CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

EAF PROJECT

TATA Steel UK Limited (Tata Steel)

2062419-RSKA-CVNMP-002-(04)

RSK Acoustics Limited Reg. in England and Wales No.7102436
www.rskacoustics.com info@rskacoustics.com
+44(0)1928 726006

Registered Office: Spring Lodge, 172 Chester Road, Helsby, WA6 0AR
Bristol | Coventry | Dar Es Salaam | Dubai | Edinburgh
Helsby | Hemel Hempstead | Kingsclere | Leeds | London | Manchester

General notes

Project Name:	EAF Project
Title:	Construction Noise and Vibration Management Plan
Client:	TATA Steel UK Limited (Tata Steel)
Issue Date:	30 June 2025
Report No.	2062419-RSKA-CVNMP-002-(04)

Revision:	Description:	Author(s):	Reviewer:	Date:
02	Final	Kartik Subramaniam	Dan Clare	20 May 2025
03	Minor text updates	Alex West	Dan Clare	22 May 2025
04	Update to Section 7.3.3	Alex West	Dan Clare	30 June 2025

Author(s):	Alex West	Technical reviewer:	Daniel Clare
Signature:		Signature:	
Date:	30 June 2025	Date:	30 June 2025

RSK Acoustics Ltd (RSKA) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSKA. No other warranty, expressed or implied, is made as to the professional advice included in this report.
Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSKA for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.
No part of this report may be copied or duplicated without the express permission of RSKA and the party for whom it was prepared.
Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.
This work has been undertaken in accordance with the quality management system of RSK Acoustics Ltd.

Contents

1 Introduction 5
1.1 Instruction 5
1.2 Purpose 5
1.3 Objectives 5
1.4 Document Updates 6
2 Proposed Development 7
2.1 Overview 7
2.2 Proposed New Facilities 7
2.3 Noise Sensitive Receptors (NSRs) 8
3 Baseline Survey 10
3.1 Survey Methodology 10
3.2 Baseline Monitoring Results 11
4 Noise and Vibration Thresholds 13
4.1 Monitoring Results 13
4.2 Noise and Vibration Thresholds 13
5 Construction Details 15
5.1 Overview 15
5.2 Working Areas and Programme 15
5.3 Working Hours 15
5.4 Construction Methodology 16
5.5 Construction Programme 19
5.6 Plant Noise Source Emission Data 19
6 Construction Noise and Vibration Impact Assessment 21
6.1 Noise Modelling Methodology and Assessment Assumptions 21
6.2 Construction Noise Modelling Results 22
6.3 Construction Noise Assessment Results 24
6.4 Construction Vibration Assessment 25
7 Noise and Vibration Control Measures 27
7.1 Overview 27
7.2 Community Notification 27
7.3 Best Practicable Means (BPM) 27
8 Section 61 (S61) Consent Applications 30
9 Complaints Handling 31
9.1 Introduction 31
9.2 Investigation and Actions 31
10 Compliance Noise and Vibration Monitoring 32
10.1 Noise Monitoring 32
10.2 Vibration Monitoring 33
10.3 Noise and Vibration Assessment 33

Appendix A – Glossary 34
Appendix B – Figures 35
Appendix C – Regulatory Framework 39
Appendix D – Noise Survey Time History 46
Appendix E – Plant List and Noise Levels 49
Appendix F – Noise Predictions during Core Hours 67
Appendix G – Noise Predictions Outside Core Hours 73

List of Tables

Table 2.1 Proposed facilities for each development in the wider site 8
Table 2.2 NSR Locations 8
Table 2.3 SSSI Locations 9
Table 3.1 Unattended measurement location details 10
Table 3.2 2024 baseline result summary – MP1 to MP5 11
Table 3.3 Ecological receptor baseline sound survey result summary – MP6 to MP7 11
Table 4.1 Proposed working hours 13
Table 4.2 Derived noise threshold 14
Table 5.1 Construction areas and dates 15
Table 5.2 Construction methodology 19
Table 5.3 Summary of noise levels for activities within the construction programme 20
Table 6.1 Modelling Parameters 21
Table 6.2 Predicted construction noise levels at each receptor during daytime hours (weekdays 07.00−19.00 and Saturdays 07.00−13.00) 22
Table 6.3 Predicted construction noise levels at each receptor during evening (19.00–23.00 Weekdays only) 23
Table 6.4 Predicted construction noise levels at each receptor during weekend hours (13.00–23.00 Saturdays and 07.00–23.00 Sundays) 23
Table 6.5 Predicted construction noise levels at each receptor during night-time hours(23.00–07.00) 24
Table 6.6 Minimum setback distance from vibratory works to existing residential properties 25

1 Introduction

1.1 Instruction

RSK Acoustics have been instructed by Tata Steel UK Limited to undertake a Construction Noise and Vibration Management Plan (CNVMP). The CNVMP relates to the proposed construction works associated with the EAF Project. The project involves a new Electric Arc Furnace (EAF) based steel production and scrap metal handling facility, at their existing facility in Port Talbot.

To inform the CNVMP an Construction Noise and Vibration Assessment (CNVA) has been undertaken and included within the CNVMP. This has been prepared in order to satisfy the Pre-Commencement Conditions (for full and outline permissions 10 and 49 respectively, from planning permission reference P2024/0711, as reproduced below:

"No development shall commence on a phase approved under condition 39 until a detailed Construction Noise and Vibration Assessment (CNVA), as stated in paragraph 7.4.27 of the Environmental Statement (2024), has been submitted to and approved in writing by the Local Planning Authority. The CNVA shall include the following details:

> *a. Full consideration of the noise impact of the construction activities, including consideration of the final construction programme, phasing and specific plant items to be used in construction.*
>
> *b. Identification of construction noise mitigation to be incorporated into the Construction Environmental Management Plan to include consideration of appropriate construction working hours and noise mitigation.*

Reason:
In the interests of the amenity of the area as a whole and to ensure the development complies with Policy EN8 of the Neath Port Talbot Local Development Plan (2011-2026)."

1.2 Purpose

The CNVMP details the procedures by which noise and vibration will be managed, and minimised in relation to the construction works, both from a proactive (noise & vibration control, good practice, and community engagement), and reactive (monitoring, and complaint investigation). The CNVA aspect quantifies the potential noise and vibration impacts associated with the construction works at the most impacted sensitive receptors.

The CNVA is been informed by a baseline noise survey undertaken by RSKA in 2024, comprising long-term unattended noise measurements at locations representative of the nearest noise sensitive receptors. Based on the low risk of significant vibration effects identified within the ES, no baseline vibration monitoring was undertaken.

A glossary of acoustic terms used within this report is provided in **Appendix A – Glossary**.

1.3 Objectives

This CNVMP details the procedures by which noise and vibration will be managed in relation to the construction works, and includes the following aspects:

- An overview of the Proposed Development and identification of the closest sensitive receptors;
- Establishment of the baseline noise environment at nearby sensitive receptors;
- A summary of the applicable noise and vibration thresholds following a review of relevant legislation and guidance and review of the baseline survey results;
- A description of the construction works to be undertaken, including plant requirements and construction phasing;

- Prediction of noise and vibration levels at nearby sensitive receptors, and assessment against relevant standards and guidance (CNVA);
- Recommended mitigation measures to be implemented on site in accordance with Best Practicable Means (BPM);
- Procedures for gaining a Section 61 consent (should they be required);
- Consideration of compliance noise and vibration monitoring throughout the project; and
- Complaint management procedure, and community engagement.

1.4 Document Updates

Where new information is provided relating to the construction methodology (location, programme, plant lists, etc.), this document will be updated to reflect such changes, and to identify any further noise or vibration controls that may now be required. Following an update, the document will be submitted to the Local Planning Authority for information purposes.

2 Proposed Development

2.1 Overview

The Proposed Development includes a new Electric Arc Furnace (EAF) based steel production facility, and a scrap metal handling facility on the existing Tata Steel UK Limited site in Port Talbot.

The site is situated next to Margam Moors, with Port Talbot Docks bordering the site to the north with the town of Port Talbot, and the main line railway forms the eastern boundary. The site is bounded to the east by Swansea Bay and the Margam sands Site of Special Scientific Interest (SSSI) is to the south.

The location of the site and the site's future footprint is provided in **Appendix B – Figures.**

2.2 Proposed New Facilities

The facilities required for the Proposed Developments including the EAF Facility, and scrap metal handling facility are as summarised below:

Proposed Development	Site Area	Proposed Facilities
EAF Facility	Melt Shop & Consteel	One EAF (located within the existing BOS building)
		Two Ladle Arc Furnaces (LFs)
		Canopy Hood
		Consteel Coveyor
		Charging Bay South Extension
	FTP & MHS	Fume treatment plant (FTP)
		Hot Briquetted Iron (HBI) and pig iron storage area
		Ferro Alloys Bunker
		Melt shop power distribution building
		Meltshop FTP electrical building
		Meltshop FEP electrical building
		Lagoon Water Pump House
		Active Carbon Injection Silos
		Powder Silos
		HBI Electrical Building
	Compressor House & Green Walway	Compressor house
		Green walkway extension
	Water Treatment Plant	Fire water pump house
		Primary pump house
		Secondary pump house
		Meltshop WTP electrical building
		Emergency tank
	Main Power Area	National Grid (NG) 275 kV compound
		Main power centre
		Power compensation building
	VLN Office Building	Car Parking Area

Proposed Development	Site Area	Proposed Facilities
		Changing & Office Block Building
	Other areas	Lime and dololime external bunker
		Ferro-alloys bunker
		HBI bunker
		LF power building
		Central melt shop operator room
		Two Lagoon water pump house
		New road network between scrap handling areas to the EAF
Scrap metal handling facility	Roads & Scraps Yards	Shredder Scrapyard
		HBI & Pig Iron Storage Area
		Rail Receipt Facilities
		Scrap Bays
		Relocation of Harscro Shredder;
		Office and amenity provisions;
		Dedicated scrap overflow;
		Scrap lorry unloading area
		Non-ferrous processing plant

Table 2.1 Proposed facilities for each development in the wider site

2.3 Noise Sensitive Receptors (NSRs)

The residential receptors with the greatest potential to be impacted by the development are identified in **Table** 2.2, and are considered representative of other sensitive receptors in the area.

NSR Ref.	Description	Type of Receptor	Easting	Northing
R1	Residential properties at West End	Residential	277127	188899
R2	Residential properties at Prince Street	Residential	277641	188331
R3	Residential properties at Brynhyfryd Road	Residential	278365	187088
R4	Residential properties at Longland Lane	Residential	279273	186115
R5	Residential properties at Eglwys Nunydd	Residential	280190	184858

Table 2.2 NSR Locations

The selected assessment points included within **Table 2.2** represent the habitable properties which are most exposed to the proposed development. These are considered to represent other similarly located residential dwellings within the surrounding area.

Other areas of interest to be considered within this assessment include the nearby Site of Special Scientific Interest (SSSI) as identified in **Table 2.3** below.

NSR Ref.	Description	Type of Receptor	Easting	Northing
R6	Margam Moors	SSSI	278040	185241

NSR Ref.	Description	Type of Receptor	Easting	Northing
R7	Eglwys Nunydd reservoir	SSSI	279744	184949

Table 2.3 SSSI Locations

All NSRs identified within **Table 2.2** and **Table 2.3** are identified graphically in **Appendix B – Figures**.

3 Baseline Survey

This section provides an overview of the methodologies implemented for the baseline noise survey and the subsequent results obtained.

3.1 Survey Methodology

A baseline noise survey was undertaken in general accordance with British Standard (BS) 7445-1:2003 'Description of environmental noise – Guide to quantities and procedures'. Monitoring equipment conformed to the requirements of BS EN 61672-1:2013 'Electroacoustics. Sound level meters specifications' and BS EN 60942:2018 'Electroacoustics – Sound Calibrators'.

Following the shutdown of the 'Heavy End'[1] on 30 September 2024, baseline monitoring was undertaken at sensitive residential receptors to quantify the acoustic environment.

The 2024 monitoring was undertaken at five positions representative of nearby NSRs identified within the submitted ES and surveyed during 2018, 2019, 2022 and 2024.

Five unattended monitoring positions were selected to be representative of the site and nearest receptors, respectively. As such, a baseline noise survey was undertaken between 26 September 2024 and 24 October 2024 to obtain ambient and background noise levels representative of the existing surrounding receptors.

Previous survey work to establish the acoustic environment that ecological receptors have habituated to were undertaken at ecological receptors prior to the shutdown of the 'Heavy End between Tuesday 7 May to Wednesday 22 May 2024 (MP6 and MP7) and Wednesday 22 May to Tuesday 28 May 2024 (MP6).

A description of the installation and geo-referenced locations of each measurement position is provided in **Table 3.1** below:

Ref.	Approx. Coordinates	Representative Noise Sensitive Receptors
MP1	277193E, 188843N	R1 - Residential properties at West End
MP2	277642E, 188334N	R2 - Residential properties at Prince Street
MP3	278337E, 187085N	R3 - Residential properties at Brynhyfryd Road
MP4	279261E, 186124N	R4 - Residential properties at Longland Lane
MP5	280184E, 184849N	R5 - Residential properties at Eglwys Nunydd
MP6	278256E, 185312N	R6 - Margam Moors
MP7	279769E, 185040N	R7 - Eglwys Nunydd reservoir

Table 3.1 Unattended measurement location details

All sound level meters used as part of the survey conform to BS EN 61672-1, Class 1, for free-field application. Any filters, where used, will conform to BS EN 61260, Class 1, and sound calibrators to BS EN 60942, Class 1.

[1] The Heavy End refers to the 2no. coal powered blast furnaces at the Tata Steel site, that were shutdown in September 2024. This resulted in a change in noise level across the area, with the level of change dependent on the contribution of the heavy end.

3.2 Baseline Monitoring Results

3.2.1 Residential Receptor Baseline Sound Survey

Analysis of the dataset obtained from the long-term continuous survey has been conducted, accounting for the daytime, evening and weekends, and night-time periods as described in BS 5228-1:2009+A1:2014. Representative sound levels for each receptor, during each assessment period are detailed in **Table 3.2** below.

Measurement Position	NSR Ref.	Measured $L_{Aeq,T}$ Noise Levels[1], dB(A)		
		Core Hours	Outside Core Hours	
		Daytime (07.00−19.00) and Saturdays (07.00−13.00)	Evenings and weekends[2]	Night-time (23.00−07.00)
MP1	R1	61	60	60
MP2	R2	55	52	50
MP3	R3	56	59	52
MP4	R4	64	60	59
MP5	R5	67	65	60

Note:
[1] $L_{Aeq,T}$ values are the logarithmic average of $L_{Aeq,15min}$ samples; and
[2] 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

Table 3.2 2024 baseline result summary – MP1 to MP5

3.2.2 Ecological Receptor Baseline Sound Survey

A summary of the ambient noise level dB $L_{Aeq,T}$ and maximum sound levels dB L_{AFmax} measured at monitoring locations MP6 and MP7 are shown in **Table 3.3** below:

Measurement Position	NSR Ref.	Average Sound Level $L_{Aeq,T}$ (dB)		Maximum Sound Level L_{AFmax} (dB)	
		Daytime	Night-time	Daytime	Night-time
MP6	R6	49	50	83	85
MP7	R7	60	57	82	78

Table 3.3 Ecological receptor baseline sound survey result summary – MP6 to MP7

During the survey, L_{AFmax} events were measured. An analysis of the typical number of events has been undertaken and is summarised below. For the purpose of this assessment, the analysis included an assumption that only a single L_{AFmax} event could occur in any 5 second period.

Over the course of the survey at R6 the average number of L_{AFmax} events above 55 dB L_{AFmax} [2] in any given day was in the order of 2500 events. The magnitude of these events ranged between 55 dB and 85 dB.

At R7, the average number of L_{AFmax} events above 55 dB L_{AFmax} in any given day was in the order of 15,000 events, ranging between 55 dB and 82 dB L_{AFmax}. The proximity to the motorway (M4) is thought to have resulted in the higher number of L_{AFmax} events above 55 dB L_{AFmax}. Although representative of the areas within ~150 m of the motorway, it is not considered appropriate to use the number of L_{AFmax} events at this location to represent the entire SSSI area.

[2] Please see Section 4.2.2 for further information relating to the 55 dB threshold.

Based on the above, the number of measured L_{AFmax} events from R6 are expected to be more representative of the land to the west of the Eglwys Nunydd reservoir.

4 Noise and Vibration Thresholds

4.1 Monitoring Results

Analysis of the dataset obtained from the baseline surveys has been conducted, accounting for the daytime, evening and weekends, and night-time periods as described in BS 5228-1:2009+A1:2014.

Construction works are proposed to be undertaken during periods identified within an 'x' within **Table 4.1**.

Task	Task Description	Core Hours[1]	Evening and Weekends[2]	Public Holiday[2]	Night-time[3]
1	Vegetation Clearance	x	x	x	-
2	Civil Enabling Works, Site Set-up and Deliveries	x	x	x	-
3	Demolition Works (with crusher)	x	-	-	-
3a	Demolition Works (without crusher)	x	x	x	-
4	Earthworks	x	x	x	-
5	Excavation and Drainage Works	x	x	x	-
6	Concreting Works, Structural Steel Works and Mechanical Erection Works	x	x	x	x
7	Piling works (with driven piling rigs only)	x	x	x	-
	Piling works (with CFA piling rigs only)	x	x	x	-
8	Cable Pull	x	x	x	-
9	Decommission and site demobilisation	x	x	x	-

Notes:
1: Monday – Friday 07:00-19:00 and Saturdays 07:00-13:00;
2: Monday – Friday 19.00–23.00, 13.00–23.00 Saturdays and 07.00–23.00 Sundays and Public Holidays; and
3:All days 23.00−07.00.

Table 4.1 Proposed working hours

There will be no working outside of the hours identified within **Table 4.1** unless communicated in advance with the local authority.

4.2 Noise and Vibration Thresholds

A summary of the applicable thresholds for both noise and vibration is provided within the below section. Further information relating to the standards and guidance referenced in deriving the criteria is provided within **Appendix C – Regulatory Framework**.

4.2.1 Noise Thresholds (Residential Dwellings)

BS 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites. Noise' sets out techniques to predict and assess the likely noise effects from construction works, based on detailed information on the type and number of plant items being used, their location, and the length of time they are in operation. The standard also provides example thresholds for assessing the significance of noise effects.

Annex E of BS 5228-1:2009+A1:2014 provides guidance on evaluating the significance of construction noise impacts, and this has been provided in **Table C. 3** in **Appendix C – Regulatory Framework**.

4.2.2 Noise Thresholds (Ecological Receptors)

For the ecological receptors, thresholds are based on the guidance within the IECS 2009 report (Cutts et al., 2009) and the review of thresholds provided in the Natural England 2018 document, it is considered that a noise threshold of 55 dB(A) is acceptable for the assessment of nesting and wintering birds within the SSSI. Such a noise level is an indication of low noise level effect in the Natural England, 'A Review of the Effects of Noise on Birds – Version 1' 2018 guidance.

Although not specifically stated, for the purpose of this assessment the 55 dB (A) level has been assumed to relate to both average and maximum noise events e.g. 55 dB $L_{Aeq,\ T}$ and L_{AFMax}. In a similar way to the BS 4142:2014+A1 2019 assessment, context and existing noise levels are important to be accounted for when assessing impacts on fauna. For example, an area which already sees a high exposure to levels of noise above this, may either be absent of fauna, or see an adaption or acceptance of these elevated noise levels by fauna in that area. This is where the number of existing noise events is important.

4.2.3 Noise Thresholds Summary

The following assessment criteria have been derived as per the BS 5228-1:2009+A1:2014 ABC Method for residential receptors; and the IECS 2009 report for ecological receptors, in conjunction with the measured noise levels from the baseline surveys conducted.

Receptors	Representative Measurement Location	Representative Baseline Noise Threshold Level Daytime, dB(A)[1]	Representative Baseline Noise Level – Evenings and Weekends, dB(A)[2]	Representative Baseline Noise Level Night-time, dB(A)[3]
R1	MP1	65	65	55
R2	MP2	65	55	55
R3	MP3	65	65	55
R4	MP4	70	65	55
R5	MP5	70	65	55
R6	MP6	55 – subject to existing environmental exposure		
R7	MP7			
Notes: 1: Monday – Friday 07:00-19:00 and Saturdays 07:00-13:00; 2: Monday – Friday 19.00–23.00, 13.00–23.00 Saturdays and 07.00–23.00 Sundays; and 3: 23.00−07.00.				

Table 4.2 Derived noise threshold

4.2.4 Vibration

The Piling Works has been identified as the primary potential source of vibration within the construction programme. Some smaller levels of vibration may be generated though compaction activities, however this will be localised.

Given that the nearest residential dwellings are located approximately 900 metres from the works, vibration levels at these receptors are expected to be minimal due to natural attenuation over distance.

A vibration criteria of 10 mm/s PPV (in the frequency range of 4 Hz to 15 Hz) has been adopted at residential receptors, based upon the guidance provided in BS 7385-2:1993. This criterion is appropriate to adopt for both transient and continuous vibration levels emanating from construction works.

5 Construction Details

5.1 Overview

TATA Steel are proposing to conduct essential preparatory works, demolition, earthworks, and excavation works prior to main construction works, involving piling works, concreting works and cable pulling.

Based on the indicative construction programme provided by the Principal Contractor, construction at the TATA Steel facility is understood to be undertaken between May 2025 and October 2027.

At the time of preparing this report, a detailed construction programme and methodology had not yet been finalised. An indicative plant list for all planned activities was provided, although specific quantities and time-based requirements were not included. Therefore, the construction programme and methodology (including specific locations, and equipment emissions) below has been developed based on information available, and based on RSKA's prior experience in comparable projects, site conditions and project requirements.

The construction task descriptions and plant assumptions have been reviewed and confirmed as appropriate for the proposed construction by the Principal Contractor. Therefore, we believe this to provide a representative indication of the final works, and resultant impacts.

The CNVMP will be updated according to the recent of more up to date information.

Information provided by the client regarding working areas, and indicative plant requirements are shown in **Appendix B**.

5.2 Working Areas and Programme

Based on the information provided in the 'Phasing Plan for Planning' (Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C Dated: 07/04/2025), the construction works are understood to be undertaken at 10 areas across the site, and in phases.

Table 5.1 below summarizes the working areas and the dates in which the construction activities will be carried out. Within in **Appendix B – Figures,** working areas in the context of the wider site has been provided in **Figure B. 2**; and the construction time periods in each area is shown graphically in **Figure B. 3**.

Area	Description	Working Dates
1	Melt Shop & Consteel	Demolition works: May-25 to Aug-25 Main Works: Sept-25 to Feb-27
2	FTP & MHS	Aug-25 to Oct-26
2A	Compressor House & Green Walkway	Sept-26 to Jun-27
3	Water Treatment Plant	Aug-25 to Oct-26
4	Main Power Area	Aug-25 to Nov-26
5	Roads & Scrap Yards	Nov-25 to Aug-27
6	VLN Office Building	Mar-27 to Oct-27
7	Rail Upgrade	Apr-26 to Aug-26
8	Lagoon Infill	Aug-25 to Mar-26
9	P-Fields Preparatory Works Area	Apr-25 to Oct-25

Table 5.1 Construction areas and dates

5.3 Working Hours

Working hours are a fundamental measure which can limit and control noise and vibration emissions.

Construction works are proposed to be undertaken during periods identified within **Table 4.1**, with higher noise emitting works restricted to core hours.

5.4 Construction Methodology

At the time of this assessment, detailed programme schedules and methodologies has not been developed and provided by the client. Therefore, the following tasks undertaken and methodologies adopted are assumed based on similar project types and site conditions.

Table 5.2 provides an overview of the indicative construction tasks assumed to be undertaken, along with the and their works extents.

The working areas defined within **Table 5.2** are shown within **Figure B. 2** in **Appendix B – Figures**.

Activity	Description	Assumed Activity Areas
Task 1: Vegetation Clearance	Chain saws, a chipper, excavators and various hand tools will be used to remove hedges and other vegetated areas to enable the subsequent tasks to be undertaken within the working areas of the site. Portable generators and powered hand tools may also be used for vegetation clearance in areas not accessible to machinery.	3, 4, 5, 9
Task 2: Civil Enabling Works, Site Set-up and Deliveries	These construction activities include site access routes, temporary drainage for the site, building of hardstanding and parking areas and erection of site compounds, storage areas and site offices. Where required, suitable work facilities will be installed in the form of welfare cabins delivered to the site on appropriate HGVS or low loaders in line with an agreed traffic management plan and route. These delivery lorries will unload tracked excavators and materials used for creating the new access and diversion route works. Compaction equipment, bulldozers, water pumps, and telescopic handlers will also be deployed to support road and laydown area construction. Power and air tools may be supported by site generators and compressors as required. ***Access Roads*** A 12 m peripheral road encircles all major facilities, and side roads are considered easy access to each section. Separate site entry points are envisaged for heavy vehicle entry. The construction access road is required for safe movement of vehicles, cranes, cars and other construction equipment. Access roads will be used to provide temporary access into and through the construction site. The temporary access road should follow the proposed permanent transport corridors within the plant. ***Temporary drainage*** Permanent stormwater and foul water drainage systems will be required for the new facilities. Wherever required, temporary drainage for working platforms and temporary access roads will be aligned with permanent drainage layouts where feasible. Otherwise, temporary drainage consisting of local filter drains and earthworks channels will be used to manage	1 to 9

Activity	Description	Assumed Activity Areas
	surface water runoff. Siltbusters and interceptors will be used to protect existing drainage outfalls from silt and other site debris. ***Parking area*** Car parking area will be provided for the project staff and visitors within the P-Fields compound location. ***Laydown Area*** Hardstanding areas will be prepared and used for material laydown, storage, repair and maintenance works, refuelling operations, delivery of materials, workshops, project offices, sanitary and washing. Lay down space for all the equipment will be considered, and lifting and handling equipment will be extended up to the laydown space.	
Task 3: Demolition Works	A number of structures currently present within the development site will be required to be demolished/ dismantled. Existing facilities to be demolished include Harsco substation, weighbridge, shed and cabins, Concast admin block and amenity block, north lagoon pumphouse, rooms and high level platform above Lance Bay, small brickwork buildings within Lance Bay, Charging bay workshops and offices, engineering block cabins, ladle stand foundations and scrapbox weighbridge plinths, Teeming Bay stands, preheater foundations water ring pumphouse and trench sheeting, workshops degasser foundations and hydraulic house and offtake repair stand, compressor and transfer car, Converter Bay deskulling station foundations and RH penthouse, RH cooling water tower, RH pumps. The demolition of all structures will involve the removal of structural steel members and the dismantling of RCC super and substructures. Before the start of demolition of the main structures, all electrical and other utilities isolation to be done by the contractor. After the isolation, the following sequence will be followed: 1. Asbestos Removal after necessary investigation. 2. Removal of Mechanical, Electrical and C&I equipment. 3. Soft stripping work, which includes removal of non-structural elements. 4. Superstructure demolition of the building. 5. Substructure demolition. 6. Underground piping and cables. 7. Disposal of demolished materials to designated areas. Demolition will involve mobile cranes, tracked excavators with breaker attachments, pneumatic tools, and haulage vehicles such as tipper lorries and skip wagons.	1, 2, 2A, 3, 5, 6, 9
Task 4: Earthworks	Once the site is established, it will be cleared, and earthworks will be carried out to establish the correct site levels. Topsoil will be stripped, and then general earthworks will be undertaken to cut and fill as required. This will involve excavators to load spoil into dumpers and lorries, which will transport it to the designated locations, along with the use of compaction/stabilisation equipment. For the Scrap Yard, Scrap Storage Yard, and National Grid Substation earthworks, the final platform level will be designed to minimise the cut and fill volumes of the earthworks. For the proposed Scrap Yard and Scrap Storage Yard sites, large areas are currently laid to stone, which has been	1 to 9

Activity	Description	Assumed Activity Areas
	well trafficked and should be suitable to be reused as permanent works to reduce the volume of earthworks. Additionally, a part of the existing Works Reservoir needs to be infilled to provide space to construct roads, buildings and plant. The affected areas of the reservoir will be dredged, and a stone platform will then be constructed by infilling with site-won 6A self-compacting stone, placed as a wet mix over the prepared bed. The infill will now be retained with a perimeter earthworks bund. Additional plant, including bulldozers, graders, and water pumps will support earth shaping and platform formation.	
Task 5: Excavation and Drainage Works	Excavation works will be carried out using tracked excavators to remove soil to the required depth and profile as required. Excavated material will be either stockpiled or loaded directly into dumpers for removal or redistribution on site. Where required, drainage works will be undertaken prior to excavation to maintain dry working conditions. The site engineer will survey and mark out the excavation area, and the operatives will be briefed on a daily basis and supervised during the whole excavation operation. Drainage installation may also require water pumps, generators, vibratory rollers, and lifting equipment	1, 2, 2A, 3, 4, 5, 6, 8
Task 6: Concreting Works, Structural Steel Works and Mechanical Erection Works	***Concreting Works*** There is an estimated 65,000 m^3 of reinforced concrete works as part of the project. Reinforced concrete will be formed from steel reinforcement bars that are fixed in-situ and surrounded with fresh concrete. The concrete will be cured in-situ to the designed shape by means of timber or metal formwork panels. Once fully cured, the formwork will be removed to leave a hardened, reinforced concrete foundation. The resources that will be used for concrete are concrete pumps, boom placer, truck-mounted concrete mixer, vibrator for compacting concrete, and manpower. This phase will focus on the refurbishment of existing structures and the construction of new buildings where specified. This will include utility infrastructure installation and sustainable drainage system integration. Excavations will be required, with soil conditions expected to vary due to the site's historical use. Excavators, articulated dump trucks (ADTs), and wagons will be in operation at any given time. Stockpiled materials will be limited to a maximum height, and dust control measures such as damping down will be implemented as needed. Mechanical erection works will require significant cranage including large capacity mobile and crawler cranes, lifting platforms such as cherry pickers, along with telehandlers and portable power sources.	1, 2, 2A, 3, 4, 5, 6, 8

Activity	Description	Assumed Activity Areas
Task 7: Piling works	The piling phase will involve installing foundation piles to support future structures. Piling works will be undertaken using the following methods: - CFA (Continuous Flight Auger) piling; - Driven precast piling methods; - Vibratory piling. *There may be periods of time where steel sheet impact piling is required which may elevate instantaneous noise levels. However, this will be restricted to daytime works only. The above piling methods will be used as a priority where practical. Once the final construction methodology has been defined, the piling methodology and timeframes will be communicated to Local Planning Authority (LPA).* Piling rigs will be deployed to install the necessary foundations efficiently. Concrete will be placed/poured on-site using concrete pokers and concrete pumps. To mitigate dust emissions, water suppression systems will be used, and all piling activities will adhere to best practices in air quality management. Piling work will take place within designated zones, and construction vehicle movements will be strictly controlled to prevent unnecessary disruption to surrounding areas. Material handling during piling will be supported by excavators, cement mixers, telescopic handlers, and compressors.	1, 2, 3, 4, 5, 9
Task 8: Cable Pull	A 10-tonne winch with 1000 m anti-twist steel bond (or similar) and a lorry with lifting boom, plus hand trolleys, a generator and hand tools will be used to pull the cables to the required location. Where required, a crawler dozer may be used for trench reinstatement following cable installation, operated at a low utilisation rate.	4
Task 9: Decommission and site demobilisation	The trackway used for the temporary haul road will be lifted, and the ground will be backfilled. The temporary welfare cabins and plant will be removed from the site, along with all associated warning signs. Tracked excavators and dumpers will be used to lift temporary haul roads and support backfilling, with low loaders mobilised to remove plant from site.	1 to 9

Table 5.2 Construction methodology

5.5 Construction Programme

Specific information relating to the programme of construction activities is not currently available. The programme has been derived by using the identification of working areas and monthly estimates of activity provided within the Phasing Plan (Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C dated: 07/04/2025) (see **Figure B. 2** and **Figure B. 3** in **Appendix B – Figures**).

5.6 Plant Noise Source Emission Data

The estimated plant requirements have been assumed based on the indicative construction phasing plan provided in Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C Dated: 07/04/2025.

Plant requirements and quantities have been estimated based on similar sites and applications, and based on the information provided by the client. On-time percentages have been reviewed and confirmed as appropriate by the Principal Contractor.

Daytime % on-times are based on core hour period (12 hours). For evening and weekend assessment periods (4-6 hour periods) and the night-time assessment period (1 hour period) are the same, in order to provide a typical worst case assessment.

Table 5.3 below outlines the construction tasks included in the assessment, along with their associated noise source emission levels for each task during each working period.

Task	Task Description	Sound Power Level (L_w dBA)		
		Core Hours[1]	Evening, Weekends and Public Holidays[2]	Night-time[3]
1	Vegetation Clearance	112	116	116
2	Civil Enabling Works, Site Set-up and Deliveries	119	122	122
3	Demolition Works (with crusher)	121	124	124
3a	Demolition Works (without crusher)	118	121	121
4	Earthworks	118	121	121
5	Excavation and Drainage Works	114	116	116
6	Concreting Works, Structural Steel Works and Mechanical Erection Works	116	119	119
7	Piling works (with driven piling rigs only)	118	120	120
	Piling works (with CFA piling rigs only)	110	112	112
8	Cable Pull	108	115	115
9	Decommission and site demobilisation	102	109	109

Notes:
1: Monday – Friday 07:00-19:00;
2: Monday – Friday 19.00–23.00, Saturdays 07:00-13:00, 13.00–23.00 Saturdays and 07.00–23.00 Sundays; and
3: 23.00−07.00.

Table 5.3 Summary of noise levels for activities within the construction programme

The full list of plant assumed within each task and further detail of the plant requirements and assumed percentage on times is provided in **Appendix E – Plant List and Noise Levels**. Where the make and model of the plant items, or if manufacturer noise levels are not available, representative noise levels have been used based on the guidelines and reference noise levels within BS 5228-1:2009+A1:2014 of similar plant.

6 Construction Noise and Vibration Impact Assessment

6.1 Noise Modelling Methodology and Assessment Assumptions

Construction generated noise has been predicted at the closest sensitive receptors (considered to have the highest potential for impact) to the proposed works. Receptors have been identified through a desktop study of the construction extent and the surrounding area. It should be noted that neighbouring receptors are likely to experience similar or lower magnitudes of noise to those included within the assessment.

Noise predictions have been made using acoustic modelling software 'SoundPlan v9.1'. The modelling parameters are presented in **Table 6.1**.

Item	Setting
Algorithm	British Standard 5228-1:2009+A1:2014 'Code of practice for noise and vibration control on construction and open sites– Part 1: Noise'.
Ground absorption	The ground absorption across the site has been set with an absorption coefficient of 0.0, representing hard, reflective surfaces. Beyond the site boundary, ground absorption settings have either been determined as hard (0.0), mixed (0.5) or soft (0.7) following a desktop review of the ground conditions.
Meteorological conditions	10 degrees Celsius; 70% humidity; and Wind from source to receiver.
Façade Corrections	Predictions are at 1m from a given façade.
Receptor height	For residential receptors: Ground Floor (GF) - 1.5m above ground level; and First Floor – 4.0m above ground level. For ecological receptors: 1.5m above ground level.
Site layout	Works extents have been assumed to be to cover the full extent of the EAF Project has been broken down into nine areas as identified in the drawings provided by the client (Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C Dated: 07/04/2025). Cable pulling extents have been determined using the drawings provided by the client (Drawing ref: '275kv Margam Gis To Port Talbot Connection Cable route optioneering layout Key plan' dated: 14/05/2024). In order to provide a robust assessment, modelling assumes that the plant for a given activity, for a given period of time is located at the closest separation distance to each receptor, thus providing worst case noise levels. In reality, this is unlikely to be the case, and the project will not constantly produce the predicted levels.
Noise Source Emission Data	Tasks and plant (quantities, on-times) have been assumed based on similar sized applications, and based on the information provided by the client at the time of this report. Data for plant noise emissions taken from RSKA file data, typical manufacturer noise data or BS5228 – See **Appendix E – Plant List and Noise Levels**. Where hand tools have been identified as the main plant within any particular activities, it has been assumed that the associated noise level and typical short duration would be such that it would not have a significant impact on noise predictions. All construction plant located at a relative height to ground of 1.5m.
Working hours	As per **Table 4.1.**
Terrain	LiDAR DTM with a 1-metre resolution has been imported into the model.

Table 6.1 Modelling Parameters

6.2 Construction Noise Modelling Results

Table 6.2 to **Table 6.5** below present the construction activity noise predictions within each time period.

The predicted construction noise predictions represent the highest construction noise in isolation across the entire construction programme (April 2025 to October 2027). Predictions exclude contributions from existing ambient noise, in line with the methodology in BS 5228-1:2009+A1 2014.

Each construction task has been modelled individually, with the assumption that all associated plant items operate simultaneously during that task. The results provide the construction noise predictions when occurring at the nearest working location (within each working area) relative to each sensitive receptor. This approach ensures that the predictions represent a robust 'typical worst case' assessment of potential noise impacts for each sensitive receptor.

Construction Noise Predictions – Core Hours, dB(A) – GF level												
Receptor	Criteria	Tasks										
		1	2	3		4	5	6	7		8	9
		Vegetation Clearance	Civil Enabling Works, Site Set-up and Deliveries	Demolition Works – with crusher	Demolition Works – without crusher	Earthworks	Excavation and Drainage Works	Concreting Works, Structural Steel Works and Mechanical Erection Works	Piling Works – with driven piling rig[1]	Piling Works – with CFA piling rig only	Cable Pull	Decommission and demobilisation
R1	65	34	43	45	42	42	38	40	42	34	25	26
R2	65	42	51	53	50	50	46	48	48	40	30	34
R3	65	42	50	52	49	49	45	47	49	41	32	33
R4	70	39	48	50	47	47	43	45	45	37	30	31
R5	70	36	45	47	44	44	40	42	44	36	29	28
R6	55 (L_{AFmax})	44	59	61	58	58	54	56	58	50	48	42
R7		37	47	49	46	46	42	44	46	38	30	30
	Exceedance of prescribed noise threshold prior to context consideration											

Note:
1: These levels have the potential to increase in the order of 5 – 8 dB where steel sheet piling is required. However, details of this will be communicated to LPA when the confirmed methodology, location and programme associated with the piling is available.

Table 6.2 Predicted construction noise levels at each receptor during daytime hours (weekdays 07.00−19.00 and Saturdays 07.00−13.00)

Construction Noise Predictions – Evening Hours, dB(A) – 1F level												
Receptor	Criteria	Tasks										
		1	2	3		4	5	6	7		8	9
		Vegetation Clearance	Civil Enabling Works, Site Set-up and Deliveries	Demolition Works – with crusher	Demolition Works – without crusher	Earthworks	Excavation and Drainage Works	Concreting Works, Structural Steel Works and Mechanical Erection Works	Piling Works – with driven piling rig	Piling Works – with CFA piling rig only	Cable Pull	Decommission and demobilisation
R1	65	38	47	-	46	46	41	44	45	37	32	34
R2	55	46	54	-	53	53	48	51	50	42	37	41
R3	65	49	58	-	57	57	52	55	53	45	40	45
R4	65	43	51	-	50	50	45	48	47	39	38	38
R5	65	40	48	-	47	47	42	45	46	38	36	35
R6	55 (L_{AFmax})	48	62	-	61	61	56	59	60	52	55	49
R7		41	50	-	49	49	44	47	48	40	37	37
	Exceedance of prescribed noise threshold prior to context consideration											

Table 6.3 Predicted construction noise levels at each receptor during evening (19.00–23.00 Weekdays only)

Construction Noise Predictions – Weekend Hours, dB(A) – 1F level												
Receptor	Criteria	Tasks										
		1	2	3		4	5	6	7		8	9
		Vegetation Clearance	Civil Enabling Works, Site Set-up and Deliveries	Demolition Works – with crusher	Demolition Works – without crusher	Earthworks	Excavation and Drainage Works	Concreting Works, Structural Steel Works and Mechanical Erection Works	Piling Works – with driven piling rig	Piling Works – with CFA piling rig only	Cable Pull	Decommission and demobilisation
R1	65	38	47	-	46	46	41	44	45	37	32	34
R2	55	46	54	-	53	53	48	51	50	42	37	41
R3	65	49	58	-	57	57	52	55	53	45	40	45
R4	65	43	51	-	50	50	45	48	47	39	38	38
R5	65	40	48	-	47	47	42	45	46	38	36	35
R6	55 (L_{AFmax})	48	62	-	61	61	56	59	60	52	55	49
R7		41	50	-	49	49	44	47	48	40	37	37
	Exceedance of prescribed noise threshold prior to context consideration											

Table 6.4 Predicted construction noise levels at each receptor during weekend hours (13.00–23.00 Saturdays and 07.00–23.00 Sundays)

Construction Noise Predictions – Night-time Hours, dB(A) – 1F level												
Receptor	Criteria	Tasks										
		1	2	3		4	5	6	7		8	9
		Vegetation Clearance	Civil Enabling Works, Site Set-up and Deliveries	Demolition Works – with crusher	Demolition Works – without crusher	Earthworks	Excavation and Drainage Works	Concreting Works, Structural Steel Works and Mechanical Erection Works	Piling Works – with driven piling rig	Piling Works – with CFA piling rig only	Cable Pull	Decommission and demobilisation
R1	55	-	-	-	-	-	-	44	-	-	-	-
R2	55	-	-	-	-	-	-	51	-	-	-	-
R3	55	-	-	-	-	-	-	55	-	-	-	-
R4	55	-	-	-	-	-	-	48	-	-	-	-
R5	55	-	-	-	-	-	-	45	-	-	-	-
R6	55 (L_{AFmax})	-	-	-	-	-	-	59	-	-	-	-
R7		-	-	-	-	-	-	47	-	-	-	-
	Exceedance of prescribed noise threshold prior to context consideration											

Table 6.5 Predicted construction noise levels at each receptor during night-time hours (23.00–07.00)

6.3 Construction Noise Assessment Results

6.3.1 Residential Assessment

The results in **Table 6.2** indicate that the noise from the proposed construction tasks are predicted to be below the trigger threshold prescribed by BS 5228-1:2009+A1 2014 during core hours.

The results in **Table 6.3** indicate that the noise from the proposed construction tasks are predicted to be below the trigger threshold prescribed by BS 5228-1:2009+A1 2014 during evening hours.

During non-core weekend hours (13.00–23.00 Saturdays and 07.00–23.00 Sundays), **Table 6.4** indicates that the proposed activities during this period are predicted to be below the trigger threshold prescribed by BS 5228-1:2009+A1 2014.

During non-core night-time hours (23:00–07:00), **Table 6.5** indicates that the proposed activities during this period are predicted to be below the trigger threshold prescribed by BS 5228-1:2009+A1 2014.

6.3.2 Ecological Assessment

For the ecological receptors included within the assessment, exceedances of the 55 dB L_{AFmax} criteria have been identified during all assessment periods. Although the exceedance of the threshold is noted, the levels predicted are well below those measured during the previous baseline monitoring undertaken at the R6 location.

The predicted noise level is noted to be between the 50 and 70 dB threshold for behavioral changes (alarm calls, heads up, change in feeding/roosting activity) indicating a low to moderate effect. It is noted that the existing acoustic environment already included in the order of 2500 L_{AFmax} events per day which exceed the assessment criteria of 55 dB L_{AFmax}, limiting the impact of the construction activities on the ecological receptor due to it's prolonged habituation to similar noise events. In addition due to the large expanse of the SSSI, and

similar habitats across the SSSI, avifauna will have the ability to choose quieter areas with less exposure to construction noise, in periods where levels are elevated, again reducing the potential for long term impacts.

6.4 Construction Vibration Assessment

The primary source of vibration associated with the construction works at the nearest receptors has been identified as vibratory compaction works included within Tasks 2, 4 and 5, and piling works within Task 7.

As per the details within Table 5.2, the following piling methodologies may be implemented during the project:

Piling works will be undertaken using either of the following methods:

- CFA (Continuous Flight Auger) piling;
- Driven precast piling methods;
- Vibratory piling.

There may be periods of time where steel sheet impact piling is required however vibration impacts will be similar to those for driven precast methods.

Table 6.6 below presents the minimum setback distances between the proposed vibratory compaction and rotary piling works, which consider, as a worst case, the distance between the works area boundary and the receptors.

Receptor	Closest Working Area	Approx. setback distance
R1	5,6	1800m
R2	6	900m
R3	6	750m
R4	5	1200m
R5	5	2200m

Table 6.6 Minimum setback distance from vibratory works to existing residential properties

Annex E of BS 5228-2:2009+A1:2014 provides empirical formulae for predicting peak particle velocity (PPV) levels for various construction activities, including the prediction of vibratory compaction, vibratory piling and percussive piling (driven/impact piling). However, these formulae are only applicable to receptors up to 110m for vibratory compaction; 111m for percussive / driven piling; and up to 100m for vibratory piling. Despite this, predictions were made with the setback distances in **Table 6.6**, which resulted in predicted vibration levels being <1mm/s, significantly below the prescribed criteria in **Section 4.2.4**.

Annex E of BS5228-2 does not provide empirical formulae for CFA or Rotary Bored piling techniques. Section F3.2.4 of BS5228-2 provides the following statement in respect of vibration from CFA piling:

"The levels of vibration associated with continuous flight auger (CFA) injected piling and pressed-in piling are minimal, as the processes do not involve rapid acceleration or deceleration of tools in contact with the ground but rely to a large extent on steady motions. Continuous vibrations at a low level could be expected from the prime movers."

The use of CFA piling is also referenced in BS 5228-2:2009+A1:2014 (Section 8.5.3) as a vibration mitigation measure i.e. an alternative method that is least likely to give rise to unacceptable levels of vibration. Furthermore, BS 5228-2:2009+A1:2014 (Table D.6, Ref. no.101 within the standard) provides measured data of an auguring procedure measured at 20m from the pile location. The resultant peak particle velocity vibration level was recorded at a level of 0.05 mm/s.

On the basis of the minimum set back distances between the proposed piling and the surrounding residential properties works are higher than the reference data, the expected vibration levels generated by the CFA piling works are not considered to be significant in terms of disturbance

Therefore, it is likely that at this distance the resultant peak particle velocity at these receptors would be significantly lower than the assessment criteria assigned in Section 4 and not considered significant in terms of potential building damage.

7 Noise and Vibration Control Measures

7.1 Overview

As noted in **Section 6**, the established noise criteria may be breached during certain tasks particularly outside core hours, therefore, noise from the construction works may have adverse effects on the identified receptors.

While the predicted values represent a worst-case scenario, it is considered good practice to implement the following Best Practical Means (BPM) to further minimise potential disturbance:

7.2 Community Notification

A simple but highly effective method of reducing impacts in the surrounding community is through pro-active community engagement. Prior to the commencement of the project, a community engagement exercise should be undertaken. This will focus on the residential and commercial receptors identified within this document.

Community engagement can take many guises; however, typically this includes community newsletters (postal and email), posters and boundary notifications (contact details) and project websites. The following information will be made available to the surrounding community at the commencement of the project (overview of project) and prior to any high impact activity:

- Project overview;
- Start and duration of works;
- Proposed working hours;
- Steps being undertaken by the team to control noise and vibration;
- Any work which might be required out of specified working hours; and
- A helpline for queries and complaints.

7.3 Best Practicable Means (BPM)

Best Practicable Means as defined in Section 72 of the Control of Pollution Act 1974 and BS 5228-1: 2009+A1: 2014 shall be employed at all times to reduce noise to a minimum.

7.3.1 Noise Control Measures

The main contractor shall ensure that the following guidelines are applied where applicable:

- Whenever possible, noisy plant will be situated away from sensitive receptors;
- Whenever possible fabrication will be undertaken off site;
- Where reasonably practicable, fixed items of construction plant will be electrically powered in preference to diesel or petrol driven;
- As far as reasonably practicable, the noise from reversing alarms will be controlled or limited. This will be undertaken through following a hierarchy of techniques:
    - The site layout will be designed to minimise reversing;
    - Banksmen will be utilised to avoid so far as reasonably practicable the use of reversing alarms;
    - Reversing alarms are required to incorporate practicable features such as broadband signals or ‘smart alarms’ to reduce the level of noise.
- Where an enclosure is available it should be used. Construction noise predictions include enclosures to non-mobile plant including generators and compressors;

- Where reasonably practicable, vehicles and mechanical plant associated with the construction works will be fitted with effective exhaust silencers and shall be maintained in good working order;
- Machines and vehicles in intermittent use will be shut down or throttled down to a minimum during periods between works;
- Where practicable, mobile screens will be placed around noisy hand-held equipment i.e. breakers, stihl /concrete saws etc;
- Effective communication will be undertaken prior to any noisy works commencing that could result in an exceedance of the noise or vibration trigger thresholds at local residents, this will be undertaken a minimum of two weeks in advance of the works;
- Where possible, all deliveries to support non-core works will be completed within core working hours;
- The movement of delivery materials outside of normal working hours shall be kept to a minimum and handled in a manner that minimises noise (i.e. manual handling rather than mechanical);
- All plant, equipment and noise control measures applied to plant and equipment must be maintained in good working order and operated such that noise emissions are minimised as far as reasonably practicable;
- Where breaking out activities are necessary the continuous use of percussive or impact breaking equipment/ methods should be minimised;
- All employees shall be provided with an appropriate induction and ongoing briefings regarding the management of environmental issues. This will involve emphasising the need for employees to show consideration to the sensitive receptors, including residential neighbours. They will be briefed on not generating unnecessary noise when on site or when leaving and arriving;
- Two-way radios to be used on site to avoid shouting;
- All compressors and generators shall be ‘sound reduced’ models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use, and all pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. (if possible)
- Where barriers are considered they should be placed as close to the plant as possible and should have a minimum mass per unit area of 7 kg/m²;
- Where possible, deliveries shall be scheduled during the proposed core working hours;
- The engines of all parked vehicles or vehicles waiting to enter any work area shall be switched as soon as possible;
- Work compounds shall be laid out so that accesses and loading areas are located as far away from sensitive neighbours as practicably possible and so that temporary structures screen noisy areas where practicable;
- Stationary plant such as pumps, compressors and generators, shall be situated as far as possible from residential property and acoustic screens erected if required. Other plant and machinery shall be screened if necessary;
- Plant known to emit noise strongly in one direction shall be, where practicable, orientated so that noise is directed away from noise-sensitive areas;
- A speed limit of 10mph shall be set and enforced on all Site traffic; and
- Haul routes shall be maintained in good condition to minimise 'body slap' of vehicles.

7.3.2 Vibration Control Measures

Vibration is more difficult to control than noise however, its propagation is much more limited relative to noise so effects of any significance rarely extend beyond ~ 100 m of vibration generating activities. Vibration can cause disturbance by causing structures to vibrate and radiate noise in addition to perceptible movement.

The main contractor shall ensure that the following guidelines are applied where applicable:

- Where reasonably practicable, plant and/or methods of work causing significant levels of vibration at sensitive receptors should be replaced by other less intrusive plant and/or methods of working;
- Vibration from stationary plant (e.g. generators, pumps, compressors) can, if located close to sensitive receptors, prove disturbing. In these instances, equipment should be relocated or isolated using resilient mountings.
- Where reasonably practicable, vibration generating equipment shall be located as far from sensitive receptors as possible.

7.3.3 Piling Activities

Piling activities, where practicable, should be undertaken using continuous flight auger or vibratory piling methods. Alternative piling methods should only be used where it is demonstrated that no adverse noise or vibration impacts would result.

Piling activities are to be undertaken during the hours identified within Table 4.1 or as authorised through consultation with the Local Planning Authority.

7.3.4 Site Activity Areas

All construction work activities are to be undertaken within the designated construction site boundaries including designated haul routes.

7.3.5 Training

All site personnel will receive training appropriate to the nature of their roles and responsibility; the training will include specific information in relation to noise and vibration management. If their work activities are identified as generating significant noise/vibration emissions at sensitive receptors or occur outside of core hours, staff will receive induction training that will incorporate environmental awareness training, plus specific training in relation to noise and vibration.

The above Best Practice will be briefed to all parties via:

- Site Induction;
- Toolbox talks;
- Start of Shift briefings; and

7.3.6 Unplanned Overruns

In the event that the proposed works periods extend beyond the anticipated working hours, or agreed construction period for that activity, and/or continue due to unforeseen circumstances that would affect safety or engineering practicability, the LPA will be kept informed of the nature, time, location and reasons for the overrun as soon as possible, and records kept by the Tata Steel UK Limited and the Principal Contractor.

The LPA will be requested to provide a telephone number and nominate an officer to receive such notifications. Overruns and the reasons for these will be reviewed by Tata Steel UK Limited, its Principal Contractor and the LPA, with the aim of reducing the potential for further unplanned overruns if these are likely to result in significant noise or vibration effects.

In the case of work required in response to an emergency (or which, if not completed, would be damaging or unsafe), the LPA will be advised as soon as is reasonably practicable of the reasons for, and likely duration of, such works. In addition to this, other local stakeholders will also be notified.

8 Section 61 (S61) Consent Applications

8.1.1 Introduction

The contractor have the option to submit applications for S61 consents, variations and dispensations under the Control of Pollution Act 1974 (CoPA) for all construction activities that may generate a significant noise and/or vibration effect, including piling and activities to be undertaken outside of construction working hours for the Proposed Development, unless otherwise agreed with the LPA.

Activities that typically do not come under a Section 61 consent include those agreed with the LPA or which do not have significant noise and vibration impact, and would occur during core working hours. Not all Local Planning Authorities use S61 applications, and therefore each case will be considered in consultation with the LPA before progressing.

In cases where there is a change of working method or procedure, or in the type of plant and equipment to be used from those provided within this CVNMP, a revised noise and vibration assessment will be submitted to the local authorities for approval prior to works taking place. This could be submitted to the LPA in isolation, or as part of a S61 application.

The contractor will be required to demonstrate that Best Practicable Means (BPM), as defined under Section 72 of the CoPA, are employed at all times for all activities, to minimise noise and vibration effects.

The potential for a significant noise and/or effect, and therefore a greater benefit of submitting a Section 61 application, is defined against the following criteria:

- Unplanned and noisy activities such as piling operations;
- Necessary night-time, weekend, or evening working;
- Road or footpath closures / diversions and movements of wide loads; and
- Tower crane services and erections.

8.1.2 Section 61 Content

Where a Section 61 consent is sought, before starting any construction activities where significant noise and/or vibration may be generated, the contractor will prepare and submit information to the LPA, which will include:

- An outline of the proposed construction methods, type and number of plant to be used;
- Definition of the working hours required and, where these differ from the core working hours and a justification for the working hours sought;
- A work programme which identifies the location and duration of each significant and/or vibration generating activity;
- The sound power levels, or sound pressure level at 10m, for each item of plant for each relevant activity;
- Appropriate justification that the method and plant proposed demonstrates that BPM has been employed to control noise and vibration impacts, in terms of noise/vibration level, duration and working hours;
- Predicted noise and vibration levels at sensitive receptor locations supported by calculations as per the methodology in BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014; and
- All steps to be employed to minimise noise and vibration during the works.

9 Complaints Handling

9.1 Introduction

During any type of construction activity, there is always a potential for complaints to be received. Good practice and proactive community engagement will reduce the potential for complaints.

Broadly speaking, where complaints are received, these will be documented and dealt with in a timely and professional manner by the contractor. Prior to determining whether monitoring should be included as a response to a specific complaint, the complaint and the veracity of the complaint should be investigated.

9.2 Investigation and Actions

Where appropriate, the main contractor or project manager would undertake an investigation of the complaint. After the investigation, an appropriate course of action and any corrective actions would be undertaken in response to this investigation. Notification of the complaint and actions taken will be provided to the LPA upon request.

The actions which are recommended to be taken as soon as possible are as follows:

- Note the time, date, identity and contact details of the complainant. Note if the complaint has been referred from the local authority. Ask the complainant to describe the noise and vibration emission; is it constant or intermittent, how long has it been going on for, is it worse at any time of day, does it come from an identifiable source.
- As soon as possible after receipt of a complaint, undertake a site inspection. Note all noise and vibration-producing activities taking place and the mitigation methods that are being employed. If the complaint was related to an event in the recent past, note any noise and vibration-producing activities that were underway at that time, if possible. Implement any remedial action necessary.
- As soon as possible, visit the area from where the complaint originated to ascertain if noise and vibration are still a problem.
- Noise and vibration monitoring may be undertaken in the event of complaints being received. The methodology would be agreed with the LPA prior to the commencement of monitoring.
- If another source of noise or vibration, other than the construction work, is causing the nuisance, verify the source.
- As soon as possible after the initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken.
- If necessary, update any relevant method statements to prevent any recurrence of problems.
- File the noise and vibration complaint form on the complaint register.
- Notify the main contractor or project manager as soon as practicable that a complaint has been received, what the findings of the investigation were, and any remedial measures taken.
- Where the specific activity responsible for the complaint cannot be identified, consideration should be given to the deployment of medium-term unattended monitoring equipment in discussion with the main contractor or project manager.

Inform workers on site of the complaint and what the findings of the investigation were, and any remedial measures taken.

10 Compliance Noise and Vibration Monitoring

Given the nature of the works, monitoring could be carried out continuously throughout the works or on an ad-hoc basis in response to justified complaints in line with Section 9 'Complaints Handling'. Consultation with the Neath Port Talbot County Borough Council will be undertaken to determine the most suitable option and any specific requirements.

Given the relatively low levels (below target thresholds), a combination of both long term and short term monitoring is to be used to determine whether activities are achieving the noise trigger thresholds.

Existing long term monitoring will be used at the commencement of specific tasks, or a change in work area, to ensure levels match those theoretically presented in the CNVMP. Where specific concerns or complaints are raised relating to a specific activity, short term measurements can be utilised to ensure the noise trigger thresholds are achieved.

Where monitoring is undertaken , the methodology presented below should be followed as a minimum.

10.1 Noise Monitoring

10.1.1 Noise Equipment

The sound level meter used should be of Type 1 classification in accordance with BS EN 61672:-1:2003 '*Electroacoustics. Sound level meters. Specifications'*. The calibrator used conforms to the requirements of BS EN IEC 60942:2018 '*Electroacoustics, Sound calibrators'.*

The meter should be capable of recording the following parameters:

- $L_{Aeq,\ 15\ min}$;
- $L_{A90,\ 15\ min}$;
- $L_{A10,\ 15\ min}$; and
- $L_{Amax,\ 15\ min}$.

The sound level meter and associated calibrator will have been calibrated to international standards within the previous year. The sound level meter will be field calibrated before and after each measurement.

10.1.2 On-site monitoring

Where possible, existing on-site noise monitoring equipment will be utilised and positioned to demonstrate compliance with the noise trigger thresholds, as included in **Table 4.2**.

The specific location of the sound level meter should be chosen in accordance with the following:

- Noise monitoring locations should be within the direct line between the construction activities and sensitive receptor assessment locations;
- Locations should not be obscured by buildings of structures where there is a clear line of site between the construction works and the monitoring location;
- Locations should be a minimum of three meters from any reflective surfaces, screens (e.g. houses, solid fences, vehicles); and
- Microphone should be positioned 1.5 m or 4.0 m in height from relative ground.

There may be circumstances where on-site monitoring is not able to demonstrate compliance with the noise trigger thresholds, in this circumstance off-site monitoring will be undertaken in line with the details in the below section.

10.1.3 Off-site Monitoring

Noise monitoring locations will be representative of the nearest sensitive receptors to the construction site and agreed with the LPA.

The specific location of the sound level meter should be chosen in accordance with the following:

- Locations should be representative of the noise environment of the relevant receptor;
- Locations should not be obscured by buildings of structures where there is a clear line of site between the construction works and the receiver;
- Locations should be a minimum of three meters from any reflective surfaces, screens (e.g. houses, solid fences, vehicles);
- Locations should be away from noise sources that do not represent the construction noise and vibration at the most exposed facade, or sources which unduly mask construction noise; and
- Microphone should be positioned 1.5 m in height from relative ground.

10.1.4 Noise Measurements

Measurements should be undertaken in accordance with BS 7455-1:2003 '*Description and measurement of environmental noise. Guide to quantities and procedures'.*

Noise measurements should be undertaken under meteorological conditions conducive to environmental noise monitoring. This includes low wind speeds (<5 m/s) and dry conditions (no rain, no snow and preferably dry road surfaces). Weather conditions should be documented.

10.1.5 Noise Assessment Thresholds

Noise measurements will be compared with the construction noise thresholds as included in **Table 4.2** based on the guidance from BS 5228-1:2009+A1:2014 for residential dwellings and based on guidance from IECS 2009 report for ecological receptors.

The noise measurements will also be compared with the noise predictions in Section 6, once final construction information has been provided[3].

10.2 Vibration Monitoring

Based on the limited chance of significant effects, it is not considered necessary to undertake vibration monitoring during the project. However, ad-hoc vibration monitoring could be undertaken if a complaint is raised due to construction vibration activities carried out on site. These measurements will be undertaken in accordance with BS 5228-2:2009 + A1:2014 and BS 7385-2:1993 criteria and undertaken at the complainants dwelling.

10.3 Noise and Vibration Assessment

Noise and vibration data gathered during monitoring surveys can be used to estimate the likelihood of impacts when compared with the trigger thresholds identified within this CNVMP.

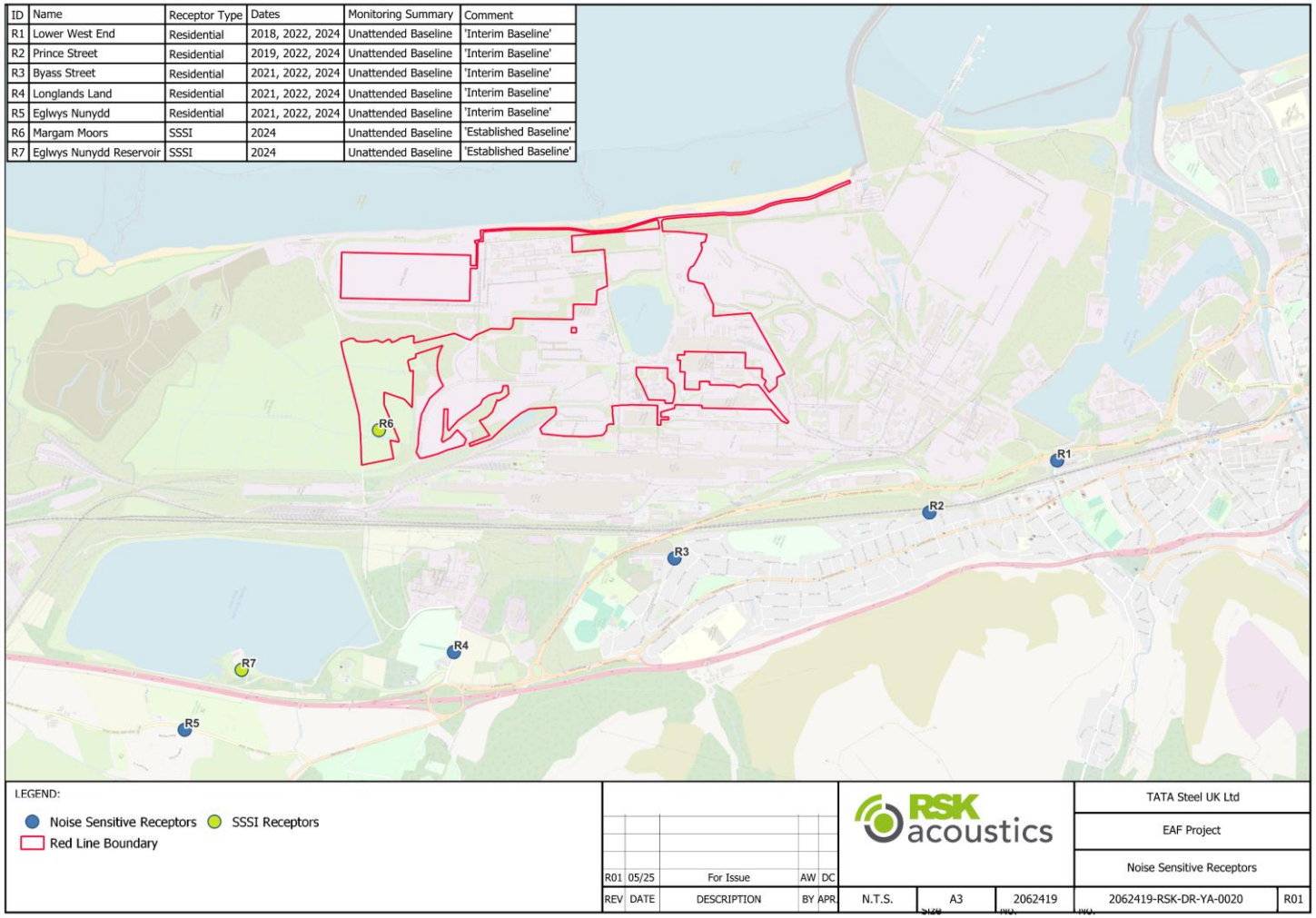
Where the assessment shows exceedances of thresholds, the relevant remedial steps should be undertaken in accordance with the CNVMP and BS 5228-1:2009+A1:2014 or BS 5228-2:2009+A1:2014, as appropriate to minimise noise. Monitoring reporting should document any corrections applied to measured levels and justifications for applying such corrections.

[3] In some case the noise associated with construction activities will be masked, or equally dominant with other ambient sources, and therefore verification through measurements may require further data analysis (to extract construction contribution), or further analysis in accordance with BS5228.

Appendix A – Glossary

Term	Definition
CNVMP	Construction Noise and Vibration Management Plan
Ambient sound	The total sound at a given place, usually a composite of sounds from many sources near and far.
dB	Decibel. Scale for expressing sound pressure level. It is defined as 20 times the logarithm of the ratio between the root mean square pressure of the sound field and a reference pressure i.e. $2x10^{-5}$ Pascal.
dB(A)	A-weighted decibel. This provides a measure of the overall level of sound across the audible spectrum with a frequency weighting to compensate for the varying sensitivity of the human ear to sound at different frequencies. Example sound levels include: 140 dB(A) Threshold of pain 120 dB(A) Threshold of feeling 100 dB(A) Loud nightclub 80 dB(A) Traffic at busy roadside 60 dB(A) Normal speech level at 1m 40 dB(A) Quiet office 20 dB(A) Broadcasting studio 0 dB(A) Median hearing threshold (1000 Hz)
Airborne sound	Sound in the air is generated by a material vibrating which in turn causes air molecules to vibrate and create a sound wave. For example, sound produced by a loudspeaker in a room can be classified as “airborne” sound.
$L_{Aeq,T}$	This is defined as the notional steady sound level over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{Amax}	This is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment.
L_p	Sound Pressure Level
Pre-existing ambient noise	Pre-existing ambient noise means the level of ambient noise, expressed as a level of L_{Aeq} determined with respect to the relevant time period and the relevant L_{Aeq} averaging time, prevailing one metre in front of relevant windows or doors in a façade of a dwelling, immediately before the placing of a contract for the construction.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Facade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building facade.
Peak particle velocity (PPV)	Instantaneous maximum velocity reached by a vibrating element as it oscillates about its rest position, typically expressed in mm/s.
mm/s	Millimetres per second – used to measure velocity.
PPV	Peak Particle Velocity, mm/s.

Appendix B – Figures



ID	Name	Receptor Type	Dates	Monitoring Summary	Comment
R1	Lower West End	Residential	2018, 2022, 2024	Unattended Baseline	'Interim Baseline'
R2	Prince Street	Residential	2019, 2022, 2024	Unattended Baseline	'Interim Baseline'
R3	Byass Street	Residential	2021, 2022, 2024	Unattended Baseline	'Interim Baseline'
R4	Longlands Land	Residential	2021, 2022, 2024	Unattended Baseline	'Interim Baseline'
R5	Eglwys Nunydd	Residential	2021, 2022, 2024	Unattended Baseline	'Interim Baseline'
R6	Margam Moors	SSSI	2024	Unattended Baseline	'Established Baseline'
R7	Eglwys Nunydd Reservoir	SSSI	2024	Unattended Baseline	'Established Baseline'

Figure B. 1 Site Overview and Project Study Areas

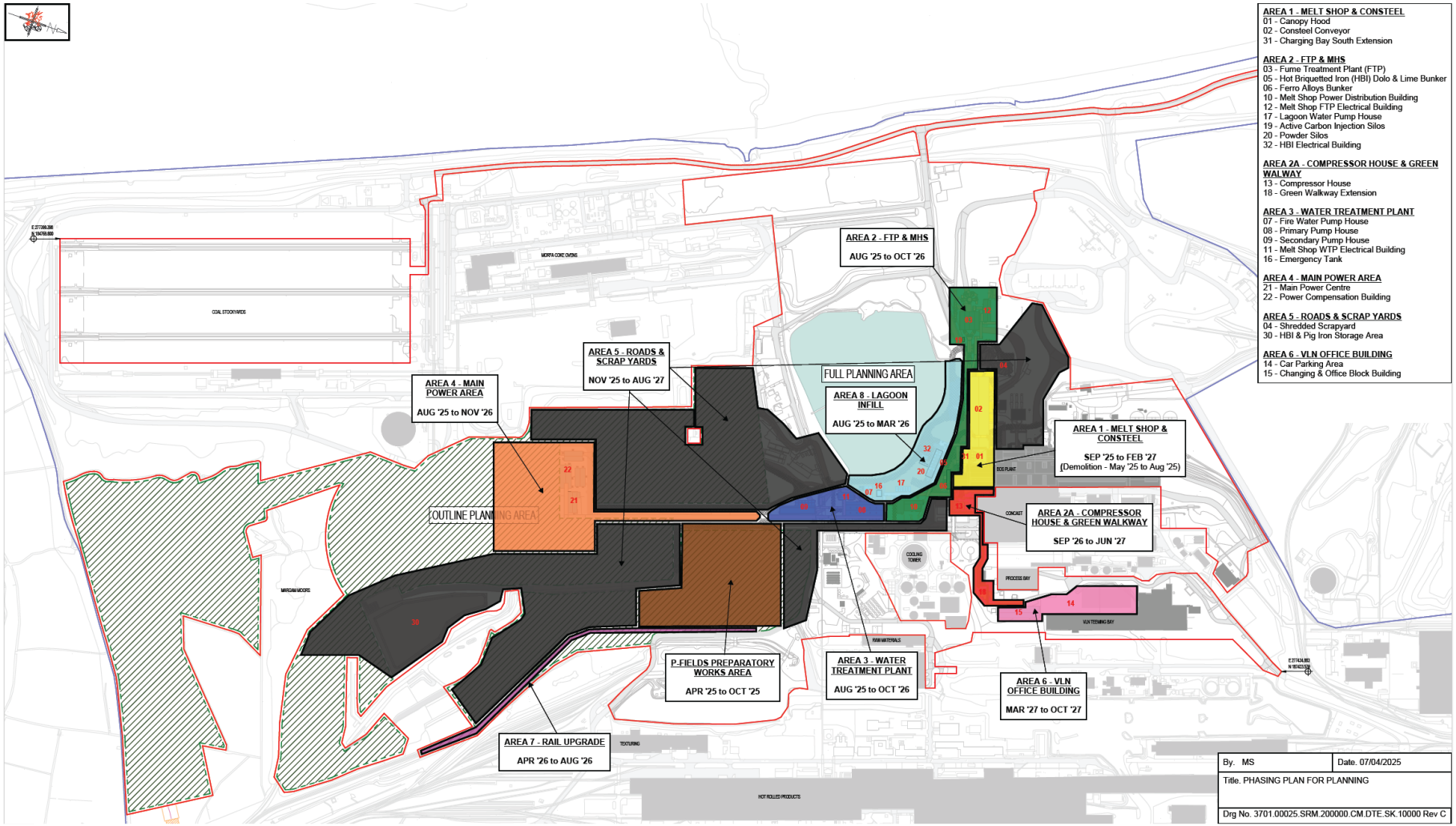


Figure B. 2 Phasing Plan of Proposed Construction Works (Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C dated: 07/04/2025)

Area	Description	2025									2026												2027									
		Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
1	MELT SHOP & CONSTEEL		DEMO	DEMO	DEMO	DEMO																										
2	FTP & MHS																															
2A	COMPRESSOR HOUSE & GREEN WALKWAY																															
3	WATER TREATMENT PLANT																															
4	MAIN POWER AREA																															
5	ROADS & SCRAP YARDS																															
6	VLN OFFICE BUILDING																															
7	RAIL UPGRADE																															
8	LAGOON INFILL																															
9	P-FIELDS PREPARATORY WORKS AREA																															

Figure B. 3 Construction programme and operational months for each month based on Phasing Plan (Drawing ref: 3701.00025.SRM.200000.CM.DTE.SK.10000 Rev C dated: 07/04/2025)

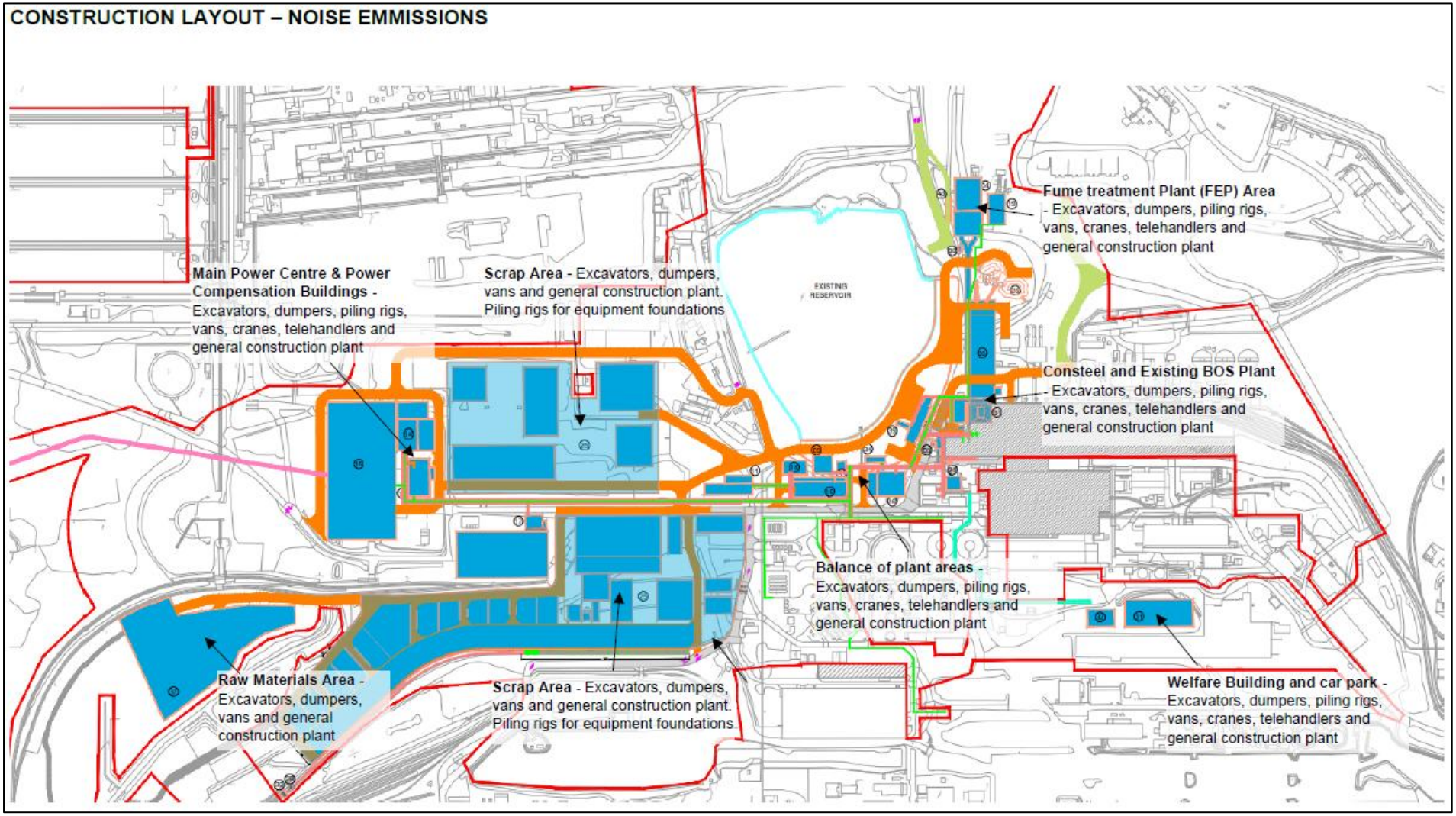


Figure B. 4 Information regarding plant requirements per area provided by the client (Drawing ref: Noise emissions during construction)

Appendix C – Regulatory Framework

This section provides a literature review of legislation and guidance relevant to proposed construction works.

Legislation

UK Government (1974). The Control of Pollution Act 1974.

The Control of Pollution Act 1974 (CoPA 74) gives local authorities power for controlling noise and vibration from construction sites. A Section 61 consent with a local authority enables a construction company to work to agreed methods, times durations and noise levels, whilst the consent remains in force and the contractor complies with the terms.

Contractors will be required to submit applications for Section 61 consents, variations and dispensations under the Control of Pollution Act 1974 (CoPA) for all construction activities that may generate a significant noise and/or vibration effect, including piling and activities to be undertaken outside of core working hours, unless otherwise agreed with the relevant planning authority.

UK Government (1990). Environmental Protection Act 1990.

This Act introduced integrated pollution control to prevent pollution arising as a result of emissions to air, land or water. The Act empowers local authorities to address noise pollution, classifying excessive noise as a statutory nuisance.

Guidance

BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Part 1: Noise

This Standard sets out techniques to predict and assess the likely noise effects from construction works, based on detailed information on the type and number of plant items being used, their location, and the length of time they are in operation. The noise prediction method is used to establish likely levels in terms of the $L_{Aeq,\ T}$ over any defined assessment period.

This Standard also documents a database of information comprising previously measured sound pressure levels at given distances for a variety of different construction plant undertaking various common activities.

The standard provides example criteria for the assessment of the significance of noise effects. Such criteria are concerned with fixed noise limits and changes in ambient noise levels. With respect to fixed noise limits BS 5228-1:2009+A1:2014 discusses those included within Advisory Leaflet 72: 1976: Noise Control on Building Sites. These limits are presented according to the nature of the surrounding environment. Thresholds are used to consider impact and determine the eligibility for noise insulation and temporary re-housing

The following is an extract from BS 5228-1:2009+A1:2014 . This details the criteria to be used in addition to the above significance criteria, for the determination of eligibility for significant noise mitigation measures.

> If the contractor has applied best practicable means (see Section 7.3) to the provision of mitigation, i.e. all reasonable measures have been taken to reduce the noise levels, but levels are still such that widespread community disturbance or interference with activities or sleep is likely to occur, there are two further provisions that can be made. This is relevant if the construction impacts are likely to continue for a significant period of time either continuously or sporadically (see additional information below). These are as follows.
>
> a) Noise insulation (NI). This is the provision of secondary glazing to the windows of affected habitable rooms. Additional ventilation provision might also be necessary to allow the windows to be kept closed whilst maintaining the appropriate number of air changes in the room. Secondary glazing increases attenuation and this can provide a significant improvement to the internal noise environment.
> b) Temporary or permanent re-housing (TRH). Where construction noise levels are such that noise insulation will not provide sufficient attenuation to prevent disturbance or interference with activities or sleep, then the occupants can be temporarily re-housed away from the construction site. However, if the nature of the construction activities means that re-housing would be necessary for a significant extent of time, e.g. in excess of six months, then there might be advantages in offering permanent re-housing, i.e. the property would be purchased by the developer and the occupants would purchase another property elsewhere. The property

would then remain vacant or be used by site personnel for the duration of the works, after which it can be re-sold.

Where, in spite of the mitigation measures applied and any Section 61 consents under the Control of Pollution Act 1974 [9], noise levels at some properties are expected to exceed trigger levels for the periods defined below, a scheme for the installation of noise insulation or the reasonable costs thereof, or a scheme to facilitate temporary re-housing of occupants, as appropriate, will be implemented by the developer or promoter. The scheme will include provision for the notification of affected parties.

Noise insulation, or the reasonable costs thereof, will be offered by the developer or promoter to owners, where applied for by owners or occupiers, subject to meeting the other requirements of the proposed scheme, where the construction of the development causes, or is expected to cause, a measured or predicted airborne construction noise level that exceeds either of the following at property lawfully occupied as a permanent dwelling:

- The noise insulation trigger levels presented in **Table C. 2** (of this report) for the corresponding times of day;
- a noise level 5dB or more above the existing pre-construction ambient noise level for the corresponding times of day;

whichever is the higher and for a period of 10 or more days of working in any 15 consecutive days of for a total number of days exceeding 40 in any 6 consecutive months.

Table C. 1 BS5228, Commentary on E4 'Example of thresholds used to determine the eligibility for noise insulation and temporary rehousing' (extract)

The recommended trigger levels as identified in BS5228 are presented in **Table C. 2**.

Time	Relevant Time Period	Averaging time, *T*	Noise trigger level dB $L_{Aeq,\,T}$ 1)
Monday to Friday	07:00 – 08:00	1 h	70
	08:00 – 18:00	10 h	75
	18:00 – 19:00	1 h	70
	19:00 – 22:00	3 h	65
	22:00 – 07:00	1 h	55
Saturday	07:00 – 08:00	1 h	70
	08:00 – 13:00	5 h	75
	13:00 – 14:00	1 h	70
	14:00 – 22:00	3 h	65
	22:00 – 07:00	1 h	55
Sunday & Public Holidays	07:00 – 21:00	1 h	65
	21:00 – 07:00	1 h	55

Note 1) Equivalent continuous A-weighted noise level predicted or measured at a point 1m in front of the most exposed windows or doors leading directly to a habitable room (living room or bedroom) in an eligible dwelling.

Table C. 2 Noise levels applicable to eligibility for noise insulation

Section E.3.2 details the 'ABC Method' of determining the potential significance of noise effects based upon noise change. This method requires the quantification of the existing baseline climate and the assessment of construction noise, in isolation, against the existing ambient levels.

In order to determine the significance of the potential noise effect at dwellings, firstly, the baseline climate is quantified for the appropriate assessment period (daytime, evening/weekends or night) and rounded to the nearest 5 dB. This is then compared to the measured or predicted site noise level (in isolation). If the site noise level exceeds the appropriate category value, as listed in **Table C. 3** below, then a potential significance is indicated.

Assessment category and threshold value period	Threshold value, $L_{Aeq,T}$ (dB)		
	Category A [A]	Category B [B]	Category C [C]
Night-time (23:00-07:00)	45	50	55
Evening and weekends [D]	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75

[A] Category A used when ambient noise levels (when rounded to the nearest 5dB(A)) are less than these values.

[B] Category B used when ambient noise levels (when rounded to the nearest 5 dB) are the same as the category A values.

[C] Category C used when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

[D] 19.00 – 23.00 weekdays, 13.00-23.00 Saturdays and 07.00 – 23.00 Sundays.

Notes

[Note 1] A significant effect has been deemed to occur if the L_{Aeq} noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

[Note 2] If the ambient noise level exceeds the threshold values given in the table (i.e. the ambient noise levels is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due site noise.

[Note 3] Applied to residential receptors only.

Table C. 3 Threshold of significant effect at dwellings (BS 5228-1:2009+A1:2014 Table E.1)

BS 5228-2: 2009+A1:2014 'Code of practice for noise and vibration control on construction and open site – Part 2: Vibration'

BS 5228-2:2009+A1:2014 gives recommendations of basic methods of vibration control and the procedures to limit the effects of vibration. Where the aim of the assessment is to determine the possibility of structural damage, the standard recommends that the preferred positioning of the transducer is at the lowest storey of the building, preferably at the base of the outer wall which is at closest distance of approach from the vibration source.

Human Exposure to Vibration

Human beings are known to be very sensitive to vibration, the threshold of perception being typically in the PPV range of 0.14 mm/s to 0.3 mm/s. Vibrations above these values can disturb, startle, cause annoyance or interfere with work activities. At higher levels they can be described as unpleasant or even painful.

Guidance on the human effects of vibration, based on human perception and disturbance are detailed in **Table C. 4**.

Vibration Level	Effect
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3 mm/s	Vibration might be just perceptible in residential environments
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint but can be tolerated if prior warning and explanation has been given to residents.
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Table C. 4 Guidance on effects of vibration levels (Table B.1 – BS5228-2: 2009)

BS 7385-2: 1993 'Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground borne vibration'

BS 7385-2: 1993 provides a series of guide values for building vibration above which damage may occur. The standard provides a framework for the procedure of monitoring, recording and analysing of building vibration.

When defining damage to residential type structures, the standard quotes the damage categories in BS 7385-1: 1990 (superseded).

Damage Category	Description
Cosmetic	The formation of hairline cracks on drywall surfaces, or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in mortar joints of brick/concrete block construction
Minor	The formation of large cracks or loosening and failing of plaster or drywall surfaces, or cracks through bricks/concrete blocks
Major	Damage to structural elements of the building, cracks in support columns, loosening of joints, splaying of masonry cracks etc

Table C. 5 Damage Criteria

BS 7385-2 provides guide values to prevent cosmetic damage to property. Between 4 Hz and 15 Hz, a guide value of 15 - 20 mm/s is recommended for unreinforced and residential property, whist above 40 Hz the guide value is 50 mm/s. In the lower frequency region strains associated with a given vibration are higher and therefore result in a lowering of the threshold criteria.

Line	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures	50 mm/s at 4 Hz and above	
	Industrial and heavy commercial buildings		
2	Unreinforced or light framed structures	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above
	Residential or light commercial buildings		
Note 1 – values referred to are at the base of the building;			
Note 2 – for line 2, at frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) is not to be exceeded.			

Table C. 6 Transient vibration guide values for cosmetic damage

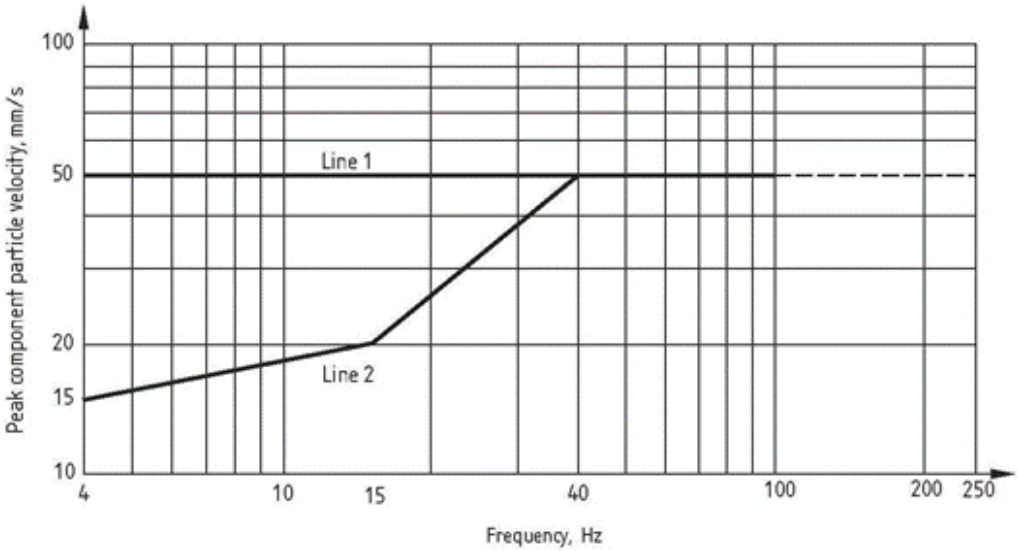


Figure C. 1 Transient vibration guide values for cosmetic damage (BS 7385-2: 1993, page 6)

According to BS 7385-2, '*Minor damage is possible at vibration magnitudes which are greater than twice those given for cosmetic damage, and major damage to a building structure may occur at values greater than four times the tabulated values'*.

Published damage criteria will not necessarily differentiate between these damage types, instead the guidance values will be at such a level which precludes the onset of cosmetic damage and therefore automatically prevent any higher grade of damage.

Institute of Estuarine and Coastal Studies 'Construction and Waterflow: Defining Sensitivity, Response, Impacts and Guidance' 2009

The IECS 2009 report (Cutts et al., 2009) defines disturbance in the general context as discrete events that disrupt ecosystem, community or population structures or in some way alter resource levels i.e. food and space. It may also influence the survival of individual birds and reduce the function of the site either for roosting or feeding. The report states that disturbance varies in its magnitude, frequency, predictability, spatial distribution and duration, and species vary greatly in their susceptibility to disturbance and this susceptibility is likely to vary with age, season, weather and the degree of previous exposure. The links between visual and audible stimuli are evident throughout the report and it is clear that noise by itself is not necessarily a cause for disturbance if not accompanied by a perceived visual threat.

In its literature review the IECS report cites a Dutch study (Smit and Visser, 1993) that found that reactions to noise from shooting ranges are stronger if sounds are combined with visual disturbance.

The IECS report reviews a 1999 study (Cutts and Allen 1999) into the disturbance of birds in response to flood defence works at Saltend on the Humber estuary.

In a separate series of reports by IECS to the Saltend Cogeneration Company into the effects of piling noise on estuarine birds, the monitoring of noise related disturbance was carried out. Noise levels were predicted across the site and ranged between 55 – 84 dB(A) (no indication is given initially in the report of the noise index used but, in subsequent paragraphs, use is made of the L_{Amax} parameter, with the time response factor not identified – but it is presumed that the Fast time response is inferred).

Effects on the bird population were observed via observations of flight responses and or behavioural changes. With respect to specific noise levels the following response descriptors are given:

- Noise below 50 dB(A) – low;
- Regular noise 50 – 70 dB – low to moderate;
- Irregular noise 50 – 70 dB – moderate;
- Regular piling noise below 70 dB – moderate; and

- Irregular piling noise above 70 dB – moderate to high.

Cutts et al. 2013 using a combination of literature review and field observations linked the likely behavioural responses of waterbirds to typical noise levels that may arise during construction works. They categorised disturbance effects into high, moderate or low and linked these to a range of noise levels, as follows:

High Noise Level Effects

Noise disturbance is typified by regular responses to stimuli with birds moving away from the works to areas which are less disturbed (within noise tolerances). Most birds will show a degree of response to noise stimuli. Birds that remain in the affect area may not forage efficiently and if there are additional pressures on the birds (cold weather, extreme heat etc.) then this may impact upon the survival of individual birds or their ability to breed. For auditory disturbances to qualify as a high level, it must constitute a sudden noise event of over 60 dB (at the bird, not at source) or a more prolonged noise of over 72 dB.

Moderate Noise Level Effects

Moderate noise disturbance is typified as high level noise which has occurred over long periods so that birds become habituated to it or lower level noise which causes some disturbance to birds. This encompasses occasional noise events above 55 dB, regular noise 60 - 72dB and long-term regular noise above 72 dB, where birds have become habituated. There is cross-over in moderate and high level noise thresholds although the lower band can be assumed unless the species is particularly sensitive. Those species that are particularly sensitive are Brent Goose, Curlew and Redshank. Birds that may be more sensitive than average include Shelduck and Bar-tailed Godwit (Smit & Visser, 1993)

Low Noise Level Effects

Low level noise is classed as that which is unlikely to cause response in birds using a fronting intertidal area. As such noises of less than 55 dB at the bird are included in this category. These effects are likely to be masked by background inputs in all but the least disturbed areas and thus would not disturb the birds close by. Noise between 55 – 72 dB in some highly disturbed areas e.g., industrial or urban areas and adjacent to roads, may feature a low level of disturbance provided the noise level was regular as birds will to often habituate to a constant noise level.

A summary of the impact thresholds for bird populations is provided below:

Level	Impact	Effect Level	Noise Level / dB(A)	Type of Noise
1	No impact	Low	Below 50	Regular construction noise
2	Behavioral changes (alarm calls, heads up, change in feeding/roosting activity)	Moderate	Equal to or below 70	Piling noise
3	Movement within zone	Moderate to high	Above 70	Piling noise
4	Movement out of zone but remaining on site	High	Above 85	Piling noise
5	Movement off site	High	Not defined	N/A

Table C. 7 IECS noise impact criteria

The noise unit in **Table C. 7** is not defined in the 2009 IECS Report but is likely to refer to the L_{AFmax} which is referenced throughout. The A-weighting network has therefore been adopted to inform the impact thresholds for those ecological receptors.

Natural England, 'A Review of the Effects of Noise on Birds – Version 1' 2018

This guidance note describes the nature of the effects of noise on birds and provides a literature review of present studies and broad measures of mitigation. This includes the application of generic thresholds for potentially harmful noise levels (or increases in noise levels), and measures to help mitigate noise effects on birds.

The document does not prescribe specific noise limits, rather a list of published thresholds for a range of activities, including construction piling, general construction, sporadic events such as shooting ranges and transportation sources.

The document references the previously discussed Cutts et al, 2009 document, plus a number of others, all of which present noise thresholds for construction activity of between 55 dB(A) and 84 dB(A) as an indication of behavioural changes from anxiety displays to moderate responses (birds moving away).

Appendix D – Noise Survey Time History

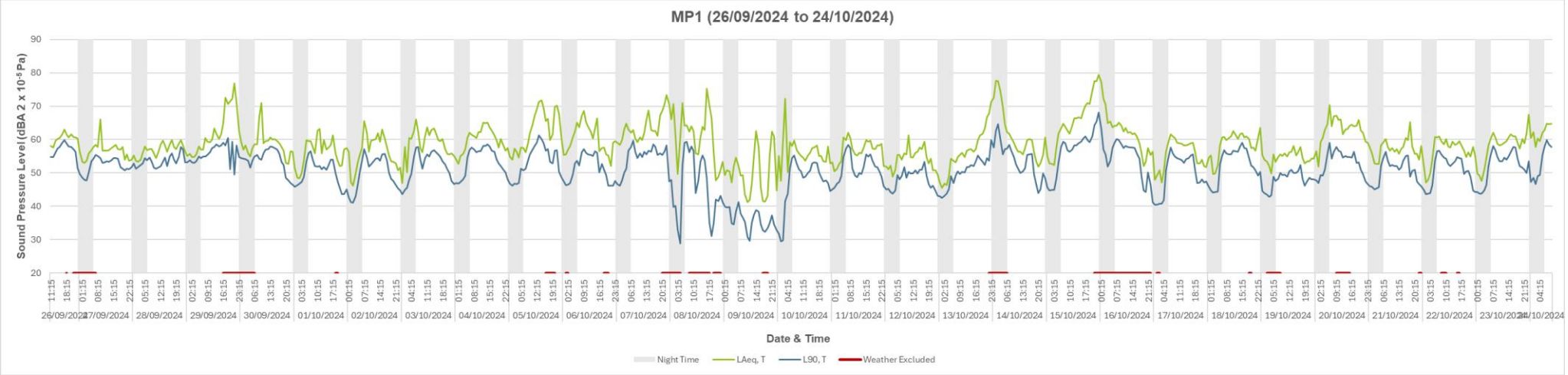


Figure D. 1 Noise monitoring data – MP1

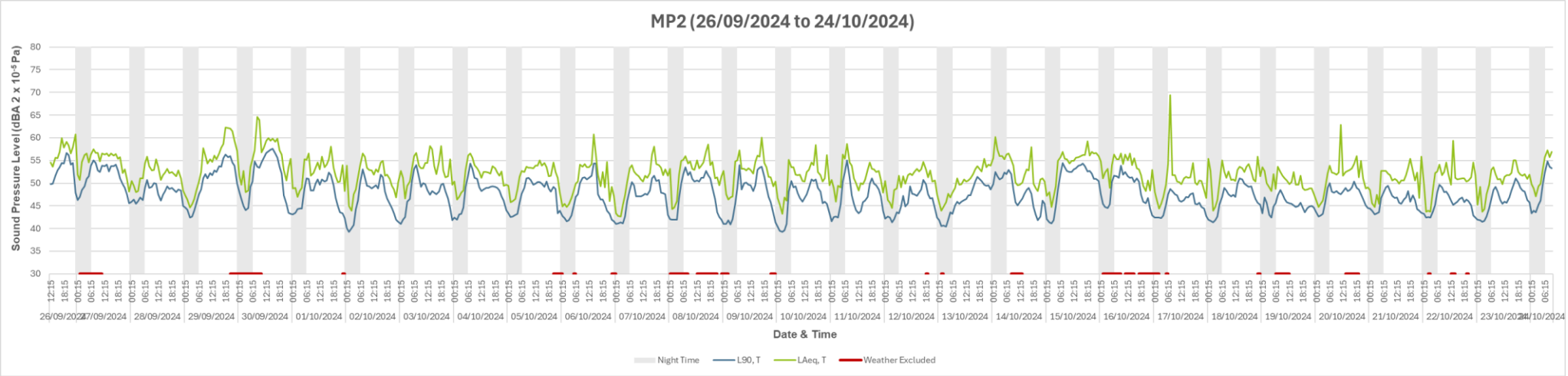


Figure D. 2 Noise monitoring data – MP2

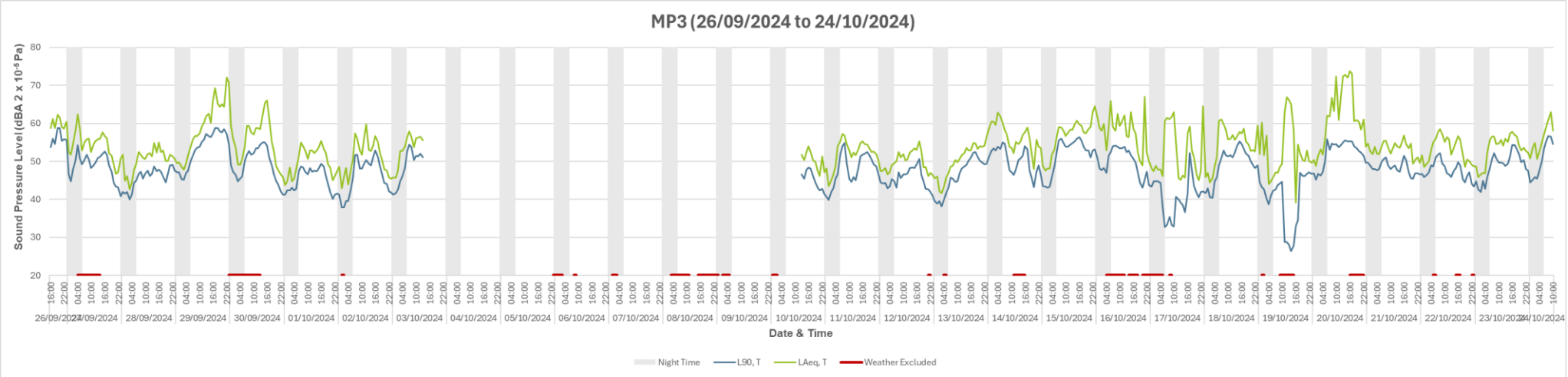


Figure D. 3 Noise monitoring data – MP3

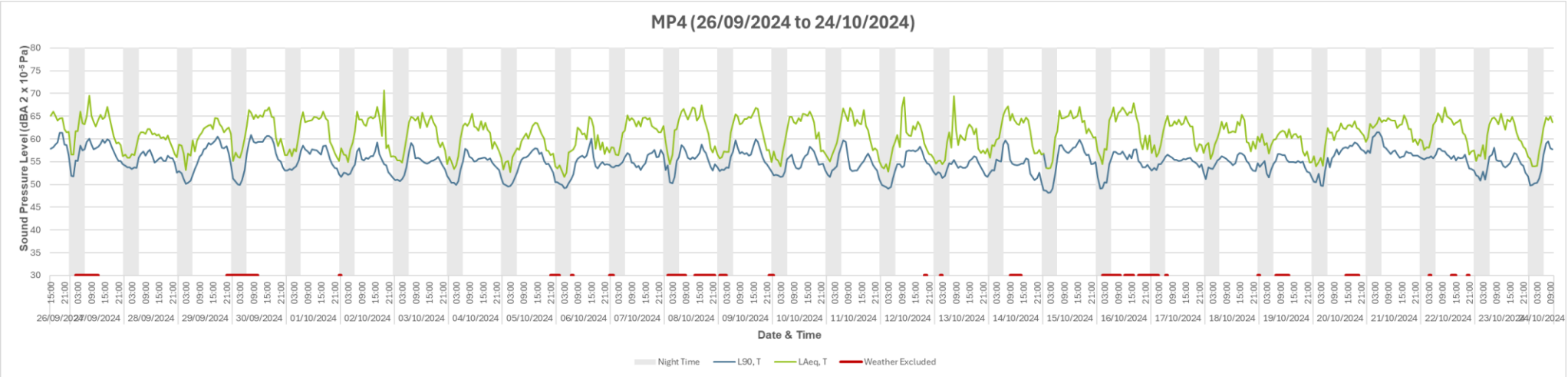


Figure D. 4 Noise monitoring data – MP4

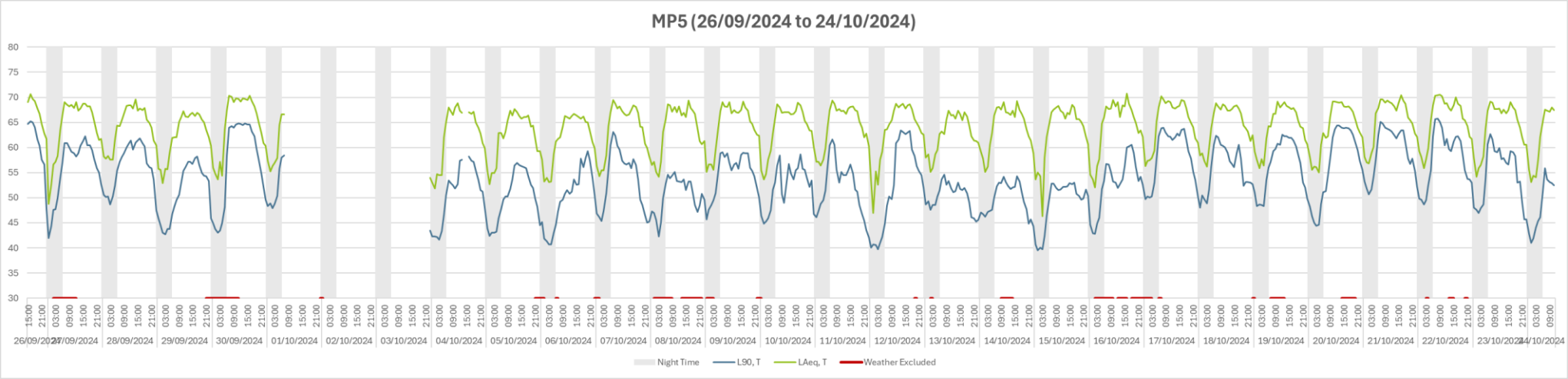


Figure D. 5 Noise monitoring data – MP5

Appendix E – Plant List and Noise Levels

Plant assumptions – Monday – Friday (07:00 – 19:00)

Task 1: Vegetation Clearance							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	-	0	0
Chainsaw	C4.73	84	4	10	-5	-9	75
Powertools	C4.69	85	2	30	-5	-7	78
Woodchipper	SCHALL, emission data catalog 2023	86	1	10	0	-10	76
5T Excavator	C4.17	71	3	30	0	0	71
Portable Generator	C4.86	65	2	100	-10	-7	58
Bulldozer	C5.15	83	1	20	0	-7	76
Wheeled loader	C2.26	79	2	25	0	-3	76
						Total	**84**

Table E. 1 Plant list for Task 1 (during core hours)

Task 2: Civil Enabling Works and Site Establishment							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	-	0	0
Powertools	C4.69	85	2	30	-10	-12	73
Handheld Circular Saw	C5.36	87	2	10	-5	-12	75
Diesel generator	C4.86	65	2	50	-10	-10	55
Compressor for tools	C5.5	65	4	50	-10	-7	58
Welfare unit	-	0	-	-	-	0	0
Generator for welfare unit	C8.24	59	1	40	-10	-14	45
Tractor (towing trailer)	C4.75	79	1	15	0	-8	71
Mobile telescopic crane (idling)	C4.47	61	2	50	0	0	61
Mobile telescopic crane	C4.41	71	2	50	0	0	71
Tracked excavator	C2.2	77	2	30	0	-2	75
Dumper	C4.4	76	2	40	0	-1	75
Concrete mixer truck (discharging) & concrete pump (pumping)	C4.28	75	5	30	0	2	77
Poker vibrator	C4.33	78	3	30	-5	-5	73
Telescopic handler	C4.54	79	5	15	0	-1	78
Vibratory plate (petrol)	C2.41	80	3	50	-5	-3	77
Vibratory roller	C2.40	73	2	40	0	-1	72
Water pump	C2.46	62	2	80	-10	-8	54
Road sweeper	C4.90	76	2	20	0	-4	72
Bulldozer	C5.15	83	2	40	0	-1	82
Wheeled loader	C2.26	79	2	25	0	-3	76
Excavator mounted rock breaker	C9.12	85	2	50	-5	-5	80
Tracked excavator	C1.12	82	4	50	0	3	85
Road breaker (hand-held pneumatic)	C5.3	82	4	25	0	0	82
Concrete pump	C3.26	75	2	25	0	-3	72
						Total	**91**

Table E. 2 Plant list for Task 2 (during core hours)

Task 3: Demolition Works (with crusher)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Mobile telescopic crane (idling)	C4.47	61	5	50	0	4	65
Mobile telescopic crane	C4.41	71	5	50	0	4	75
Breaker mounted on excavator	C1.9	74	2	50	0	0	74
Tracked excavator	C2.19	77	2	50	0	0	77
Hand-held circular saw	C4.73	84	2	50	-5	-5	79
Compressor (diesel)	Literature review	66	2	10	-10	-17	49
Hand-held pneumatic breaker	C1.6	83	3	50	-5	-3	80
8-wheel tipper	C11.19	83	2	40	0	-1	82
Hand tools	-	0	-	-	-	0	0
Skip wagon	C8.21	78	3	20	0	-2	76
Articulated dump truck (tipping fill)	C2.32	74	3	35	0	0	74
Jackhammer	C5.6	95	4	15	-10	-12	83
Tracked semi-mobile crusher	C9.14	90	2	50	0	0	90
Bulldozer	C5.15	83	2	40	0	-1	82
Wheeled loader	C4.13	71	1	25	0	-6	65
Dumper	C4.4	76	10	50	0	7	83
						Total	**93**

Table E. 3 Plant list for Task 3 – with crusher plant (during core hours)

Task 3: Demolition Works (without crusher)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Mobile telescopic crane (idling)	C4.47	61	5	50	0	4	65
Mobile telescopic crane	C4.41	71	5	50	0	4	75
Breaker mounted on excavator	C1.9	74	2	50	0	0	74
Tracked excavator	C2.19	77	2	50	0	0	77
Hand-held circular saw	C4.73	84	2	50	-5	-5	79
Compressor (diesel)	Literature review	66	2	10	-10	-17	49
Hand-held pneumatic breaker	C1.6	83	3	50	-5	-3	80
8-wheel tipper	C11.19	83	2	40	0	-1	82
Hand tools	-	0	-	-	-	0	0
Skip wagon	C8.21	78	3	20	0	-2	76
Articulated dump truck (tipping fill)	C2.32	74	3	35	0	0	74
Jackhammer	C5.6	95	4	15	-10	-12	83
Bulldozer	C5.15	83	2	40	0	-1	82
Wheeled loader	C4.13	71	1	25	0	-6	65
Dumper	C4.4	76	10	50	0	7	83
						Total	**90**

Table E. 4 Plant list for Task 3 – without crusher plant (during core hours)

Task 4: Earthworks							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	30	-5	-7	78
Stihl Saw	C5.36	87	2	5	-5	-15	72
Delivery lorries	C2.34	80	6	5	0	-5	75
Telescopic handler	C4.54	79	2	30	0	-2	77
Chain saw	Manufacturer's data	78	2	20	-5	-9	69
Tracked Excavator (71 t)	C2.2	77	4	35	0	1	78
Dumper	C4.4	76	10	50	0	7	83
Vibratory plate (petrol)	C2.41	80	2	50	-5	-5	75
Vibratory Roller	C2.40	73	4	50	0	3	76
Water Pump	C2.46	62	4	80	-10	-5	57
Bulldozer	C4.90	76	2	15	0	-5	71
8-wheel tipper	C5.15	83	2	50	0	0	83
Grader	C6.31	86	2	30	0	-2	84
Mobile telescopic crane	C4.46	67	5	50	0	4	71
Vibratory plate (petrol)	C2.41	80	3	50	-5	-3	77
Wheeled loader	C4.13	71	2	25	0	-3	68
						Total	**90**

Table E. 5 Plant list for Task 4 (during core hours)

Task 5: Excavation and Drainage Works							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	30	-5	-7	78
Tracked excavator	C2.19	77	4	50	0	3	80
4" Water Pump	C2.46	62	1	50	-10	-13	49
Generator (for 4" Water Pump)	C8.23	62	1	50	-10	-13	49
Tool Compressor	C5.5	65	2	50	-10	-10	55
Vibratory plate (petrol)	C2.41	80	4	50	-5	-2	78
Vibratory Roller	C2.40	73	4	50	0	3	76
Mobile telescopic crane	C4.47	61	2	50	0	0	61
Mobile telescopic crane	C4.41	71	2	50	0	0	71
Dumper	C4.4	76	5	50	0	4	80
Dumper (idling)	C4.5	63	5	10	0	-3	60
Compressor for hand held pneumatic breaker	C5.5	65	4	50	0	3	68
						Total	**86**

Table E. 6 Plant list for Task 5 (during core hours)

Task 6: Concreting Works, Structural Steel Works and Mechanical Erection Works							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	30	-5	-7	78
Concrete mixer truck (discharging) & concrete pump (pumping)	C4.28	75	20	25	0	7	82
Poker vibrator	C4.33	78	3	50	-5	-3	75
Truck mounted concrete pump + boom arm (idling)	C4.31	75	5	25	0	1	76
8-wheel tipper	C5.15	83	2	30	0	-2	81
Mobile telescopic crane (idling)	C4.47	61	2	50	0	0	61
Mobile telescopic crane	C4.41	71	2	50	0	0	71
Dumper	C4.4	76	2	50	0	0	76
Dumper (idling)	C4.5	63	2	10	0	-7	56
Tracked excavator	C2.19	77	3	30	0	0	77
Telescopic handler	C4.54	79	2	30	0	-2	77
Diesel generator	C4.86	65	2	50	-10	-10	55
Cherry Pickers	C4.53	77	2	50	0	0	77
						Total	**88**

Table E. 7 Plant list for Task 6 (during core hours)

Task 7: Piling works (with driven piling rig)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Large rotary bored piling rig	C3.14	83	1	20	0	-7	76
Compressor for mini piling	C3.19	75	2	20	-10	-14	61
Telescopic handler	C4.54	79	2	30	0	-2	77
Mobile telescopic crane (idling)	C4.47	61	2	50	0	0	61
Mobile telescopic crane	C4.41	71	2	50	0	0	71
Tracked excavator	C4.63	77	2	30	0	-2	75
Concrete pump	C3.26	75	1	25	-5	-11	64
Cement mixer truck (discharging)	C4.18	75	1	25	0	-6	69
Driven precast concrete piling	9t 0.7 m drop	86	6	40	0	4	90
						Total	**90**

Table E. 8 Plant list for Task 7 – with driven piling rig (during core hours)

Task 7: Piling works (with CFA piling rig only)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Large rotary bored piling rig	C3.14	83	1	20	0	-7	76
Compressor for mini piling	C3.19	75	2	20	-10	-14	61
Telescopic handler	C4.54	79	2	30	0	-2	77
Mobile telescopic crane (idling)	C4.47	61	2	50	0	0	61
Mobile telescopic crane	C4.41	71	2	50	0	0	71
Tracked excavator	C4.63	77	2	30	0	-2	75
Concrete pump	C3.26	75	1	25	-5	-11	64
Cement mixer truck (discharging)	C4.18	75	1	25	0	-6	69
						Total	**82**

Table E. 9 Plant list for Task 7 – with CFA piling rig only (during core hours)

Task 8: Cable Pull							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Crawler mounted dozer	C6.29	88	1	15	0	-8	80
Diesel generator	C4.78	66	1	40	-10	-14	52
Lorry with lifting boom	C4.53	77	1	20	0	-7	70
10T Winch with 1000m anti-twist steel bond	Typical (based on C4.84)	89	1	5	-10	-23	66
Hand trolleys	-	0	-	-	0	0	0
						Total	**80**

Table E. 10 Plant list for Task 8 (during core hours)

Task 9: Decommission and site demobilisation							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Tracked excavator	C6.12	74	2	20	0	-4	70
Dumper	C4.4	76	3	15	0	-3	73
Hand tools	-	0	-	-	0	0	0
						Total	**74**

Table E. 11 Plant list for Task 9 (during core hours)

Plant assumptions – Monday – Friday 19.00–23.00, Saturdays 07:00-13:00, 13.00–23.00 Saturdays and 07.00–23.00 Sundays

Task 1: Vegetation Clearance							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	-	0	0
Chainsaw	C4.73	84	4	50	-5	-2	82
Powertools	C4.69	85	2	50	-5	-5	80
Woodchipper	SCHALL, emission data catalog 2023	86	1	40	0	-4	82
5T Excavator	C4.17	71	3	50	0	2	73
Portable Generator	C4.86	65	2	100	-10	-7	58
Bulldozer	C5.15	83	1	40	0	-4	79
Wheeled loader	C2.26	79	2	40	0	-1	78
						Total	**88**

Table E. 12 Plant list for Task 1 (outside core hours)

Task 2: Civil Enabling Works and Site Establishment							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	-	0	0
Powertools	C4.69	85	2	60	-10	-9	76
Handheld Circular Saw	C5.36	87	2	50	-5	-5	82
Diesel generator	C4.86	65	2	100	-10	-7	58
Compressor for tools	C5.5	65	4	60	-10	-6	59
Welfare unit	-	0	-	-	-	0	0
Generator for welfare unit	C8.24	59	1	100	-10	-10	49
Tractor (towing trailer)	C4.75	79	1	40	0	-4	75
Mobile telescopic crane (idling)	C4.47	61	2	20	0	-4	57
Mobile telescopic crane	C4.41	71	2	80	0	2	73
Tracked excavator	C2.2	77	2	80	0	2	79
Dumper	C4.4	76	2	80	0	2	78
Concrete mixer truck (discharging) & concrete pump (pumping)	C4.28	75	5	80	0	6	81
Poker vibrator	C4.33	78	3	80	-5	-1	77
Telescopic handler	C4.54	79	5	80	0	6	85
Vibratory plate (petrol)	C2.41	80	3	60	-5	-2	78
Vibratory roller	C2.40	73	2	60	0	1	74
Water pump	C2.46	62	2	100	-10	-7	55
Road sweeper	C4.90	76	2	80	0	2	78
Bulldozer	C5.15	83	2	80	0	2	85
Wheeled loader	C2.26	79	2	80	0	2	81
Excavator mounted rock breaker	C9.12	85	2	80	-5	-3	82
Tracked excavator	C1.12	82	4	60	0	4	86
Road breaker (hand-held pneumatic)	C5.3	82	4	60	0	4	86
Concrete pump	C3.26	75	2	100	0	3	78
						Total	**94**

Table E. 13 Plant list for Task 2 (outside core hours)

Task 3: Demolition Works (with crusher)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Mobile telescopic crane (idling)	C4.47	61	5	20	0	0	61
Mobile telescopic crane	C4.41	71	5	80	0	6	77
Breaker mounted on excavator	C1.9	74	2	80	0	2	76
Tracked excavator	C2.19	77	2	80	0	2	79
Hand-held circular saw	C4.73	84	2	60	-5	-4	80
Compressor (diesel)	Literature review	66	2	100	-10	-7	59
Hand-held pneumatic breaker	C1.6	83	3	60	-5	-2	81
8-wheel tipper	C11.19	83	2	60	0	1	84
Hand tools	-	0	-	-	-	0	0
Skip wagon	C8.21	78	3	30	0	0	78
Articulated dump truck (tipping fill)	C2.32	74	3	60	0	3	77
Jackhammer	C5.6	95	4	60	-10	-6	89
Tracked semi-mobile crusher	C9.14	90	2	80	0	2	92
Bulldozer	C5.15	83	2	80	0	2	85
Wheeled loader	C4.13	71	1	80	0	-1	70
Dumper	C4.4	76	10	80	0	9	85
						Total	**96**

Table E. 14 Plant list for Task 3 – with crusher plant (outside core hours)

Task 3: Demolition Works (without crusher)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Mobile telescopic crane (idling)	C4.47	61	5	20	0	0	61
Mobile telescopic crane	C4.41	71	5	80	0	6	77
Breaker mounted on excavator	C1.9	74	2	80	0	2	76
Tracked excavator	C2.19	77	2	80	0	2	79
Hand-held circular saw	C4.73	84	2	60	-5	-4	80
Compressor (diesel)	Literature review	66	2	100	-10	-7	59
Hand-held pneumatic breaker	C1.6	83	3	60	-5	-2	81
8-wheel tipper	C11.19	83	2	60	0	1	84
Hand tools	-	0	-	-	-	0	0
Skip wagon	C8.21	78	3	30	0	0	78
Articulated dump truck (tipping fill)	C2.32	74	3	60	0	3	77
Jackhammer	C5.6	95	4	60	-10	-6	89
Bulldozer	C5.15	83	2	80	0	2	85
Wheeled loader	C4.13	71	1	80	0	-1	70
Dumper	C4.4	76	10	80	0	9	85
						Total	**93**

Table E. 15 Plant list for Task 3 – without crusher plant (outside core hours)

Task 4: Earthworks							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	60	-5	-4	81
Stihl Saw	C5.36	87	2	60	-5	-4	83
Delivery lorries	C2.34	80	6	30	0	3	83
Telescopic handler	C4.54	79	2	60	0	1	80
Chain saw	Manufacturer's data	78	2	60	-5	-4	74
Tracked Excavator (71 t)	C2.2	77	4	80	0	5	82
Dumper	C4.4	76	10	80	0	9	85
Vibratory plate (petrol)	C2.41	80	2	60	-5	-4	76
Vibratory Roller	C2.40	73	4	60	0	4	77
Water Pump	C2.46	62	4	100	-10	-4	58
Bulldozer	C4.90	76	2	80	0	2	78
8-wheel tipper	C5.15	83	2	80	0	2	85
Grader	C6.31	86	2	60	0	1	87
Mobile telescopic crane	C4.46	67	5	80	0	6	73
Vibratory plate (petrol)	C2.41	80	3	60	-5	-2	78
Wheeled loader	C4.13	71	2	80	0	2	73
						Total	**93**

Table E. 16 Plant list for Task 4 (outside core hours)

Task 5: Excavation and Drainage Works							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	60	-5	-4	81
Tracked excavator	C2.19	77	4	80	0	5	82
4" Water Pump	C2.46	62	1	100	-10	-10	52
Generator (for 4" Water Pump)	C8.23	62	1	100	-10	-10	52
Tool Compressor	C5.5	65	2	60	-10	-9	56
Vibratory plate (petrol)	C2.41	80	4	60	-5	-1	79
Vibratory Roller	C2.40	73	4	60	0	4	77
Mobile telescopic crane	C4.47	61	2	80	0	2	63
Mobile telescopic crane	C4.41	71	2	80	0	2	73
Dumper	C4.4	76	5	80	0	6	82
Dumper (idling)	C4.5	63	5	20	0	0	63
Compressor for hand held pneumatic breaker	C5.5	65	4	60	0	4	69
						Total	**88**

Table E. 17 Plant list for Task 5 (outside core hours)

Task 6: Concreting Works, Structural Steel Works and Mechanical Erection Works							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Hand tools	-	0	-	-	0	0	0
Powertools	C4.69	85	2	60	-5	-4	81
Concrete mixer truck (discharging) & concrete pump (pumping)	C4.28	75	20	40	0	9	84
Poker vibrator	C4.33	78	3	60	-5	-2	76
Truck mounted concrete pump + boom arm (idling)	C4.31	75	5	60	0	5	80
8-wheel tipper	C5.15	83	2	80	0	2	85
Mobile telescopic crane (idling)	C4.47	61	2	20	0	-4	57
Mobile telescopic crane	C4.41	71	2	80	0	2	73
Dumper	C4.4	76	2	80	0	2	78
Dumper (idling)	C4.5	63	2	20	0	-4	59
Tracked excavator	C2.19	77	3	60	0	3	80
Telescopic handler	C4.54	79	2	60	0	1	80
Diesel generator	C4.86	65	2	100	-10	-7	58
Cherry Pickers	C4.53	77	2	60	0	1	78
						Total	**91**

Table E. 18 Plant list for Task 6 (outside core hours)

Task 7: Piling works (with driven piling rig)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Large rotary bored piling rig	C3.14	83	1	30	0	-5	78
Compressor for mini piling	C3.19	75	2	30	-10	-12	63
Telescopic handler	C4.54	79	2	60	0	1	80
Mobile telescopic crane (idling)	C4.47	61	2	20	0	-4	57
Mobile telescopic crane	C4.41	71	2	80	0	2	73
Tracked excavator	C4.63	77	2	60	0	1	78
Concrete pump	C3.26	75	1	60	-5	-7	68
Cement mixer truck (discharging)	C4.18	75	1	40	0	-4	71
Driven precast concrete piling	9t 0.7 m drop	86	6	50	0	5	91
						Total	**92**

Table E. 19 Plant list for Task 7 – with driven piling rig (outside core hours)

Task 7: Piling works (with CFA piling rig only)							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Large rotary bored piling rig	C3.14	83	1	30	0	-5	78
Compressor for mini piling	C3.19	75	2	30	-10	-12	63
Telescopic handler	C4.54	79	2	60	0	1	80
Mobile telescopic crane (idling)	C4.47	61	2	20	0	-4	57
Mobile telescopic crane	C4.41	71	2	80	0	2	73
Tracked excavator	C4.63	77	2	60	0	1	78
Concrete pump	C3.26	75	1	60	-5	-7	68
Cement mixer truck (discharging)	C4.18	75	1	40	0	-4	71
						Total	**84**

Table E. 20 Plant list for Task 7 – with CFA piling rig only (outside core hours)

Task 8: Cable Pull							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Crawler mounted dozer	C6.29	88	1	60	0	-2	86
Diesel generator	C4.78	66	1	100	-10	-10	56
Lorry with lifting boom	C4.53	77	1	60	0	-2	75
10T Winch with 1000m anti-twist steel bond	Typical (based on C4.84)	89	1	50	-10	-13	76
Hand trolleys	-	0	-	-	0	0	0
						Total	**87**

Table E. 21 Plant list for Task 8 (outside core hours)

Task 9: Decommission and site demobilisation							
Plant	Plant Ref	L_p (at 10 m) dB(A)	No. of Plant Items	On-Time %	Screening (dB)	Total Correction (dB)	Total L_p (at 10 m) dB(A)
Tracked excavator	C6.12	74	2	80	0	2	76
Dumper	C4.4	76	3	80	0	4	80
Hand tools	-	0	-	-	0	0	0
						Total	**81**

Table E. 22 Plant list for Task 9 (outside core hours)

Appendix F – Noise Predictions during Core Hours

Monthly Noise Predictions from Construction Works – Task 1																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	33	33	33	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	0	0
R2	40	40	40	40	41	41	41	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	0	0
R3	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	0	0
R4	37	37	37	37	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	38	38	38	38	38	38	38	38	0	0
R5	32	32	32	32	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	0	0
R6	40	40	40	40	43	43	43	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	0	0
R7	34	34	34	34	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	0	0

Table F. 1 Monthly Noise Predictions from Construction Works – Task 1 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 2																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	40	41	41	41	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	40	40
R2	47	47	47	47	49	49	49	50	50	50	50	50	50	50	50	50	50	51	51	51	51	51	51	51	51	51	51	51	51	51	51
R3	49	49	49	49	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	49	49
R4	45	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	48	48	48	48	48	48	48	48	48	48	46	46	46	46
R5	40	40	40	40	43	43	43	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	38
R6	47	47	47	47	50	50	50	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	44	44
R7	41	41	41	41	44	44	44	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	39	39

Table F. 2 Monthly Noise Predictions from Construction Works – Task 2 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 3 (with crusher)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	42	43	43	43	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	42	42
R2	49	49	49	49	51	51	51	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53	53	53	53	53	53	53	53	53
R3	51	51	51	51	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	51	51
R4	47	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	50	50	48	48	48	48
R5	42	42	42	42	44	44	44	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40	40
R6	49	49	49	49	49	49	49	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	46	46
R7	43	43	43	43	44	44	44	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	41	41

Table F. 3 Monthly Noise Predictions from Construction Works – Task 3 with crusher (Core Hours)

Monthly Noise Predictions from Construction Works – Task 3 (without crusher)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	39	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	39
R2	46	46	46	46	48	48	48	49	49	49	49	49	49	49	49	49	49	50	50	50	50	50	50	50	50	50	50	50	50	50	50
R3	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48
R4	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45	45	47	47	47	47	47	47	47	47	47	47	45	45	45	45
R5	39	39	39	39	41	41	41	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	37
R6	46	46	46	46	46	46	46	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	43	43
R7	40	40	40	40	41	41	41	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	38	38

Table F. 4 Monthly Noise Predictions from Construction Works – Task 3 without crusher (Core Hours)

Monthly Noise Predictions from Construction Works – Task 4																																
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	39	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	39	39
R2	46	46	46	46	48	48	48	49	49	49	49	49	49	49	49	49	49	50	50	50	50	50	50	50	50	50	50	50	50	50	50
R3	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	48	48
R4	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45	45	47	47	47	47	47	47	47	47	47	47	45	45	45	45
R5	39	39	39	39	42	42	42	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	37	37
R6	46	46	46	46	49	49	49	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	43	43
R7	40	40	40	40	43	43	43	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	38	38

Table F. 5 Monthly Noise Predictions from Construction Works – Task 4 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 5																																
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	36	36	36	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	35
R2	0	37	37	37	44	44	44	45	45	45	45	45	45	45	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46
R3	0	43	43	43	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44
R4	0	38	38	38	41	41	41	41	41	41	41	41	41	41	41	41	41	43	43	43	43	43	43	43	43	43	43	41	41	41	41
R5	0	33	33	33	38	38	38	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	33	33
R6	0	39	39	39	45	45	45	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	39	39
R7	0	34	34	34	39	39	39	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	34	34

Table F. 6 Monthly Noise Predictions from Construction Works – Task 5 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 6																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	38	38	38	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	37
R2	0	39	39	39	46	46	46	47	47	47	47	47	47	47	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	48
R3	0	45	45	45	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	46
R4	0	40	40	40	43	43	43	43	43	43	43	43	43	43	43	43	43	45	45	45	45	45	45	45	45	45	45	43	43	43	43
R5	0	35	35	35	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	35
R6	0	41	41	41	47	47	47	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	41	41
R7	0	36	36	36	41	41	41	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	36

Table F. 7 Monthly Noise Predictions from Construction Works – Task 6 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 7 (with driven piling rig)																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	39	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	0	0
R2	46	46	46	46	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	0	0
R3	47	47	47	47	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	0	0
R4	44	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	44	44	44	44	44	44	44	44	44	44	0	0
R5	39	39	39	39	42	42	42	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	0	0
R6	46	46	46	46	49	49	49	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	0	0
R7	40	40	40	40	43	43	43	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	0	0

Table F. 8 Monthly Noise Predictions from Construction Works – Task 7 with driven piling rig (Core Hours)

Monthly Noise Predictions from Construction Works – Task 7 (with CFA piling rig only)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	31	32	32	32	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	0	0
R2	38	38	38	38	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0	0
R3	39	39	39	39	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	0	0
R4	36	36	36	36	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	36	36	36	36	36	36	36	36	36	36	0	0
R5	31	31	31	31	34	34	34	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	0	0
R6	38	38	38	38	41	41	41	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0	0
R7	32	32	32	32	35	35	35	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	0	0

Table F. 9 Monthly Noise Predictions from Construction Works – Task 7 with CFA piling rig only (Core Hours)

Monthly Noise Predictions from Construction Works – Task 8																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	0	0	0	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	0	0	0	0	0	0	0	0	0	0	0
R2	0	0	0	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0
R3	0	0	0	0	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	0	0	0	0	0	0	0	0	0	0	0
R4	0	0	0	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	0	0	0	0	0	0	0	0	0	0	0
R6	0	0	0	0	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	0	0	0	0	0	0	0	0	0	0	0
R7	0	0	0	0	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	0	0	0	0	0	0	0	0	0	0	0

Table F. 10 Monthly Noise Predictions from Construction Works – Task 8 (Core Hours)

Monthly Noise Predictions from Construction Works – Task 9																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	23	24	24	24	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	23	23
R2	30	30	30	30	32	32	32	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34
R3	32	32	32	32	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	32	32
R4	28	28	28	28	29	29	29	29	29	29	29	29	29	29	29	29	29	31	31	31	31	31	31	31	31	31	31	29	29	29	29
R5	23	23	23	23	26	26	26	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	21	21
R6	30	30	30	30	33	33	33	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	27	27
R7	24	24	24	24	27	27	27	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	22	22

Table F. 11 Monthly Noise Predictions from Construction Works – Task 9 (Core Hours)

Appendix G – Noise Predictions Outside Core Hours

Monthly Noise Predictions from Construction Works – Task 1																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	37	37	37	37	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	0	0
R2	44	44	44	44	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	0	0
R3	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	0	0
R4	41	41	41	41	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	42	42	42	42	42	42	42	42	42	42	0	0
R5	36	36	36	36	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0	0
R6	44	44	44	44	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	0	0
R7	38	38	38	38	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	0	0

Table G. 1 Monthly Noise Predictions from Construction Works – Task 1 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 2																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	43	44	44	44	46	46	46	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	43	43
R2	50	50	50	50	52	52	52	53	53	53	53	53	53	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	54
R3	54	54	54	54	55	55	55	55	55	55	55	55	55	55	55	55	55	58	58	58	58	58	58	58	58	58	58	57	57	57	57
R4	48	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	51	51	51	51	51	51	51	51	51	51	49	49	49	49
R5	43	43	43	43	46	46	46	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	41	41
R6	50	50	50	50	53	53	53	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	47	47
R7	44	44	44	44	47	47	47	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	42	42

Table G. 2 Monthly Noise Predictions from Construction Works – Task 2 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 3 (with crusher)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	45	46	46	46	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	45	45
R2	52	52	52	52	54	54	54	55	55	55	55	55	55	55	55	55	55	56	56	56	56	56	56	56	56	56	56	56	56	56	56
R3	56	56	56	56	57	57	57	57	57	57	57	57	57	57	57	57	57	60	60	60	60	60	60	60	60	60	60	59	59	59	59
R4	50	50	50	50	51	51	51	51	51	51	51	51	51	51	51	51	51	53	53	53	53	53	53	53	53	53	53	51	51	51	51
R5	45	45	45	45	47	47	47	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	43	43
R6	52	52	52	52	52	52	52	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	64	49	49
R7	46	46	46	46	47	47	47	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	44	44

Table G. 3 Monthly Noise Predictions from Construction Works – Task 3 with crusher (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 3 (without crusher)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	42	43	43	43	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	42
R2	49	49	49	49	51	51	51	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53	53	53	53	53	53	53	53	53
R3	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	57	57	57	57	57	57	57	57	57	57	56	56	56	56
R4	47	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	50	50	48	48	48	48
R5	42	42	42	42	44	44	44	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40	40
R6	49	49	49	49	49	49	49	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	46	46
R7	43	43	43	43	44	44	44	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	41	41

Table G. 4 Monthly Noise Predictions from Construction Works – Task 3 without crusher (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 4																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	42	43	43	43	45	45	45	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	42	42
R2	49	49	49	49	51	51	51	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53	53	53	53	53	53	53	53	53
R3	53	53	53	53	54	54	54	54	54	54	54	54	54	54	54	54	54	57	57	57	57	57	57	57	57	57	57	56	56	56	56
R4	47	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	50	50	50	50	50	50	50	50	50	50	48	48	48	48
R5	42	42	42	42	45	45	45	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	40	40
R6	49	49	49	49	52	52	52	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	46	46
R7	43	43	43	43	46	46	46	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	41	41

Table G. 5 Monthly Noise Predictions from Construction Works – Task 4 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 5																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	38	38	38	40	40	40	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	37	37
R2	0	39	39	39	46	46	46	47	47	47	47	47	47	47	47	47	47	48	48	48	48	48	48	48	48	48	48	48	48	48	48
R3	0	48	48	48	49	49	49	49	49	49	49	49	49	49	49	49	49	52	52	52	52	52	52	52	52	52	52	51	51	51	51
R4	0	40	40	40	43	43	43	43	43	43	43	43	43	43	43	43	43	45	45	45	45	45	45	45	45	45	45	43	43	43	43
R5	0	35	35	35	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	35
R6	0	41	41	41	47	47	47	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	41	41
R7	0	36	36	36	41	41	41	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	36	36

Table G. 6 Monthly Noise Predictions from Construction Works – Task 5 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 6																																
Receptor	2025									2026													2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	41	41	41	43	43	43	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	40	40
R2	0	42	42	42	49	49	49	50	50	50	50	50	50	50	50	50	50	51	51	51	51	51	51	51	51	51	51	51	51	51	51
R3	0	51	51	51	52	52	52	52	52	52	52	52	52	52	52	52	52	55	55	55	55	55	55	55	55	55	55	54	54	54	54
R4	0	43	43	43	46	46	46	46	46	46	46	46	46	46	46	46	46	48	48	48	48	48	48	48	48	48	48	46	46	46	46
R5	0	38	38	38	43	43	43	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	38	38
R6	0	44	44	44	50	50	50	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	44	44
R7	0	39	39	39	44	44	44	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	39	39

Table G. 7 Monthly Noise Predictions from Construction Works – Task 6 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 7 (with driven piling rig)																																
Receptor	2025									2026													2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	41	42	42	42	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	0	0
R2	48	48	48	48	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	0	0
R3	51	52	52	52	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	0	0
R4	46	46	46	46	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	46	46	46	46	46	46	46	46	46	46	0	0
R5	41	41	41	41	44	44	44	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	0	0
R6	48	48	48	48	51	51	51	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	0	0
R7	42	42	42	42	45	45	45	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	0	0

Table G. 8 Monthly Noise Predictions from Construction Works – Task 7 with driven piling rig (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 7 (with CFA piling rig only)																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	33	34	34	34	36	36	36	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	0	0
R2	40	40	40	40	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	0	0
R3	43	44	44	44	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	0	0
R4	38	38	38	38	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	38	38	38	38	38	38	38	38	38	38	0	0
R5	33	33	33	33	36	36	36	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	0	0
R6	40	40	40	40	43	43	43	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	0	0
R7	34	34	34	34	37	37	37	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0	0

Table G. 9 Monthly Noise Predictions from Construction Works – Task 7 with CFA piling rig only (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 8																															
Receptor	2025									2026												2027									
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	0	0	0	0	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	0	0	0	0	0	0	0	0	0	0	0
R2	0	0	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	0	0	0	0	0	0	0	0	0	0	0
R3	0	0	0	0	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	0	0	0	0	0	0	0	0	0	0	0
R4	0	0	0	0	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	0	0	0	0	0	0	0	0	0	0	0
R5	0	0	0	0	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	0	0	0	0	0	0	0	0	0	0	0
R6	0	0	0	0	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	0	0	0	0	0	0	0	0	0	0	0
R7	0	0	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	0	0	0	0	0	0	0	0	0	0	0

Table G. 10 Monthly Noise Predictions from Construction Works – Task 8 (Outside Core Hours)

Monthly Noise Predictions from Construction Works – Task 9																																
Receptor	2025									2026												2027										
	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26	May-26	Jun-26	Jul-26	Aug-26	Sep-26	Oct-26	Nov-26	Dec-26	Jan-27	Feb-27	Mar-27	Apr-27	May-27	Jun-27	Jul-27	Aug-27	Sep-27	Oct-27
R1	30	31	31	31	33	33	33	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	30	30
R2	37	37	37	37	39	39	39	40	40	40	40	40	40	40	40	40	40	41	41	41	41	41	41	41	41	41	41	41	41	41	41
R3	41	41	41	41	42	42	42	42	42	42	42	42	42	42	42	42	42	45	45	45	45	45	45	45	45	45	45	44	44	44	44
R4	35	35	35	35	36	36	36	36	36	36	36	36	36	36	36	36	36	38	38	38	38	38	38	38	38	38	38	36	36	36	36
R5	30	30	30	30	33	33	33	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	28	28
R6	37	37	37	37	40	40	40	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	34	34
R7	31	31	31	31	34	34	34	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	29	29

Table G. 11 Monthly Noise Predictions from Construction Works – Task 9 (Outside Core Hours)

RSK acoustics

Institute of Acoustics Sound Advice Provider 50 1974-2024 Sponsoring Organisation

DNV ISO 9001 · ISO 14001

INVESTORS IN PEOPLE | Gold

IEMA CORPORATE PARTNER

Constructionline Gold Member