NORTH FALLS

Offshore Wind Farm

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

Appendix 26.2 Road Traffic Noise Assessment

Document Reference No: 004577240-01
Date: 6 December 2022
Revision: 01

PRELIMINARY ENVIRONMENTAL INFORMATION REPORT

6 December 2022

Project	North Falls Offshore Wind Farm
Sub-Project or Package	Environmental Impact Assessment
Document Title	Preliminary Environmental Information Report Appendix 26.2 Road Traffic Noise Assessment
Document Reference	004577240-01
Revision	01 (Draft B)
Supplier Reference No	PB9244-RHD-ZZ-ON-TN-ON-0125

Revision	Date	Status/Reason for Issue	Originator	Checked	Approved
01 (Draft B)	06/12/22	Final	TB	GC	JP/DH/AP

Contents

Tables

Glossary of Acronyms

AAWT	Annual Average Weekday Traffic
BNL	Basic Noise Level
CRTN	Calculation of Road Traffic Noise
CTR	Construction Traffic Receptor
dB	Decibel
DEFRA	Department for Environment, Food and Rural Affairs
HGV	Heavy Goods Vehicles
LiDAR	Light detection and ranging
LOAEL	Lowest Observed Adverse Effect Level
NAC	Noise Advisory Council
NVSR	Noise and Vibration Sensitive Receptor
OS	Ordnance Survey
PEIR	Preliminary Environmental Information Report
SOAEL	Significant Observed Adverse Effect Level

Glossary of Terminology

The Project Or 'North Falls'	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
For further explanation of acoustics specific terms, refer to Appendix 26.1 Baseline Noise Survey and Acoustic Terminology	

1 Introduction

1. This Appendix to the Preliminary Environmental Information Report (PEIR) for the proposed North Falls Offshore Wind Farm (herein 'the Project' or 'North Falls') details the construction road traffic noise assessment including traffic data, calculation procedures and results.

2 Off-Site Construction Traffic Data

2. This section outlines the traffic data provided by the project's Transport Consultants and which is described in detail in Chapter 27 Traffic and Transport (Volume I) and Appendix 27.1 Transport Assessment (Volume III) of the PEIR.
3. Traffic data were provided by the Transport Consultants as 18hr Annual Average Weekday Traffic (AAWT), along with speed data, total vehicles and percentage Heavy Goods Vehicles (HGVs).
4. The data were provided for the following scenarios:
   - Baseline year (2026);
   - Baseline year plus peak construction traffic; and
   - Baseline year plus average construction traffic.
5. The earliest realistic year that construction works will start is 2026. It is anticipated that later years would have higher baseline traffic flows so the calculated change in flows due to the project is maximised by assuming the earliest possible construction year.
6. As discussed in Chapter 26 Noise and Vibration (Volume I), the calculations use the standardised methodology specified in the Calculation of Road Traffic Noise (CRTN) (Department of Transport, 1988) or the method detailed in 'A Guide to Measurement and Prediction of the Equivalent Continuous Sound Level L_{eq}, Report by a Working Party for the Technical Sub-committee of the Noise Advisory Council' (NAC, 1978). Neither of these calculation methods account for any potential changes in vehicle noise over time. Hence, the magnitude of impact is only dependent on the change in traffic flow, so assuming the earliest realistic construction year ensures a worst-case effect has been determined.

3 Noise from Off-Site Construction Traffic Assessment

3.1 Basic Noise Level Calculations

7. Noise impacts on all road links to be used during the construction of North Falls were assessed by comparing the calculated Basic Noise Level (BNL, as defined in CRTN) for the baseline traffic flows and for the peak and average scenarios, provided in Table 1 and Table 2. The NAC method was used instead of CRTN for those links where the traffic flows were below the minimum cut-off in CRTN

(1000 vehicles per day). Where the calculations have used the NAC method instead of CRTN, these cells are highlighted in orange.

Table 1 Calculated BNL – 2026 baseline versus 2026 baseline + peak construction traffic

Link ID	Description	Speed (mph)	2026 baseline BNL (CRTN dB $L_{A10,18hr}$ or (NAC dB $L_{Aeq,18hr}$)*	2026 baseline + peak construction BNL (CRTN dB $L_{A10,18hr}$ or NAC dB $L_{Aeq,18hr}$)*	Overall change (dB)	Magnitude of impact
1	A120 from the A12 to the A133	70	80.8	81.0	0.2	Negligible
2	A120 from the A133 to Harwich Road	70	80.8	81.0	0.2	Negligible
3	A120 from Harwich Road to Bentley Road	50	73.7	74.4	0.7	Negligible
4	Bentley Road from the A120 to Little Bromley	43	57.1	63.0	5.9	High
5	Bentley Road through Little Bromley	43	57.1	57.9	0.8	Negligible
6	B1035 south of the A120 to Tendring Green	42	66.8	67.4	0.6	Negligible
7	Bromley Road north of Little Bromley	42	60.6	61.1	0.5	Negligible
8	Bromley Road south of the A137	42	60.6	61.1	0.5	Negligible
9	A137 east-west through Lawford	30	68.4	68.4	0.0	Negligible
10	A137 north-south through Lawford	30	68.4	68.5	0.1	Negligible
11	Parsonage Lane and Wolves Hall Lane east of the B1035	26	42.5	44.3	1.8	Low
12	Stones Green Road	30	48.4	49.1	0.7	Negligible
13	B1035 south of the B1352	30	66.5	66.6	0.1	Negligible
14	B1035 north of the A120	30	66.5	66.8	0.3	Negligible
15	A120 from Bentley Road to the B1035	50	73.7	74.4	0.7	Negligible
16	A120 from the B1035 to Colchester Road	50	73.7	74.4	0.7	Negligible
17	Colchester Road south of the A120	32	56.9	59.6	2.7	Low
18	A120 from Colchester Road to the B1352	50	73.0	73.8	0.8	Negligible
19	A120 from the B1352 to Parkeston Road	50	73.0	73.8	0.8	Negligible
20	A133 south of the A120	50	76.2	76.4	0.2	Negligible
21	A133 to the B1033	57	77.1	77.3	0.2	Negligible
22	A133 south of the B1033 to Progress Way	25	70.6	70.8	0.2	Negligible

Link ID	Description	Speed (mph)	2026 baseline BNL (CRTN dB $L_{A10,18hr}$ or (NAC dB $L_{Aeq,18hr}$)*	2026 baseline + peak construction BNL (CRTN dB $L_{A10,18hr}$ or NAC dB $L_{Aeq,18hr}$)*	Overall change (dB)	Magnitude of impact
23	A133 south of Progress Way to the B1032	60	75.9	76.0	0.1	Negligible
24	B1032 east of the A133 to Holland Road	30	68.3	68.6	0.3	Negligible
25	B1032 from Holland Road to Kings Parade	30	68.6	68.9	0.3	Negligible
26	B1032 from Kings Parade to the south of Great Holland	36	66.5	67.1	0.6	Negligible
27	B1032 through Great Holland	36	66.5	66.6	0.1	Negligible
28	B1033 north of the B1032 through Kirby Cross to Pork Lane	44	69.2	69.2	0.0	Negligible
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	44	69.2	69.4	0.2	Negligible
30	B1033 south of the B1414 through Thorpe-le-Soken	44	69.2	69.4	0.2	Negligible
31	B1414 east of the B1033	36	59.9	59.9	0.0	Negligible
32	B1033 north of the B1414 through Thorpe-le-Soken	44	69.2	69.4	0.2	Negligible
33	B1033 from the B1441 to the B1035 through Weeley	47	70.1	70.5	0.4	Negligible
34	B1033 from the A133 to the B1441	47	70.1	70.5	0.4	Negligible
35	B1035 north of B1033 to Whitehall Lane	34	59.3	61.6	2.3	Low
36	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	42	66.8	66.9	0.1	Negligible
37	B1035 north of Whitehall Lane to Swan Road	34	59.3	61.6	2.3	Low
38	B1035 through Goose Green	42	66.8	66.9	0.1	Negligible
39	B1035 north of Swan Road to the south of Tendring	39	62.4	64.0	1.6	Low
40	B1035 through Tendring to Crown Lane	39	62.4	62.7	0.3	Negligible
41	Crown Lane	35	63.1	63.1	0.0	Negligible
42	B1035 from Crown Lane to Lodge Lane	39	62.4	62.8	0.4	Negligible
*	Where cells are highlighted in orange, this shows that the NAC calculation methodology has been used and the calculated level is an $L_{Aeq,18hr}$					

Table 2 Calculated BNL – 2026 baseline traffic versus 2026 baseline + average construction traffic

Link ID	Description	Speed (mph)	2026 baseline BNL (CRTN dB $L_{A10,18hr}$ or (NAC dB $L_{Aeq,18hr}$)*	2026 baseline + average construction BNL (CRTN dB $L_{A10,18hr}$ or NAC dB $L_{Aeq,18hr}$)*	Overall change (dB)	Magnitude of impact
1	A120 from the A12 to the A133	70	80.8	80.9	0.1	Negligible
2	A120 from the A133 to Harwich Road	70	80.8	80.9	0.1	Negligible
3	A120 from Harwich Road to Bentley Road	50	73.7	74.2	0.5	Negligible
4	Bentley Road from the A120 to Little Bromley	43	57.1	61.8	4.7	Medium
5	Bentley Road through Little Bromley	43	57.1	57.5	0.4	Negligible
6	B1035 south of the A120 to Tendring Green	42	66.8	67.2	0.4	Negligible
7	Bromley Road north of Little Bromley	42	60.6	60.9	0.3	Negligible
8	Bromley Road south of the A137	42	60.6	60.9	0.3	Negligible
9	A137 east-west through Lawford	30	68.4	68.4	0.0	Negligible
10	A137 north-south through Lawford	30	68.4	68.5	0.1	Negligible
11	Parsonage Lane and Wolves Hall Lane east of the B1035	26	42.5	43.8	1.3	Low
12	Stones Green Road	30	48.4	48.9	0.5	Negligible
13	B1035 south of the B1352	30	66.5	66.5	0.0	Negligible
14	B1035 north of the A120	30	66.5	66.7	0.2	Negligible
15	A120 from Bentley Road to the B1035	50	73.7	74.2	0.5	Negligible
16	A120 from the B1035 to Colchester Road	50	73.7	74.2	0.5	Negligible
17	Colchester Road south of the A120	32	56.9	59.0	2.1	Low
18	A120 from Colchester Road to the B1352	50	73.0	73.6	0.6	Negligible

Link ID	Description	Speed (mph)	2026 baseline BNL (CRTN dB $L_{A10,18hr}$ or (NAC dB $L_{Aeq,18hr}$)*	2026 baseline + average construction BNL (CRTN dB $L_{A10,18hr}$ or NAC dB $L_{Aeq,18hr}$)*	Overall change (dB)	Magnitude of impact
19	A120 from the B1352 to Parkeston Road	50	73.0	73.6	0.6	Negligible
20	A133 south of the A120	50	76.2	76.3	0.1	Negligible
21	A133 to the B1033	57	77.1	77.2	0.1	Negligible
22	A133 south of the B1033 to Progress Way	25	70.6	70.7	0.1	Negligible
23	A133 south of Progress Way to the B1032	60	75.9	76.0	0.1	Negligible
24	B1032 east of the A133 to Holland Road	30	68.3	68.5	0.2	Negligible
25	B1032 from Holland Road to Kings Parade	30	68.6	68.8	0.2	Negligible
26	B1032 from Kings Parade to the south of Great Holland	36	66.5	66.9	0.4	Negligible
27	B1032 through Great Holland	36	66.5	66.6	0.1	Negligible
28	B1033 north of the B1032 through Kirby Cross to Pork Lane	44	69.2	69.2	0.0	Negligible
29	B1033 from Pork Lane to the south of Thorpe-le-Soken	44	69.2	69.3	0.1	Negligible
30	B1033 south of the B1414 through Thorpe-le-Soken	44	69.2	69.3	0.1	Negligible
31	B1414 east of the B1033	36	59.9	59.9	0.0	Negligible
32	B1033 north of the B1414 through Thorpe-le-Soken	44	69.2	69.3	0.1	Negligible
33	B1033 from the B1441 to the B1035 through Weeley	47	70.1	70.4	0.3	Negligible
34	B1033 from the A133 to the B1441	47	70.1	70.4	0.3	Negligible
35	B1035 north of B1033 to Whitehall Lane	34	59.3	60.9	1.6	Low
36	B1035 through Tendring Green from Parsonage Lane to Stones Green Road	42	66.8	66.9	0.1	Negligible
37	B1035 north of Whitehall Lane to Swan Road	34	59.3	60.9	1.6	Low
38	B1035 through Goose Green	42	66.8	66.9	0.1	Negligible
39	B1035 north of Swan Road to the south of Tendring	39	62.4	63.4	1.0	Low
40	B1035 through Tendring to Crown Lane	39	62.4	62.7	0.3	Negligible

Link ID	Description	Speed (mph)	2026 baseline BNL (CRTN dB $L_{A10,18hr}$ or (NAC dB $L_{Aeq,18hr}$)*	2026 baseline + average construction BNL (CRTN dB $L_{A10,18hr}$ or NAC dB $L_{Aeq,18hr}$)*	Overall change (dB)	Magnitude of impact
41	Crown Lane	35	63.1	63.1	0.0	Negligible
42	B1035 from Crown Lane to Lodge Lane	39	62.4	62.7	0.3	Negligible
*	Where cells are highlighted in orange, this shows that the NAC calculation methodology has been used and the calculated level is an $L_{Aeq,18hr}$					

8. According to Table 1 and Table 2, there is the potential for negligible impacts on 36 links and low impacts on 5 links, irrespective of whether the average or peak traffic flows are used in the calculations. On one link (link 4, Bentley Road from the A120 to Little Bromley), the calculations using the average construction traffic flow indicate a change of 4.7 dB (an impact of medium magnitude) and, using the peak traffic flow, the change is 5.9 dB, which is an impact of high magnitude.

3.2 Detailed Calculations

9. To provide further context on the potential impacts, the noise and vibration sensitive receptors (NVSRs) within 50m of Link 4 (CTR1 to CTR7) are identified in the Chapter 26 Noise and Vibration (Volume I). The road traffic noise levels for the 'baseline year' and 'baseline plus peak construction traffic' scenarios have been calculated at each NVSR for comparison with the construction road traffic noise lowest observed adverse effect level (LOAEL) and significant observed adverse effect level (SOAEL) values detailed in the Chapter 26 Noise and Vibration (Volume I).

10. Following the identification of potentially significant effects as stated in the Chapter 26 Noise and Vibration (Volume I), a mitigated modelling scenario was produced. This incorporated the proposed mitigation option of a temporary 30mph speed limit on Bentley Road from the A120 to Little Bromley (Link 4).

11. The noise modelling study area extended to 300m in all directions from Link 4. This study area was determined based on a review of aerial imagery which didn't identify any roads outside this study area with the potential to affect noise levels at the identified NVSRs.

12. The calculations of road traffic noise were undertaken using SoundPLAN (V8.2) noise modelling software. This software implements the sound propagation calculation methodology set out in CRTN.

3.2.1 Modelling input data

13. Inputs into the noise modelling software include traffic data, the ground topography, ground type, and buildings to form a 3D representation of the study area. Modelling input data are detailed in Table 3.

Table 3 Noise model input data

Data	Usage	Source file	Origin
OS mapping	Locations of buildings and roads in study area	OS_MasterMap_669253_880737	Emapsite
		OS_MasterMap_717065_930746	North Falls Offshore Wind Ltd
Street-side Photography	Locations and heights of existing barriers	N/a	Google Street View
LiDAR composite Digital Terrain Model	Ground topography in study area	LIDAR-DTM-1m-2020-TM12nw LIDAR-DTM-1m-2020-TM02ne	Environment Agency (2020) LIDAR Composite DSM 2020 – 1m. Defra Data Services Platform. Available at https://environment.data.gov.uk/DefraDataDownload/?Mode=survey

Data	Usage	Source file	Origin
Road traffic flows	18-hour AAWT, %HGV and speed for all links (baseline and unmitigated scenarios). Speed for mitigated scenario assumed to be as per provided traffic flow data except for link 4 where the speed was assumed to be 30 mph.	PB9244 – Cal 001 – D.01 – Air & Noise Flows.xlsx	The project's Transport Consultants

3.2.2 Acoustic model settings

14. Acoustic modelling has been undertaken using the following model settings:

- Maximum search radius of 3000m.
- Maximum number of reflections: 1
- Noise predictions carried out at ground floor level i.e. 1.5m above ground.
- Side diffraction enabled.
- Building heights set to 6m.
- Ground absorption has been set as:
  - Road surfaces G = 0 (hard ground);
  - All other areas G = 0.8 (80% soft ground, considered representative of the study area.
- Road surfaces have been assumed to be standard hot rolled asphalt (surface correction factor of -0.5dB for speeds at or above 75kph, for lower speeds the correction is -1dB).

3.2.3 Calculation results

15. The results of the calculations are shown in Table 4.

Table 4 Calculated road traffic noise levels

NVSR	Calculated daytime road traffic noise level (dB $L_{A10,18h}$)			Change in noise level from baseline (dB $L_{A10,18h}$)	
	Baseline year	Baseline year plus peak construction traffic	Baseline year plus peak construction traffic, mitigated	Baseline year plus peak construction traffic	Baseline year plus peak construction traffic, mitigated
CTR1	55.3	59.6	58.2	4.3	2.9
CTR2	61.6	68.0	66.5	6.4	4.9
CTR3	53.1	58.2	56.7	5.1	3.6

NVSR	Calculated daytime road traffic noise level (dB $L_{A10,18h}$)			Change in noise level from baseline (dB $L_{A10,18h}$)	
	Baseline year	Baseline year plus peak construction traffic	Baseline year plus peak construction traffic, mitigated	Baseline year plus peak construction traffic	Baseline year plus peak construction traffic, mitigated
CTR4	59.2	64.8	63.4	5.6	4.2
CTR5	67.0	70.5	69.6	3.5	2.7
CTR6	58.4	60.7	60.1	2.3	1.7
CTR7	55.0	59.5	58.1	4.5	3.1

4 References

Department of Transport, Welsh Office (1988) Calculation of Road Traffic Noise (CRTN). London, HMSO.
Working Party for the Technical Sub-committee of the Noise Advisory Council (1978), A Guide to Measurement and Prediction of the Equivalent Continuous Sound Level Leq. London: HMSO
Environment Agency (2021) LIDAR Composite DSM 2020 - 1m. Defra Data Services Platform available at https://environment.data.gov.uk/DefraDataDownload/?Mode=survey
Google (2021) Google Street View. Available at https://www.google.com/maps/@51.8975798,1.0695756,3a,75y,259.22h,73.87t/data=!3m6!1e1!3m4!1s7OvM96zT45Fd_Rf8hdjs3A!2e0!7i13312!8i6656