Environmental Impact Assessment Report
Volume 3, Appendix 25.4: Construction Stage Traffic Noise Assessment

MarramWind Offshore Wind Farm

December 2025

MarramWind

Document code:	MAR-GEN-ENV-REP-WSP-000155
Contractor document number:	852346-WEIS-IA-E5-RP-O7-162986
Version:	Final for Submission
Date:	08/12/2025
Prepared by:	WSP UK Limited
Checked by:	WSP UK Limited
Approved by:	MarramWind Limited

Contents

1. Introduction

1.1.1.1 This Appendix of the Environmental Impact Assessment (EIA) Report presents the methodology and results of the assessment of change in road traffic noise levels for the proposed MarramWind Offshore Wind Farm (hereafter referred to as 'the Project') in relation to the construction stage.

1.1.1.2 This Appendix should be read in conjunction with the relevant parts of **Volume 1, Chapter 25: Onshore Noise and Vibration**.

2. Construction Traffic Noise Assessment

2.1 Methodology for the assessment of changes in road traffic noise

2.1.1.1 The results of the Transport Assessment have been used as the basis for determining the change in noise levels arising on existing roads as a result of construction stage development generated traffic. Road traffic noise calculations have been carried out in general accordance with Calculation of Road Traffic Noise (CRTN) (Department of Transport and Welsh Office, 1988) (see **Appendix 25.1: Noise and Vibration Relevant Legislation, Policy and Technical Guidance)**.

2.1.1.2 Basic Noise Level (BNL) calculations have been undertaken for a notional receptor location 10m from the edge of the carriageway of each road considered. A notional receptor has been used because the change in traffic noise level adjacent to any given road will be the same at all distances where noise from that route is dominant. Traffic noise calculations have been undertaken to establish the change in the daytime $L_{A10,18hr}$ noise level for the peak number of daily trips for each construction route.

2.1.1.3 Predictions have been undertaken for the following Scenarios:

- Scenario 1: Baseline traffic alone; and
- Scenario 2: Baseline traffic plus traffic due to peak of construction of the Project.

2.1.1.4 The traffic data for the assessment has been prepared by the Transport Consultant and is included in **Section 2.3** of this Appendix and includes all routes likely to be used during the construction stage of the Project.

2.1.1.5 The changes in road traffic noise have been determined by subtracting the noise level determined for Scenario 1, from that determined for Scenario 2. The resulting change is therefore that associated with the additional construction traffic movements. Predicted increases in BNL are presented in **Section 3** of this Appendix.

2.1.1.6 The Project construction traffic will only use public highways during project core hours and shoulder hours, as set out in **Volume 1, Chapter 4: Project Description**, which are during the daytime period. Therefore, only daytime assessment criteria are considered.

2.2 Methodology for the assessment of road traffic on low flow roads

2.2.1.1 For low flow roads, below 1,000 vehicle movements between 06:00 and 24:00, the number of vehicles is below the CRTN prediction methodology range. For the low flow roads considered for Scenarios 1 and 2, the British Standards (BS) 5228-1 (Subcommittee B/564/1, 2009) (see **Appendix 25.1**) haul road calculation has been used to predict the heavy goods vehicle (HGV) noise level for the peak construction traffic data at ten metres (m).

2.2.1.2 This method predicts an equivalent continuous sound level based on the general formula:

$$L_{Aeq,T} = L_{WA} - 33 + 10\log_{10}Q - 10\log_{10}V - 10\log_{10}d$$

where:

L_{WA} is the sound power level of the plant, in decibels (dB)

Q is the number of vehicles per hour

V is the average vehicle speed, in kilometres per hour (km/h)

d is the distance of receiving position from the centre of haul road (m).

2.2.1.3 Adjustments may also be applied for reflections, screening, angle of view and percentage of the assessment period for which an activity takes place.

2.2.1.4 An adjustment is applied for on-time, it is assumed that the time taken for each vehicle pass-by is 60 seconds (distance travelled in 60 second at 64 km/h is approximately 1,070m).

2.2.1.5 In summary, the calculation parameters are:

L_{WA}: 110dB. Lorry sound power adopted from BS 5228-1, Table C. 11 'Lorry movements on access road, ref. no. 9 'Lorry' (Power rating, kW 313, 32 tonne)

Q: up to 7 HGV movements per hour

V: 64km/h

d: 10m

Reflection: +3dB

On-time: up to 7 minutes per hour

Angle-of-view: no adjustment

Screening: no adjustment.

2.2.1.6 The predicted road traffic noise levels for each link will be compared against the daytime construction noise thresholds determined in accordance with the BS 5228-1 'ABC method', i.e. 65 decibels (dB) $L_{Aeq,T}$ (see Section 2.2 of **Appendix 25.3: Construction Stage Noise and Vibration Assessment**).

2.3 Construction stage traffic data

2.3.1.1 The Project traffic data (Average Annual Weekday Traffic (AAWT), per cent HGV, and average speed) for input into the assessment is reported in **Table 2.1**. Where no data was available, this has been indicated as N/A in **Table 2.1**.

Table 2.1 Summary of traffic data used as a basis for the construction stage traffic assessment

Road link ID	Road link name and location	Scenario 1: Baseline		Scenario 2: Construction stage		Average speed (km/hr)	Comments
		AAWT 18 hr	% HGV	AAWT 18 hr	% HGV		
A90-01	A90 between A982 at Whitehilll and A950.	7568	8%	7790	11%	97	- -
A90-02	A90 between A950 and	4418	4%	4752	7%	97	- -

Road link ID	Road link name and location	Scenario 1: Baseline		Scenario 2: Construction stage		Average speed (km/hr)	Comments
		AAWT 18 hr	% HGV	AAWT 18 hr	% HGV		
	A982 at Waterside.						
A90-03	A90 between A982 and C5B.	4418	4%	4752	7%	97	- -
A90-04	A90 between C5B and U32B.	5949	6%	6282	8%	97	- -
A950-01	A950 between A90 and C56B.	7656	10%	7911	11%	84	- -
C43B-01	C43B between C5B and U45B.	N/A	N/A	52	50%	31	Very Low Flow Road
C56B-01	C56B between A950 and C38B.	N/A	N/A	125	37%	31	Very Low Flow Road
C5B-01	C5B between A90 and Cairnhill.	540	4%	627	10%	31	Low Flow Road
U32B-01	U32B west off the A90 at Inverquinzie Cotts.	N/A	N/A	28	50%	31	Very Low Flow Road, Residential receptor adjacent to road.
U45B-01	U45B between U50B and C43B.	N/A	N/A	71	50%	31	Very Low Flow Road
U50-01	U50B between A950 and C43B.	N/A	N/A	68	50%	31	Very Low Flow Road
U59B-01	U59B between A950 and C38B at Denholm.	N/A	N/A	150	39%	31	Very Low Flow Road
U63B-01	U63B between A950 and	423	11%	548	17%	31	Low Flow Road

Road link ID	Road link name and location	Scenario 1: Baseline		Scenario 2: Construction stage		Average speed (km/hr)	Comments
		AAWT 18 hr	% HGV	AAWT 18 hr	% HGV		
	C38B at Stockbridge.						
B9178-01	B9178 east of A90 Inverettie Roundabout.	2084	23%	2086	23%	46	- -

3. Construction Stage Traffic Noise Assessment

3.1 BNL assessment

3.1.1.1 The inputs from **Table 2.1** have been used to determine BNLs in the baseline (without Project) and construction (baseline plus Project) scenarios. The BNLs and differences between the two scenarios are reported in **Table 3.1**. Where the AAWT flow is below the level where the BNL can reliably be predicted (i.e. an AAWT of 1000) "N/A" has been reported in the table. For these road links, the BNL for Scenario 2 has been calculated using the BS 5228-1 haul road calculation (see **Section 2.2**).

Table 3.1 Predicted construction stage traffic noise and traffic noise increase

Road link ID	Road link name and location	Scenario 1: BNL without development $L_{A10,18hr}$, dB	Scenario 2: BNL with development $L_{A10,18hr}$, dB	Difference, dB (Scenario 2 – Scenario 1)
A90-01	A90 between A982 at Whitehilll and A950.	71.6	72.2	0.6
A90-02	A90 between A950 and A982 at Waterside.	68.5	69.4	0.9
A90-03	A90 between A982 and C5B.	68.5	69.4	0.9
A90-04	A90 between C5B and U32B.	70.1	70.8	0.7
A950-01	A950 between A90 and C56B.	70.9	71.2	0.3
C43B-01	C43B between C5B and U45B.	N/A	48 dB $L_{Aeq,1h}$	N/A
C56B-01	C56B between A950 and C38B.	N/A	48 dB $L_{Aeq,1h}$	N/A
C5B-01	C5B between A90 and Cairnhill.	N/A	52 dB $L_{Aeq,1h}$	N/A
U32B-01	U32B west off the A90 at Inverquinzie Cotts.	N/A	42 dB $L_{Aeq,1h}$	N/A
U45B-01	U45B between U50B and C43B.	N/A	49 dB $L_{Aeq,1h}$	N/A
U50-01	U50B between A950 and C43B.	N/A	49 dB $L_{Aeq,1h}$	N/A
U59B-01	U59B between A950 and C38B at Denholm.	N/A	50 dB $L_{Aeq,1h}$	N/A

Road link ID	Road link name and location	Scenario 1: BNL without development $L_{A10,18hr}$, dB	Scenario 2: BNL with development $L_{A10,18hr}$, dB	Difference, dB (Scenario 2 – Scenario 1)
U63B-01	U63B between A950 and C38B at Stockbridge.	N/A	52 dB $L_{Aeq,1h}$	N/A
B9178-01	B9178 east of A90 Inverettie Roundabout.	63.9	63.9	0.0

3.1.1.2 The results in **Table 3.1** show the A90 road link is subject to the highest noise level changes which, during peak construction, range between +0.3dB and +0.9dB.

3.1.1.3 For low flow roads, i.e. below 1000 vehicle movements between 06:00 and 00:00, the haul road calculation in BS 5228-1 has been used to predict the HGV noise level for the peak construction traffic data at 10m. Whilst there is the potential for a noticeable change in noise due to HGV movements at residential receptors adjacent to these low-traffic roads, the highest noise level resulting from construction HGV traffic is predicted to be 52dB $L_{Aeq,1h}$.

4. References

Department of Transport and Welsh Office, (1988). *Calculation of Road Traffic Noise.* [online] Available at: https://n-somerset.gov.uk/sites/default/files/2022-11/CD13.02%20Department%20of%20Transport%20and%20Welsh%20Office%20%281988%29.%20Calculation%20of%20Road%20Traffic%20Noise..pdf [Accessed: 21 August 2025].

Subcommittee B/564/1, (2009). *BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.* London: BSi. [online] Available at: https://landingpage.bsigroup.com/LandingPage/Standard?UPI=000000000030258086 [Accessed: 21 August 2025].

5. Glossary of Terms and Abbreviations

5.1 Abbreviations

Acronym	Definition
AAWT	Average Annual Weekday Traffic
BNL	Basic Noise Level
BS	British Standard
CRTN	Calculation of Road Traffic Noise
dB	Decibel
EIA	Environmental Impact Assessment
HGV	Heavy Good Vehicle
Km/h	Kilometer per hour
m	Metres

5.2 Glossary of terms

Term	Definition
AAWT (18hr)	Average Annual Weekday Traffic. Averaged 2-way traffic flow (Monday to Friday only) between 06:00 – 24:00.
BNL	Basic Noise Level. Nominal $L_{A10,18hr}$ in dB at 10m from the nearside carriageway edge.
dB	Decibels. For sound pressure, defined by calculation 10 $\log_{10}$ $(p/p_0)^2$. Where p is the root mean square sound pressure in pascals and p0 is the reference sound pressure of 2 pascals x 10^{-5} pascals.
%HGV	Percentage of AAWT attributable to heavy vehicles (weight greater than 3.5 tonnes).
$L_{A10,18hr}$	The A-weighted sound pressure level exceeded 10 per cent of the time, over the period 06:00 to 24:00, i.e. the 90th percentile of sound pressure levels.

MarramWind