	0.007	0.19%	0.06%	0.73%	0.24%	1.99	**198.73%**	66.24%
Salt marshes		HE_SM8_140m	0.002	0.007	0.19%	0.06%	0.71%	0.24%	1.99	**198.71%**	66.24%
Salt marshes		HE_SM8_150m	0.002	0.007	0.18%	0.06%	0.70%	0.23%	1.99	**198.70%**	66.23%
Salt marshes		HE_SM8_160m	0.002	0.007	0.18%	0.06%	0.69%	0.23%	1.99	**198.69%**	66.23%
Salt marshes		HE_SM8_170m	0.002	0.007	0.18%	0.06%	0.68%	0.23%	1.99	**198.68%**	66.23%
Salt marshes		HE_SM8_180m	0.002	0.007	0.18%	0.06%	0.66%	0.22%	1.99	**198.66%**	66.22%
Salt marshes		HE_SM8_190m	0.002	0.007	0.17%	0.06%	0.65%	0.22%	1.99	**198.65%**	66.22%
Salt marshes		HE_SM8_200m	0.002	0.006	0.17%	0.06%	0.64%	0.21%	1.99	**198.64%**	66.21%
Mudflats	24	HE_MU1_10m	0.035	0.192	-	**1.18%**	-	**6.40%**	2.03	-	67.73%
Mudflats		HE_MU1_130m	0.007	0.036	-	0.24%	-	**1.21%**	1.88	-	62.54%
Mudflats		HE_MU1_150m	0.007	0.034	-	0.22%	-	**1.14%**	1.87	-	62.47%
Mudflats		HE_MU1_140m	0.007	0.034	-	0.22%	-	**1.14%**	1.87	-	62.47%
Mudflats		HE_MU1_150m	0.007	0.034	-	0.22%	-	**1.14%**	1.87	-	62.47%
Mudflats		HE_MU1_160m	0.006	0.030	-	0.20%	-	**1.01%**	1.87	-	62.35%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
Mudflats		HE_MU1_170m	0.006	0.029	-	0.19%	-	0.96%	1.87	-	62.30%
Mudflats		HE_MU1_180m	0.006	0.027	-	0.18%	-	0.92%	1.87	-	62.25%
Mudflats		HE_MU1_190m	0.005	0.026	-	0.18%	-	0.88%	1.87	-	62.21%
Mudflats		HE_MU1_200m	0.005	0.025	-	0.17%	-	0.84%	1.87	-	62.17%
Mudflats		HE_MU2_5m	0.058	0.313	-	**1.92%**	-	**10.45%**	2.15	-	71.78%
Mudflats		HE_MU2_110m	0.008	0.042	-	0.27%	-	**1.40%**	1.88	-	62.74%
Mudflats		HE_MU2_120m	0.008	0.039	-	0.26%	-	**1.31%**	1.88	-	62.64%
Mudflats		HE_MU2_130m	0.007	0.037	-	0.24%	-	**1.22%**	1.88	-	62.55%
Mudflats		HE_MU2_140m	0.007	0.034	-	0.23%	-	**1.15%**	1.87	-	62.48%
Mudflats		HE_MU2_150m	0.006	0.032	-	0.21%	-	**1.08%**	1.87	-	62.41%
Mudflats		HE_MU2_160m	0.006	0.031	-	0.20%	-	**1.02%**	1.87	-	62.36%
Mudflats		HE_MU2_170m	0.006	0.029	-	0.19%	-	0.97%	1.87	-	62.30%
Mudflats		HE_MU2_180m	0.006	0.028	-	0.19%	-	0.92%	1.87	-	62.26%
Mudflats		HE_MU2_190m	0.005	0.026	-	0.18%	-	0.88%	1.87	-	62.21%
Mudflats		HE_MU2_200m	0.005	0.025	-	0.17%	-	0.84%	1.87	-	62.18%
Mudflats	80	HE_MU9_0m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_10m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_20m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_30m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_40m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_50m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%
Mudflats		HE_MU9_60m	0.005	0.024	-	0.17%	-	0.80%	1.82	-	60.80%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
Mudflats		HE_MU9_70m	0.005	0.024	-	0.17%	-	0.79%	1.82	-	60.79%
Mudflats		HE_MU9_80m	0.005	0.024	-	0.17%	-	0.79%	1.82	-	60.79%
Mudflats		HE_MU9_90m	0.005	0.024	-	0.17%	-	0.79%	1.82	-	60.79%
Mudflats		HE_MU9_100m	0.005	0.024	-	0.17%	-	0.78%	1.82	-	60.78%
Mudflats		HE_MU9_110m	0.005	0.023	-	0.17%	-	0.78%	1.82	-	60.78%
Mudflats		HE_MU9_120m	0.005	0.023	-	0.17%	-	0.77%	1.82	-	60.77%
Mudflats		HE_MU9_130m	0.005	0.023	-	0.17%	-	0.77%	1.82	-	60.77%
Mudflats		HE_MU9_140m	0.005	0.023	-	0.17%	-	0.76%	1.82	-	60.76%
Mudflats		HE_MU9_150m	0.005	0.023	-	0.16%	-	0.75%	1.82	-	60.75%
Mudflats		HE_MU9_160m	0.005	0.022	-	0.16%	-	0.75%	1.82	-	60.75%
Mudflats		HE_MU9_170m	0.005	0.022	-	0.16%	-	0.74%	1.82	-	60.74%
Mudflats		HE_MU9_180m	0.005	0.022	-	0.16%	-	0.73%	1.82	-	60.73%
Mudflats		HE_MU9_190m	0.005	0.022	-	0.16%	-	0.72%	1.82	-	60.72%
Mudflats		HE_MU9_200m	0.005	0.021	-	0.16%	-	0.71%	1.82	-	60.71%
Mudflats	26	HE_MU11_77m	0.010	0.042	-	0.34%	-	**1.39%**	1.65	-	55.05%
Mudflats		HE_MU11_90m	0.009	0.037	-	0.30%	-	**1.22%**	1.65	-	54.89%
Mudflats		HE_MU11_100m	0.008	0.033	-	0.28%	-	**1.11%**	1.64	-	54.78%
Mudflats		HE_MU11_110m	0.008	0.031	-	0.26%	-	**1.02%**	1.64	-	54.69%
Mudflats		HE_MU11_120m	0.007	0.029	-	0.24%	-	0.95%	1.64	-	54.62%
Bentley Moor Ancient Woodland											
Broadleaved Deciduous woodland	12	AW_01_165m	0.010	0.015	**1.03%**	0.34%	**1.45%**	0.48%	1.75	**175.45%**	58.48%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
Broadleaved Deciduous woodland		AW_01_170m	0.010	0.014	**1.02%**	0.34%	**1.43%**	0.48%	1.75	**175.43%**	58.48%
Broadleaved Deciduous woodland		AW_01_180m	0.010	0.014	0.99%	0.33%	**1.39%**	0.46%	1.75	**175.39%**	58.46%
Broadleaved Deciduous woodland		AW_01_190m	0.010	0.014	0.96%	0.32%	**1.35%**	0.45%	1.75	**175.35%**	58.45%
Humber Bridge Local Nature Reserve											
-	22	HB_LNR_02_150m	0.014	0.038	**1.35%**	0.45%	**3.79%**	**1.26%**	1.78	**177.79%**	59.26%
-		HB_LNR_02_160m	0.013	0.037	**1.29%**	0.43%	**3.67%**	**1.22%**	1.78	**177.67%**	59.22%
-		HB_LNR_02_170m	0.012	0.036	**1.23%**	0.41%	**3.56%**	**1.19%**	1.78	**177.56%**	59.19%
-		HB_LNR_02_180m	0.012	0.035	**1.18%**	0.39%	**3.47%**	**1.16%**	1.77	**177.47%**	59.16%
-		HB_LNR_02_190m	0.011	0.034	**1.13%**	0.38%	**3.39%**	**1.13%**	1.77	**177.39%**	59.13%
-		HB_LNR_02_200m	0.011	0.033	**1.09%**	0.36%	**3.32%**	**1.11%**	1.77	**177.32%**	59.11%
-	80	HB_LNR_01_35m	0.014	0.072	**1.41%**	0.47%	**7.20%**	**2.40%**	1.87	**187.20%**	62.40%
-		HB_LNR_01_40m	0.014	0.072	**1.42%**	0.47%	**7.23%**	**2.41%**	1.87	**187.23%**	62.41%
-		HB_LNR_01_50m	0.014	0.073	**1.43%**	0.48%	**7.29%**	**2.43%**	1.87	**187.29%**	62.43%
-		HB_LNR_01_60m	0.014	0.074	**1.44%**	0.48%	**7.36%**	**2.45%**	1.87	**187.36%**	62.45%
-		HB_LNR_01_70m	0.015	0.075	**1.46%**	0.49%	**7.46%**	**2.49%**	1.87	**187.46%**	62.49%
-		HB_LNR_01_80m	0.015	0.076	**1.48%**	0.49%	**7.57%**	**2.52%**	1.88	**187.57%**	62.52%
-		HB_LNR_01_90m	0.015	0.077	**1.51%**	0.50%	**7.71%**	**2.57%**	1.88	**187.71%**	62.57%
-		HB_LNR_01_100m	0.015	0.079	**1.54%**	0.51%	**7.88%**	**2.63%**	1.88	**187.88%**	62.63%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum NH_3 Contribution						Total NH_3 Concentration including Background		
			Change in NH_3 Concentration ($\mu g.m^{-3}$)		Project Alone Change as % of CLe		Project In-Combination Change as % of CLe*		With Project In-Combination* ($\mu g.m^{-3}$)	as % of lower CLe	as % of upper CLe
			Contribution from Project Alone	Contribution from Project In-combination*	lower CLe	upper CLe	lower CLe	upper CLe			
-		HB_LNR_01_110m	0.016	0.081	**1.57%**	0.52%	**8.08%**	**2.69%**	1.88	**188.08%**	62.69%
-		HB_LNR_01_120m	0.016	0.083	**1.62%**	0.54%	**8.33%**	**2.78%**	1.88	**188.33%**	62.78%
-		HB_LNR_01_130m	0.017	0.086	**1.67%**	0.56%	**8.59%**	**2.86%**	1.89	**188.59%**	62.86%
-		HB_LNR_01_140m	0.017	0.089	**1.72%**	0.57%	**8.90%**	**2.97%**	1.89	**188.90%**	62.97%
-		HB_LNR_01_150m	0.018	0.092	**1.78%**	0.59%	**9.23%**	**3.08%**	1.89	**189.23%**	63.08%
-		HB_LNR_01_160m	0.018	0.096	**1.85%**	0.62%	**9.59%**	**3.20%**	1.90	**189.59%**	63.20%
-		HB_LNR_01_170m	0.019	0.100	**1.92%**	0.64%	**9.97%**	**3.32%**	1.90	**189.97%**	63.32%
-		HB_LNR_01_180m	0.020	0.104	**2.00%**	0.67%	**10.42%**	**3.47%**	1.90	**190.42%**	63.47%
-		HB_LNR_01_190m	0.021	0.109	**2.09%**	0.70%	**10.93%**	**3.64%**	1.91	**190.93%**	63.64%
-		HB_LNR_01_200m	0.022	0.115	**2.20%**	0.73%	**11.53%**	**3.84%**	1.92	**191.53%**	63.84%

AADT change shown are inclusive of the Project-generated traffic, in-combination traffic growth (from 2023 to 2029). Any relevant cumulative project traffic will be included at ES stage.

20.5.3 Critical Loads

6. **Table 20.5-3** to **Table 20.5-4** present the potential contribution of the Projects (i.e. Project construction) and the in-combination contribution (i.e. Project traffic, 2023 to 2029 traffic growth), respectively, for ecological receptor transects reported in **Section 20.7.1.3.2** of **Volume 1, Chapter 20 Air Quality and Dust** in relation to nutrient nitrogen and acid deposition.

7. Predicted total pollutant concentrations (including the relevant background pollutant concentrations) at the ecological receptor locations alone and in-combination are detailed in **Table 20.5-3** to **Table 20.5-4**. Values in exceedance of 100% of the Critical Load (CL) are shown in in bold text.

8. Where habitats had multiple receptor transects modelled, the two transects with the highest predicted pollutants have been presented in the tables below.

Table 20.5-3 Nitrogen Deposition Critical Load Results

Feature Name	Road Link	Transect ID and Distance from road link	Maximum Nutrient Nitrogen Contribution						Total Nutrient Nitrogen Deposition including Background		
			Change in Nutrient Nitrogen Deposition (kgN.ha.y^{-1}) –		Change in Nutrient Nitrogen Deposition from Project Alone as % CL		Change in Nutrient Nitrogen Deposition from Project In-Combination as % of CL		With Project In-Combination* (kgN.ha.yr^{-1})	% of lower CL	% of upper CL
			Contribution from Project Alone	Contribution from Project In-combination*	lower CL	upper CL	lower CL	upper CL			
Humber Estuary SAC, SSSI, SPA, Ramsar											
Salt marshes	24	HE_SM3_10m	0.21	1.21	**2.10%**	0.21%	**12.05%**	**1.21%**	16.96	**169.55%**	84.78%
Salt marshes		HE_SM3_15m	0.17	0.99	**1.72%**	0.17%	**9.91%**	0.99%	16.74	**167.41%**	83.70%
Salt marshes		HE_SM3_20m	0.15	0.84	**1.47%**	0.15%	**8.44%**	0.84%	16.59	**165.94%**	82.97%
Salt marshes		HE_SM3_25m	0.13	0.74	**1.27%**	0.13%	**7.37%**	0.74%	16.49	**164.87%**	82.43%
Salt marshes		HE_SM3_30m	0.12	0.65	**1.15%**	0.12%	**6.55%**	0.65%	16.40	**164.05%**	82.02%
Salt marshes		HE_SM3_40m	0.09	0.54	0.94%	0.09%	**5.36%**	0.54%	16.29	**162.86%**	81.43%
Salt marshes		HE_SM3_50m	0.08	0.45	0.81%	0.08%	**4.54%**	0.45%	16.20	**162.04%**	81.02%
Salt marshes		HE_SM3_60m	0.07	0.39	0.70%	0.07%	**3.94%**	0.39%	16.14	**161.44%**	80.72%
Salt marshes	24	HE_SM4_8m	0.20	1.17	**2.03%**	0.20%	**11.65%**	**1.17%**	16.92	**169.15%**	84.58%
Salt marshes		HE_SM4_13m	0.17	0.96	**1.67%**	0.17%	**9.62%**	0.96%	16.71	**167.12%**	83.56%
Salt marshes		HE_SM4_18m	0.14	0.82	**1.43%**	0.14%	**8.22%**	0.82%	16.57	**165.72%**	82.86%
Salt marshes		HE_SM4_23m	0.13	0.72	**1.26%**	0.13%	**7.18%**	0.72%	16.47	**164.68%**	82.34%
Salt marshes		HE_SM4_28m	0.11	0.64	**1.11%**	0.11%	**6.39%**	0.64%	16.39	**163.89%**	81.94%
Salt marshes		HE_SM4_38m	0.09	0.52	0.92%	0.09%	**5.23%**	0.52%	16.27	**162.73%**	81.37%
Salt marshes		HE_SM4_48m	0.08	0.44	0.78%	0.08%	**4.43%**	0.44%	16.19	**161.93%**	80.97%
Salt marshes	80	HE_SM8_0m	0.01	0.04	0.11%	0.01%	0.43%	0.04%	16.47	**164.73%**	82.36%
Salt marshes		HE_SM8_10m	0.01	0.05	0.12%	0.01%	0.45%	0.05%	16.48	**164.75%**	82.38%
Salt marshes		HE_SM8_20m	0.01	0.05	0.12%	0.01%	0.46%	0.05%	16.48	**164.76%**	82.38%

Feature Name	Road Link	Transect ID and Distance from road link	Maximum Nutrient Nitrogen Contribution						Total Nutrient Nitrogen Deposition including Background		
			Change in Nutrient Nitrogen Deposition (kgN.ha.y^{-1}) –		Change in Nutrient Nitrogen Deposition from Project Alone as % CL		Change in Nutrient Nitrogen Deposition from Project In-Combination as % of CL		With Project In-Combination* (kgN.ha.yr^{-1})	% of lower CL	% of upper CL
			Contribution from Project Alone	Contribution from Project In-combination*	lower CL	upper CL	lower CL	upper CL			
Salt marshes		HE_SM8_30m	0.01	0.05	0.12%	0.01%	0.47%	0.05%	16.48	**164.77%**	82.38%
Salt marshes		HE_SM8_40m	0.01	0.05	0.12%	0.01%	0.46%	0.05%	16.48	**164.76%**	82.38%
Salt marshes		HE_SM8_50m	0.01	0.05	0.12%	0.01%	0.46%	0.05%	16.48	**164.76%**	82.38%
Salt marshes		HE_SM8_60m	0.01	0.05	0.12%	0.01%	0.46%	0.05%	16.48	**164.76%**	82.38%
Salt marshes		HE_SM8_70m	0.01	0.05	0.11%	0.01%	0.45%	0.05%	16.48	**164.75%**	82.38%
Salt marshes		HE_SM8_80m	0.01	0.04	0.12%	0.01%	0.45%	0.04%	16.47	**164.75%**	82.37%
Salt marshes		HE_SM8_90m	0.01	0.04	0.12%	0.01%	0.44%	0.04%	16.47	**164.74%**	82.37%
Salt marshes		HE_SM8_100m	0.01	0.04	0.10%	0.01%	0.44%	0.04%	16.47	**164.74%**	82.37%
Salt marshes		HE_SM8_110m	0.01	0.04	0.12%	0.01%	0.43%	0.04%	16.47	**164.73%**	82.37%
Salt marshes		HE_SM8_120m	0.01	0.04	0.11%	0.01%	0.43%	0.04%	16.47	**164.73%**	82.36%
Salt marshes		HE_SM8_130m	0.01	0.04	0.11%	0.01%	0.42%	0.04%	16.47	**164.72%**	82.36%
Salt marshes		HE_SM8_140m	0.01	0.04	0.11%	0.01%	0.41%	0.04%	16.47	**164.71%**	82.36%
Salt marshes		HE_SM8_150m	0.01	0.04	0.10%	0.01%	0.41%	0.04%	16.47	**164.71%**	82.35%
Salt marshes		HE_SM8_160m	0.01	0.04	0.09%	0.01%	0.40%	0.04%	16.47	**164.70%**	82.35%
Salt marshes		HE_SM8_170m	0.01	0.04	0.09%	0.01%	0.38%	0.04%	16.47	**164.68%**	82.34%
Salt marshes		HE_SM8_180m	0.01	0.04	0.11%	0.01%	0.39%	0.04%	16.47	**164.69%**	82.34%
Salt marshes		HE_SM8_190m	0.01	0.04	0.10%	0.01%	0.38%	0.04%	16.47	**164.68%**	82.34%
Salt marshes		HE_SM8_200m	0.01	0.04	0.10%	0.01%	0.38%	0.04%	16.47	**164.68%**	82.34%
Bentley Moor Ancient Woodland											
Broadleaved Deciduous woodland	12	AW_01_165m	0.09	0.13	**1.84%**	0.61%	**2.61%**	0.87%	30.30	**606.01%**	**202.00%**

Feature Name	Road Link	Transect ID and Distance from road link	Maximum Nutrient Nitrogen Contribution						Total Nutrient Nitrogen Deposition including Background		
			Change in Nutrient Nitrogen Deposition (kgN.ha.y^{-1}) –		Change in Nutrient Nitrogen Deposition from Project Alone as % CL		Change in Nutrient Nitrogen Deposition from Project In-Combination as % of CL		With Project In-Combination* (kgN.ha.yr^{-1})	% of lower CL	% of upper CL
			Contribution from Project Alone	Contribution from Project In-combination*	lower CL	upper CL	lower CL	upper CL			
Broadleaved Deciduous woodland		AW_01_170m	0.09	0.13	**1.76%**	0.59%	**2.52%**	0.84%	30.30	**605.92%**	**201.97%**
Broadleaved Deciduous woodland		AW_01_180m	0.09	0.12	**1.77%**	0.59%	**2.45%**	0.82%	30.29	**605.85%**	**201.95%**
Broadleaved Deciduous woodland		AW_01_190m	0.09	0.12	**1.73%**	0.58%	**2.40%**	0.80%	30.29	**605.80%**	**201.93%**

AADT change shown are inclusive of the Project-generated traffic, in-combination traffic growth (from 2023 to 2029). Any relevant cumulative project traffic will be included at ES stage.

Table 20.5-4 Acid Deposition Critical Load Results

Feature Name	Road Link	Transect ID and Distance from road link	Maximum Acid Deposition Contribution				Total Nutrient Acid Deposition including Background	
			Change in Acid Deposition (keq.ha.yr^{-1})		Change in Acid Deposition as % of Critical Load		Total Acid Deposition In-Combination* (keq.ha.yr^{-1})	% of CL
			Contribution from Project Alone	Contribution from Project In-combination*	Contribution from Project	Contribution from Project In-combination*		
Bentley Moor Ancient Woodland								
Broadleaved Deciduous woodland	12	AW_01_165m	0.007	0.009	0.06%	0.08%	2.17	19.74%
Broadleaved Deciduous woodland		AW_01_170m	0.006	0.009	0.06%	0.08%	2.17	19.74%
Broadleaved Deciduous woodland		AW_01_180m	0.006	0.009	0.06%	0.08%	2.17	19.74%
Broadleaved Deciduous woodland		AW_01_190m	0.006	0.009	0.06%	0.08%	2.17	19.73%

AADT change shown are inclusive of the Project-generated traffic, in-combination traffic growth (from 2023 to 2029). Any relevant cumulative project traffic will be included at ES stage.

List of Tables

List of Acronyms

Term	Definition
AADT	Annual Average Daily Traffic
CLe	Critical Level
DBD	Dogger Bank D Offshore Wind Farm Project
ES	Environmental Statement
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest