H2Teesside Project

Preliminary Environmental Information Report

Volume III – Appendices

Appendix 11A: Construction Noise Levels and Assumptions

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

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11A.0 CONSTRUCTION NOISE LEVELS AND ASSUMPTIONS

11A.1 Introduction

11A.1.2 The indicative construction and demolition (associated with decommissioning) noise levels were calculated using the procedures for prediction of construction noise set out in BS5228- 1:2009+A1:2014.

11A.1.1 Free field construction noise levels have been predicted at six receptor locations (H1, H2, H3, H4, H5 and H6) for the following construction activities:

- Construction of the Main Site:
  - piling and foundation works;
  - building and general site activity;
  - fit out;
  - layout areas;
  - decommissioning.
- Construction of the Pipeline Corridors:
  - Hydrogen Pipeline Corridor, Water Connection Corridor, CO_2 Export Corridor, Natural Gas Connection Corridor, Other Gas Connection Corridors- Open Cut and trenchless (HDD);
  - Electrical Connection- top soil strip.

11A.1.2 A full list of plant associated with construction activities and associated sound power data from BS5228 and % on time is presented in Tables 11A-1 to 11A-3. The list of plant was sourced from data from the client for pipeline construction and from other similar projects.

Table 11A-1: Plant and Equipment Associated with Construction of the Main Site

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Piling and foundation Works			
Compressors	80	100	6
Dump Truck (tipping fill)	79	100	2
Dump Truck (pass-by)	87	100	3

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Lorry (delivery and collection)	80	100	10
Large rotary bored piling rig	83	100	4
Hand-Held Welder (welding piles)	73	100	1
Generator for Welding	73	100	1
Tracked Excavator	71	100	5
Concrete Mixer Truck	80	100	25
Truck Mounted Concrete Pump and Boom Arm	80	100	3
Wheeled Mobile Telescopic Crane	78	100	4
Tower Crane	77	100	2
Diesel Generator for Site Cabins	66	100	4
Diesel Generator for Site Lighting	65	100	2
Road Sweeper	68	100	1
Angle Grinder	80	100	1
Electric Water Pump	68	100	2
Building and General Site Activities			
Compressors	80	100	6
Wheeled Loader	80	100	2
Lorry (delivery and collection)	80	100	10
Water Pump (20 kW)	65	100	1
Dumper (idling)	63	100	1
Wheeled Backhoe Loader	67	100	2
Tracked Excavator	71	100	5

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Concrete Mixer Truck	80	100	25
Truck Mounted Concrete Pump and Boom Arm	80	100	3
Poker Vibrator	78	100	1
Wheeled Mobile Telescopic Crane	78	100	4
Tower Crane	77	100	2
Fork Lift Truck	75	100	4
Electric Core Drill (Drilling Concrete)	85	100	1
Concrete Floor Cutter	91	100	1
Diesel Generator for Site Cabins	66	100	4
Diesel Generator for Site Lighting	65	100	2
Road Sweeper	68	100	1
Angle Grinder	80	100	1
Road Planer (road construction)	82	100	1
Vibratory Compactor (asphalt)	82	100	1
Asphalt Paver + Tipper Lorry	77	100	1
Electric Water Pump	68	100	2
Fit Out			
Compressors	80	100	6
Lorry (delivery and collection)	80	100	10
Wheeled Mobile Telescopic Crane	78	100	4
Tower Crane	77	100	2

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Lorry with Lifting Boom	77	100	1
Lifting Platform	67	100	1
Fork Lift Truck	75	100	1
Mini Tracked Excavator	74	100	1
Electric Core Drill (Drilling Concrete)	85	100	1
Concrete Floor Cutter	91	100	1
Hand-Held Circular Saw (Cutting Paving Slabs)	84	100	1
Diesel Generator for Site Cabins	66	100	4
Diesel Generator for Site Lighting	65	100	2
Road Sweeper	68	100	1
Angle Grinder	80	100	1
Hand-Held Cordless Nail Gun	73	100	1
Electric Water Pump	68	100	2
Decommissioning			
Compressors	80	100	3
Hand Held Pneumatic Breaker	83	100	3
Dump Truck (tipping fill)	79	100	2
Dump Truck (pass-by)	87	100	3
Lorry (delivery and collection)	80	100	4
Tracked Excavator	71	100	5
Concrete Mixer Truck	80	100	6

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Wheeled Mobile Telescopic Crane	78	100	2
Tower Crane	77	100	1
Lorry with Lifting Boom	77	100	1
Diesel Generator for Site Cabins	66	100	2
Diesel Generator for Site Lighting	65	100	1
Road Sweeper	68	100	1
Angle Grinder	80	100	1
Electric Water Pump	68	100	2
screen stockpiler	87	100	1
concrete breaker mounted on wheeled backhoe	92	100	6
tracked crusher	84	100	1

Table 11A-2: Plant and Equipment Associated with Construction of Pipeline Corridors- Open Cut Trenches

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Open Cut Trenches			
Dozer/loader	79	100	1
Hiab, Tracked excavator	77	100	1
Welding, grinding, etc.	80	100	1
Tracked excavator up to 40T	77	100	1

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Dump truck up to 29T	79	100	1
Tracked excavator up to 40T	77	100	1
Tracked excavator up to 40T	77	100	1

Table 11A-3: Plant and Equipment Associated with Construction of Pipeline Corridors- Trenchless- HDD

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
HDD			
Vibratory sheet piling rig	88	100	1
Tracked excavator	77	100	1
Directional drill (generator)	77	100	1
Tracked drilling rig	86	100	1
Water Pump	78	100	1

Table 11A-4: Plant and Equipment Associated with Construction of Electrical Connection Corridor

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
Top Soil Strip			
30T Backhoe	80	100	1
CAT D5	78	100	1
CAT D6	81	100	1

PLANT/EQUIPMENT	SOUND POWER LEVEL (dB) REFERENCE FROM BS 5228	% ON TIME (BASED ON 12HR DAY) USED IN CALCULATIONS	NUMBER OF PLANT IN OPERATION BY CONSTRUCTION ACTIVITY
CAT D8	86	100	1

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Appendix 11B: OPERATIONAL NOISE INFORMATION

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11B.0 OPERATIONAL NOISE INFORMATION

11B.1 Noise Model Settings

11B.1.1 The Proposed Development was characterised in CadnaA (version 2022) acoustic modelling software. This software implements the sound propagation calculation methodology set out in ISO 9613-2.

Data Sources

11B.1.2 The following data sources were used:

- surrounding area ground heights – downloaded from Open Survey Data (www.environment.data.gov.uk/DefraDataDownload);
- Ordnance Survey mapping of the Site and surrounding areas;
- sound power level data from similar projects; and
- proposed Development layout plans (as per Figure 4-1 – 4-8, PEI Report, Volume II).

Modelling Assumptions

11B.1.3 The model has been prepared with the following configurations and assumptions:

- Building dimensions as provided by design team;
- receptor buildings heights – all 2 storey houses (6.5 m), all 1 storey houses (4 m);
- receptor heights 1.5 m ground floor, 4 m first floor;
- ground absorption – industrial areas and hardstanding 0.0, vegetation 1.0, road surfaces 0.0, water bodies 0.0. The locations of each area have been determined from the OS Topography Layer;
- sound levels have been provided by designers as A-weighted values at 1 m from the source, these have been supplemented with octave band spectra from other comparable projects including the Khazzan central processing facility, this has been confirmed by designers to contain similar sound sources to the proposed development;
- the sound emitted by each building façade has been calculated based on the total sound power level for the building, distributed according to the surface area of the façade;
- all pumps have been modelled as point sources;
- where sound pressure level data for plant items has been provided inside an enclosure it is not yet been confirmed what material these enclosures will be constructed from. As a conservative assumption it has been assumed this will be 0.6 mm thick steel cladding.

Table 11B-1: Sound Power Levels of Operational Equipment

DETAILS	LINEAR SOUND POWER LEVEL EACH FREQUENCY BAND dB									NUMBER OPERATIONAL IN PROPOSED DEVELOPMENT	L_{WA} dB
	31	63	125	250	500	1K	2K	4K	8K		
NH3 Feed Pumps	36	50	71	78	78	78	75	68	57	2	81
Demineralised Water Pumps	46	60	81	88	88	88	85	78	67	4	91
Contaminated Water Sump Pump	36	50	71	78	78	78	75	68	57	2	81
Neutralisation Sump Effluent Pumps	36	50	71	78	78	78	75	68	57	4	81
Storm Water Sump Pumps	36	50	71	78	78	78	75	68	57	4	81
Oily Water Separator	36	50	71	78	78	78	75	68	57	2	81
Natural Gas Compressor	78	72	87	84	90	90	96	95	85	2	114
Lean Solution Cooler	127	119	113	112	119	108	103	97	89	2	117
CO_2 Cooler	126	118	112	111	118	107	102	96	88	2	116
Process Condensate Cooler	123	115	109	108	115	104	99	93	85	2	113
Syngas Cooler	127	119	113	112	119	108	103	97	89	2	117

DETAILS	LINEAR SOUND POWER LEVEL EACH FREQUENCY BAND dB									NUMBER OPERATIONAL IN PROPOSED DEVELOPMENT	L_{WA} dB
	31	63	125	250	500	1K	2K	4K	8K		
HP Flash Reflux Pumps	36	50	71	78	78	78	75	68	57	2	81
Semilean Solution Pumps	51	65	86	93	93	93	90	83	72	6	96
Hydraulic Turbine	123	115	108	91	86	89	82	83	81	2	96
Lean Solution Pumps	51	65	86	93	93	93	90	83	72	2	96
Stripper Feed Pumps	51	65	86	93	93	93	90	83	72	2	96
Reflux Pumps	36	50	71	78	78	78	75	68	57	2	81
First Fill Pumps	51	65	86	93	93	93	90	83	72	2	96
Make-up Pump	36	50	71	78	78	78	75	68	57	2	81
Process Condensate Pumps	36	50	71	78	78	78	75	68	57	2	81
CO2 Compressor	78	72	87	84	90	90	96	95	85	2	114
Fired Heater	68	78	86	95	104	111	102	106	90	6	113
Fired Heater stack exhaust	114	105	104	97	103	95	91	79	81	2	102
Process Condensate Circulation Pumps	46	60	81	88	88	88	85	78	67	2	91

DETAILS	LINEAR SOUND POWER LEVEL EACH FREQUENCY BAND dB									NUMBER OPERATIONAL IN PROPOSED DEVELOPMENT	L_{WA} dB
	31	63	125	250	500	1K	2K	4K	8K		
Process Condensate Stripper Feed Pumps	41	55	76	83	83	83	80	73	62	2	86
Process Condensate Feed Pumps	46	60	81	88	88	88	85	78	67	2	91
STG	60	76	86	84	83	79	79	69	67	2	85
Demineralised Water Plant Package	62	75	80	84	85	83	73	68	58	2	87
Flare KO Drum Pump	36	50	71	78	78	78	75	68	57	2	81
Fire Water Pumps	51	65	86	93	93	93	90	83	72	4	96
Fire Water E-Pumps	51	65	86	93	93	93	90	83	72	4	96
Fire Water Jockey Pumps	51	65	86	93	93	93	90	83	72	4	96
LP Flare Package	51	65	86	93	93	93	90	83	72	2	96
Dump Condenser	51	65	86	93	93	93	90	83	72	2	96
MP BFW Pumps	51	65	86	93	93	93	90	83	72	4	96
H2 Dryer Condensate Pumps	36	50	71	78	78	78	75	68	57	2	81
H2 Dryer	68	80	85	87	86	85	88	95	90	2	98

DETAILS	LINEAR SOUND POWER LEVEL EACH FREQUENCY BAND dB									NUMBER OPERATIONAL IN PROPOSED DEVELOPMENT	L_{WA} dB
	31	63	125	250	500	1K	2K	4K	8K		
H2 Fiscal Meter	106	114	104	99	98	101	95	96	87	2	105
H2 Recycle Compressor	44	57	74	82	90	93	90	86	88	4	96
H2 Compressor	-	110	111	112	108	106	103	88	91	2	111
Cooling Water Pumps	51	65	86	93	93	93	90	83	72	6	96
Cooling Water Tower	132	127	130	125	112	104	109	109	105	2	120
Cooling Water Dosing Package	63	76	83	91	97	100	95	94	85	2	103
Emergency Diesel Generator	-	115	109	92	89	88	83	80	72	2	96

11B.2 Uncertainty

11B.2.1 It should be noted than any sound level predictions have an associated degree of uncertainty. Modelling and measurement processes have been carried out in such a way to reduce such uncertainty. In particular, the following sources of uncertainty have been noted:

- sound levels for each noise sources have been provided by designers based on preliminary worst-case data and will be further updated during detailed design;
- the octave band spectra have not been available for each source so have been taken from other similar projects including other operational BP facilities;
- predictions of sound pressure levels according to ISO 9613 are assumed based on moderate downwind propagation, and hence could be considered as a worst-case calculation. However, the standard also indicates an estimated accuracy of ±3 dB(A) in predicted levels.

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Appendix 11C: BASELINE SOUND MONITORING AND SURVEY INFORMATION

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11C.0 H2 TEESSIDE BASELINE SOUND MONITORING SURVEY INFORMATION

11C.1 Unattended Monitoring Location (H1) Manor House Farm, Cowpen Bewley

11C.1.1 Table 11C-1 provides information on the survey location and conditions recorded on site.

Table 11C-1: H1 Survey Location Details

LOCATION H1	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Manor House Farm, Cowpen Bewley, Billingham ///cost.weep.voices NZ 48302 24880
Monitoring date and time	26/06/2023 15:17 to 04/07/2023 13:20
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 00620870
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 2217877
Weather station used	See location H6
Description of the sound climate	Road traffic from A1185 (NE), wind

Figure 11C-1: Location H1 Manor House Farm, Cowpen Bewley

11C.2 Attended Monitoring Location (H2) Cresswell Road, Grangetown

11C.2.1 Table 11C-2 provides information on the survey location and conditions recorded on site.

Table 11C-2: H2 Survey Location Details

LOCATION H2	DESCRIPTION
	DAY TIME ATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Cresswell Road, Grangetown ///feel.unique.swan NZ 55447 20705
Monitoring date and time	26/06/2023 17:28 to 26/06/2023 18:28
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Average wind speeds (m/s)	2.5
Wind direction	From the southeast
Cloud coverage	2/8
Sound Level Meter and Serial No.	Rion NL-52 s/n 00710387
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464
Description of the sound climate	Road traffic from local roads and Broadway/Trunk Road and Greystone Road (A1053), light aircraft

Figure 11C-2: Location H2 Cresswell Road, Grangetown

11C.3 Unattended Monitoring Location (H3) Kirkleatham Village

11C.3.1 Table 11C-3 provides information on the survey location and conditions recorded on site.

Table 11C-3: H3 Survey Location Details

LOCATION H3	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Kirkleatham Village ///phones.strain.jams NZ 59330 21711
Monitoring date and time	26/06/2023 16:43 to 04/07/2023 10:13
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 00386763
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 2217877
Weather Station used	See location H6
Description of the sound climate	Road traffic from A1042, A174 and other local roads, birdsong, wind in trees, industrial noise likely from Wilton International site.

Figure 11C-3: Location H3 Kirkleatham Village

11C.4 Attended Monitoring Location (H4) Seal Sands Office

11C.4.1 Table 11C-4 provides information on the survey location and conditions recorded on site.

Table 11C-4: H4 Survey Location Details

LOCATION H4	DESCRIPTION
	DAY TIME ATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Seal Sands Office, Billingham ///recall.shark.legend NZ 53979 24812
Monitoring date and time	27/06/2023 13:54 to 27/06/2023 14:54
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Average wind speeds (m/s)	2.2
Wind direction	From the south
Cloud coverage	3/8
Sound Level Meter and Serial No.	Rion NA-28 s/n 00570400
Field Calibrator and Serial No.	Rion NC-74 34973231
Description of the sound climate	Industrial sounds from Semcorp site as well as other nearby industrial facilities. Road traffic from unnamed site road.

Figure 11C-4: Location H4 Seal Sands Office

11C.5 Unattended and Attended Monitoring Location (H5) Marsh House Farm

11C.5.1 Table 11C-5 provides information on the unattended survey location and conditions recorded on site.

Table 11C-5: H5 Unattended Survey Location Details

LOCATION H5 (UNATTENDED)	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Marsh House Farm, Warrenby /// jazz.shadow.trial NZ 57984 25035
Unattended monitoring date and time	21/07/2023 12:15 to 31/07/2023 11:45
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Average wind speeds (m/s)	0 to 8.9 m/s (weather station left at this location)
Wind direction	Most often S/SE
Sound Level Meter and Serial No.	Rion NL-52 s/n 00710387
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464 and Brüel & Kjær Model 4231 s/n 2217876
Weather Station and Serial No.	RS Hydro OP46548
Description of the sound climate	Day: industrial sounds from east along Tod Point Road as well as distant industrial sound from west, road traffic along Tod Point Road, birdsong. Night: distant industrial sources to west (clanging and horns were noted), occasional cars on Tod Point Road

Figure 11C-5: Location H5 Unattended Marsh House Farm

11C.5.2 Table 11C-6 provides information on the unattended survey location and conditions recorded on site.

Table 11C-6: H5 Attended Survey Location Details

LOCATION H5 (ATTENDED)	DESCRIPTION	
	DAY AND NIGHT ATTENDED MONITORING	
Location description, what 3 words location and OS grid reference (Easting/Northing)	Near Marsh House Farm, Warrenby /// dined.tape.tone NZ 57890 25142	
Attended monitoring date and time	Day: 26/06/2023 15:53 until 16:53 Night: 26/06/2023 23:17 - 27/06/2023 00:17	
Monitoring height above ground	1.5 m	
Distance to nearest building façade	Greater than 3.5m	
Average wind speeds (m/s)	Day: 0.0	Night: 0.0
Wind direction	Day: SE	Night: E
Cloud Cover	Day: 3/8	Night:6/8
Sound Level Meter and Serial No.	Rion NL-52 s/n 00710387	
Field Calibrator and Serial No.	Day: Brüel & Kjær Model 4231 s/n 3005464 Night: Brüel & Kjær Model 4231 s/n 2217877	
Weather Station and Serial No.	RS Hydro OP46548	
Description of the sound climate	Day: industrial sounds from east along Tod Point Road as well as distant industrial sound from west, road traffic along Tod Point Road, birdsong. Night: distant industrial sources to west (clanging and horns were noted), occasional cars on Tod Point Road	

Figure 11C-6: Location H5 Attended Marsh House Farm

11C.6 Unattended Monitoring Location (H6) 58 Broadway West

11C.6.1 Table 11C-7 provides information on the survey location and conditions recorded on site.

Table 11C-7: H6 Survey Location Details

LOCATION H6	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	58 Broadway West, Dormanstown /// manliness.chest.oath NZ 58089 23908
Unattended monitoring date and time	27/06/2023 10:51 to 04/07/2023 12:11
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Average wind speeds (m/s)	Between 0 and 4.6 m/s (weather station set up at this location)
Wind direction	From the south
Sound Level Meter and Serial No.	Rion NL-52 s/n 01021280
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 2217877
Weather Station and Serial No.	RS Hydro OP46548
Description of the sound climate	Road traffic on Broadway West and other nearby roads, industrial estate to north, birdsong.

Figure 11C-7: Location H6 58 Broadway West

11C.7 Attended Monitoring Location (Eb1) Greatham Railway

11C.7.1 Table 11C-8 provides information on the survey location and conditions recorded on site.

Table 11C-8: Eb1 Survey Location Details

LOCATION EB1	DESCRIPTION	
	DAY ATTENDED MONITORING	DAY ATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Greatham Railway /// deflection.silks.slows NZ 50194 27117	Thorn Tree Lane /// Noon.hogs.bigger NZ 50159 27149
Monitoring date and time	27/06/2023 13:50 to 27/06/2023 14:20	26/06/2023 13:23 to 13:53
Monitoring height above ground	1.5 m	1.5
Distance to nearest building façade	Greater than 3.5m	Greater than 3.5m
Average wind speeds (m/s)	0.0	4.0
Wind direction	Indeterminable	West
Cloud Cover	8/8	3/8
Sound Level Meter and Serial No.	JL: Rion NL-52 s/n 00710387	Rion NA-28 s/n 00570400
Field Calibrator and Serial No.	JL: Brüel & Kjær Model 4231 s/n 3005464	Rion NC-74 34973231
Description of the sound climate	Leaves rustling, trains, aircraft	Leaves rustling, trains, aircraft

Figure 11C-8: Location Eb1 58 Greatham Railway

11C.8 Unattended Monitoring Location (Eb2) Venator, Tees Road, Hartlepool

11C.8.1 Table 11C-9 provides information on the survey location and conditions recorded on site.

Table 11C-9: Eb2 Survey Location Details

LOCATION EB2	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Venator, Tees Road, Hartlepool /// beans.lakes.frame NZ 51191 26237
Monitoring date and time	26/06/2023 13:45 to 04/07/2023 12:17
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 01581
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464
Weather Station used	See location H6
Description of the sound climate	Road traffic onA178 was dominant with additional contributions from birdsong.

Figure 11C-9: Location Eb2 Venator

11C.9 Unattended Monitoring Location (Eb3) Seal Sands

11C.9.1 Table 11C-10 provides information on the survey location and conditions recorded on site.

Table 11C-10: Eb3 Survey Location Details

LOCATION EB3	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Seal Sands, unnamed access road /// dices.feed.coherent NZ 52364 25451
Monitoring date and time	27/06/2023 13:01 to 04/07/2023 14:25
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 00654034
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 2217877
Weather Station used	See location H6
Description of the sound climate	Wind and industrial sound mainly from the nearby Conoco Phillips site were the main sources.

Figure 11C-10: Location Eb3 Seal Sands

11C.10 Unattended Monitoring Location (Eb4) Hospital of God, Greatham

11C.10.1 Table 11C-11 provides information on the survey location and conditions recorded on site.

Table 11C-11: Eb4 Survey Location Details

LOCATION EB4	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	To the rear of Hospital of God, Greatham /// diner.trash.crowned NZ 449032 527493
Monitoring date and time	27/06/2023 13:05to 06/07/2023 13:20
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 02041
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464
Weather Station used	See location H6
Description of the sound climate	Birdsong was identified as the dominant sound source at this location

Figure 11C-11: Location Eb4 Hospital of God, Greatham

11C.11 Attended Monitoring Location (Eb5) Cowpen Marsh

11C.11.1 Table 11C-12 provides information on the survey location and conditions recorded on site.

Table 11C-12: Eb5 Survey Location Details

LOCATION EB5	DESCRIPTION
	DAY ATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Cowpen Marsh /// orbit.into.bound NZ 45063 524710
Monitoring date and time	26/06/2023 14:10 to 15:10
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Average wind speeds (m/s)	3 m/s
Wind direction	From the north east
Sound Level Meter and Serial No.	Rion NL-52 s/n 00710387
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464
Description of the sound climate	Birdsong and road traffic were identified as sources at this location.

Figure 11C-12: Location Eb5 Cowpen Marsh

11C.12 Unattended Monitoring Location (Eb6) Seal Sands

11C.12.1 Table 11C-13 provides information on the survey location and conditions recorded on site.

Table 11C-13: Eb6 Survey Location Details

LOCATION EB6	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Seal Sands /// film.Mondays.skips NZ 53547 25477
Monitoring date and time	27/06/2023 13:30 to 04/07/2023 14:45
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 01021284
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 2217877
Weather Station used	See location H6
Description of the sound climate	Industrial sound mainly from the nearby Conoco Phillips site was dominant with additional contributions from wind and birds.

Figure 11C-13: Location Eb6 Seal Sands

11C.13 Unattended Monitoring Location (Eb7) Highfield Environmental

11C.13.1 Table 11C-14 provides information on the survey location and conditions recorded on site.

Table 11C-14: Eb7 Survey Location Details

LOCATION EB7	DESCRIPTION
	DAY AND NIGHT UNATTENDED MONITORING
Location description, what 3 words location and OS grid reference (Easting/Northing)	Highfield Environmental, Cowpen Bewley /// pasta.last.major NZ 49718 24447
Monitoring date and time	27/06/2023 13:00 to 06/07/2023 14:00
Monitoring height above ground	1.5 m
Distance to nearest building façade	Greater than 3.5m
Sound Level Meter and Serial No.	Rion NL-52 s/n 00386762
Field Calibrator and Serial No.	Brüel & Kjær Model 4231 s/n 3005464
Weather Station used	See location H6
Description of the sound climate	Operational noise from the Highfield Environmental site was dominant with additional noise form HGV movements on the site

Figure 11C-14: Location Eb7 Highfield Environmental

11C.14 Summary of H2 Teesside Baseline Noise Data

Table 11C-15: Sound Survey Results

MONITORING LOCATION	TIME PERIOD	$L_{Aeq,T}$ dB	Highest L_{AFmax} dB	$L_{AF90,T}$ dB
H1	Daytime	50	98	43
	Night-time	44	90	36
H2	Daytime	51	73	48
	Night-time*	-	-	-
H3	Daytime	51	92	47
	Night-time	49	78	42
H4	Daytime	57	84	53
	Night-time*	-	-	-
H5	Daytime	51	96	39
	Night-time	44	80	36
H6	Daytime	56	102	46
	Night-time	45	77	42
Eb1	Daytime	51	78	43
	Night-time*	-	-	-

MONITORING LOCATION	TIME PERIOD	$L_{Aeq,T}$ dB	Highest L_{AFmax} dB	$L_{AF90,T}$ dB
Eb2	Daytime	67	95	50
	Night-time	62	90	47
Eb3	Daytime	48	92	42
	Night-time	46	79	42
Eb4	Daytime	51	101	45
	Night-time	49	85	36
Eb5	Daytime	57	79	45
	Night-time*	-	-	-
Eb6	Daytime	53	76	51
	Night-time	53	88	51
Eb7	Daytime	47	88	41
	Night-time	42	82	37
*Only attended daytime measurements made at H2, H4, Eb1 and Eb5				