



APPENDIX 7.2 NOISE AND VIBRATION IMPACT ASSESSMENT – EAF

EAF PROJECT

Tata Steel UK Limited

2062419-RSKA-RP-001-(01)





General notes

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1 Introduction

1.1 Background

RSK Acoustics Limited has been instructed by Tata Steel UK Limited to undertake the assessment of noise and vibration for a hybrid planning application for the Electric Arc Furnace (EAF) Project. The hybrid planning application (as an EIA) accounts for two planning applications, this technical report is related to the application for full planning permission for the demolition of existing buildings and structures, partial infill of the Basic Oxygen Steelmaking (BOS) lagoon, and construction of a new electric arc furnace-based steel production facility (1 no. arc furnace, 2 no. ladle furnaces).

The development includes an upgraded slag processing facility, chemical/material storage and transfer infrastructure and pipework and cabling (above and below ground), buildings, fume and dust treatment plant, water treatment facility and material handling systems. Electrical control rooms and power infrastructure. Offices and ancillary facilities together with new and amended transport infrastructure, landscaping and green infrastructure, and associated development (Proposed Development).

Outline planning permission (with all matters reserved) is also sought for the construction of a scrap metal handling facility and associated scrap yards, scrap processing facility, underground and overground electrical infrastructure, and new and amended transport infrastructure, landscaping, and associated development.

The assessment of the outline planning permission (with all matters reserved) aspect of the hybrid planning application is not considered within this document, and is assessed separately to this noise and vibration assessment. However this technical report does consider the cumulative impacts of the entire EAF Project (both EAF and scrap handling facility operating simultaneously). This document will support a chapter to be included in the Environmental Statement (ES) as part of the hybrid planning application. The ES will include significance criteria (and residual impacts), whereas this technical report assesses potential adverse impacts based on relevant guidance.

The scrap metal handling facility is proposed at Tata Steel UK Limited Land at Port Talbot Steel works in Port Talbot, South Wales.

The primary purpose of this noise and vibration assessment is to identify any likely adverse or significantly adverse airborne noise and / or vibration impacts caused by the demolition of the existing facilities and the construction and operation of the EAF Project on noise/vibration sensitive receptors. The noise and vibration assessment will also develop noise control recommendations in order to reduce or avoid any likely adverse or significant adverse impacts, where these are identified.

This noise and vibration assessment (and its associated figures and appendices) has been prepared by competent experts with relevant and appropriate experience. It is intended to be read alongside associated documentation for the hybrid planning permission application.

A glossary of acoustic terminology relevant to the assessment is included in Appendix A – Glossary.



1.2 Site and Existing Activity Description

The existing Tata Steel UK Limited integrated steelworks at Port Talbot Steel is situated next to Margam Moors, with Port Talbot Docks bordering the site to the north with the town of Port Talbot, 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 Port Talbot Steel works converts raw materials such as iron ores and coal to semi-finished (slab) and finished steel products through a range of separate processes. These range from:

- The importing of raw materials;
- Iron production within the Blast Furnaces
- the Basic Oxygen Steelmaking (BOS) plant; and
- Sinter production within the Sinter Plant.

The above activities are termed the 'heavy end'. The 'heavy end' has operated the majority of the preceding 50+ years. During 2024 the 'heavy end' will be switched off. The closure of the 'heavy end' will happen irrespective of the EAF Project proposal.

Additional to the above 'heavy end' activity, the site also undertakes activities associated with steel manufacturing in the:

- Hot mill;
- Cold mill; and
- Continuous Annealing Processing Line (CAPL).

These activities will continue operating following the switching off of the 'heavy end', prior to the establishment of the EAF Project (subject to planning permission and environmental permitting) and following the establishment of the EAF Project.

The future activity on the site is driven by Tata's desire to replace these 'heavy end' processes with alternative, greener and more economic methods of steel manufacture.

1.3 Interim Activity Description

As mentioned above, between the 'heavy end' being switched off and the proposed 'EAF Project' will result in a period of time where neither the heavy end nor EAF Project are operational.

During the interim baseline period the Tata Steel UK Limited Port Talbot Steelworks site will undertake activities associated with steel manufacturing in the:

- Hot mill; and
- Cold mill.

These activities are planned to continue operating following the shutdown of the 'heavy end' and prior to the establishment of the EAF Project (subject to planning permission and environmental permitting).



1.4 Site and the Proposed Activity Description

The location of the site and the site's future footprint is provided in Figure C 1.

The proposal is to establish an EAF within the existing BOS building. The EAF is batch melting process using scrap metal to produce batches of molten steel.

The proposed layout of the facility is provided in of Figure C 2 of Appendix C – Figures.

1.4.1 Proposed New Facilities

The facilities required for the EAF are as summarised below:

- One EAF (located within the existing BOS building);
- Two Ladle Arc Furnaces (LFs);
- Fume treatment plant (FTP);
- Consteel Conveyor;
- Lime and dolomite external bunker;
- Ferro-alloys bunker;
- Hot Briquetted Iron (HBI) and pig iron storage area;
- HBI bunker;
- Fire water pump house;
- Primary pump house;
- Secondary pump house;
- Main power centre;
- Power compensation building;
- National Grid (NG) 275 kV compound;
- Melt shop power distribution building;
- Meltshop WTP electrical building;
- Meltshop FEP electrical building;
- LF power building;
- Central melt shop operator room;
- Compressor house;
- Emergency tank;
- Two Lagoon water pump house;
- Green walkway extension;
- Car parking area; and
- New road network between scrap handling areas to the EAF.

Figure C 2 which shows identifies the main elements of the EAF Project at the Port Talbot Steelworks. The numbers provided in the below text reference the numbers contained within Figure C 2.

1.4.2 Proposed EAF Project Process

The processes associated with the EAF Process are described with reference to acoustics below:

Raw Material Import and Scrap Handling and Processing (Scrap Handling Facility)

The EAF Project requires raw materials to be transported to the Port Talbot Steelworks site. The transportation of raw materials such as scrap metal, hot briquetted iron (HBI), and pig iron will occur via the existing rail network.



Once on site, the HBI and pig iron will be stored in the storage area and then transferred to the HBI bunker and pig iron to the shredded scrap yard. Scrap metal is transported in containers to the main scrap storage and processing area where each container is removed from the train and replaced with an empty container. As the trains enter the area the load goes over the weigh bridge and passed under a radioactivity scanning facility. This is to ensure that no radioactive sources, such as pacemakers or smoke detectors, are accidentally melted within the EAF. The containers are tipped into the correct bay containing graded scrap ready for use or for further processing. Empty containers are then stacked ready for the next train.

The overflow scrap yard is for periods where additional stocks of scrap metal are required or if additional processing is required. Lastly, there is the potential for foreign materials to be included with the delivered scrap. The separation and processing is completed in the non-ferrous processing area. Once the materials have been segregated and made furnace-ready they can be transported to the EAF.

A combination of existing widened roads and new roads will facilitate the movement of super heavy vehicles from the scrap handling areas to the EAF (shredded scrap yard).

All of the above aspects of the EAF Project are included and assessed as part of the outline planning assessment (with all matters reserved) for the scrap handling facility. The transportation, processing and storage of the raw materials described above is not considered any further in this assessment.

Production of Steel (EAF)

The below description of the activities associated with the EAF are included within this noise and vibration assessment report.

The scrap metal which has been temporarily stored within the shredded scrap yard is charged on to the Consteel Conveyor Scrap is continuously fed onto this conveyor. Once heated, the scrap is charged into the EAF and then transferred into ladle arc furnaces (LFs). The EAF and LF are located within the existing Basic Oxygen Steelmaking (BOS) building, which will be renovated to allow for electric steel making.

The molten metal is then transferred from the EAF into one of two ladle arc furnaces (LFs) and refined (all within the BOS building). Following processing into a steel slab in the existing continuous casting plant (concast), the steel slabs are transferred to the existing stockyards to the west of the rolling mills.

Waste Production

The Fume Extraction Plant (FEP) is used to process EAF dust which is generated by the steelmaking process. This FEP contains bag filters that remove dust from the air, the air movement is generated through the operation of large industrial fans/blowers. The dust generated in the materials handling system (07 and 08) the BOS building are extracted to the FEP via ducting or the BOS plant canopy.

Electrical Distribution

In order to power the new facility there needs to be upgrades to the existing distribution network. This begins with a new substation installed by National Grid and units to stabilise power draw and further distribution via the main power centre. There are also a number of new power distribution buildings for the scrap facility, water treatment plants, fume extraction plant, Consteel, EAF, and LFs. Installing this new electrical distribution network is key to the efficient running of the EAF and associated activities.



1.5 Consultation

Table 1 provides a summary of the consultation undertaken to inform the noise and vibration assessment to date.

Body / organisation	Meeting dates and other forms of consultation	Summary of outcome of discussions
Neath Port Talbot Council (NPTC)	Meetings on 18 April 2024 and 15 May 2024	<p>General approach to baseline monitoring and acoustic assessment of the Proposed Development – (Acoustic Assessment Method Statement - EAF Project - 2062419-RSKA-MS-001-(04) - Draft - 20 May 2024).</p> <p>Informal response from NPTC following document review confirmed agreement with the methodology and proposals is provided in Appendix C).</p>

Table 1 Summary of the consultation in relation to noise and vibration

1.6 Scope of the Assessment

The below section details the elements of the Proposed Development that are scoped in or scoped out of this noise and vibration assessment.

1.6.1 Elements scoped out of the assessment

The elements shown in Table 2 are not considered to give rise to likely significant impacts as a result of the Proposed Development and have therefore not been considered within this assessment.

Element Scoped Out	Justification
Vibration during operation phase	<p>The Proposed Development has a very low potential to generate any operational vibration emissions.</p> <p>As the nearest residential receptor is more than 500 m away (on Bypass Street) from the Red Line Boundary means there is limited potential for vibration to be perceptible.</p> <p>For the reason above, operational vibration and the potential adverse impact from vibration emissions are not considered any further in this assessment.</p>
Freight vehicle movements via the port	<p>The Proposed Development is not expected to have freight deliveries through the Port Talbot port.</p> <p>For the reason above, freight via the Port Talbot port is not considered any further in this assessment.</p>

Table 2 Elements scoped out of the assessment



1.6.2 Elements scoped into the assessment

The elements shown in Table 3 are considered as having the potential to give rise to likely significant impacts as a result of the Proposed Development and are therefore considered within this assessment.

Element Scoped In	Justification
Noise and vibration from construction activities.	Temporary noise and vibration impacts associated with construction activities could result in adverse impacts.
Noise and vibration from heavy vehicle movements associated with construction activities.	Temporary noise impacts associated with construction traffic on the public highway.
Noise from road traffic vehicle movements associated with the operation of the Proposed Development.	Noise generated by operational traffic (heavy good vehicles and passenger vehicle movements etc.) on existing local routes, potentially affecting existing noise sensitive receptors (NSRs).
Noise from rail traffic vehicle movements associated with the operation of the Proposed Development.	Noise generated by operational rail traffic on existing and proposed rail line local routes, potentially affecting existing noise sensitive receptors (NSRs).
Noise from the operation of the Proposed Development.	Noise from the operation of the Proposed Development including noise arising from the existing unchanged processes on site, as well as the new or altered noise generating equipment associated with the Proposed Development and operation of the new scrap handling facility

Table 3 Elements scoped into the assessment

1.7 Identification of Noise Sensitive Receptors (NSRs)

Noise Sensitive Receptor (NSR) sensitivity has been categorised based on professional judgement for a range of receptor types as set out in Table 4.

Receptor Sensitivity	Type of Receptor
High	Residential properties (including gardens), educational establishments, hospitals, places of worship, hotels, children's nurseries, nursing homes, quiet areas (designated under noise and soundscape plan 2023-2028).
Medium	Commercial premises, halls, public municipal areas, bars and restaurants, SSSI.
Low	Industrial premises.
Very low	All other areas such as those used primarily for agricultural purposes.

Table 4 Receptor sensitivity

1.8 Noise Sensitive Receptors (NSRs)

The nearest residential NSRs to the development site are identified in Table 5.

NSR Ref.	Description	Type of Receptor	Easting	Northing
R1	Residential properties at West End	Residential	277127	188899



NSR Ref.	Description	Type of Receptor	Easting	Northing
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 5 NSR Locations

Other areas of interest to be considered within this assessment include the nearby Site of Special Scientific Interest (SSSI) and quiet areas as identified in Policy EN10 of the Neath Port Talbot County Borough Council Local Development Plan (2011-2026), as identified in Table 6 below.

NSR Ref.	Description	Type of Receptor	Easting	Northing
R6	Margam Moors	SSSI	278040	185241
R7	Eglwys Nunydd reservoir	SSSI	279744	184949
R8	Vivian Park	Quiet Area	275023	190020
R9	Talbot Memorial Park / Parc Coffa Talbot	Quiet Area	277393	189282

Table 6 SSSI and Quiet Area Locations

All NSRs identified within Table 5 and Table 6 are identified graphically in Figure C 3 of Appendix C – Figures.

1.9 Study Areas

The study area for the assessment varies depending on the impacts under assessment, and in accordance with the relevant standards and guidance. A summary of the study areas adopted for the assessment is provided below:

- **Construction Noise:** The Study Area considered for the construction phase is 300m from the Red Line Boundary. BS 5228:2009+A1:2014 states that at distances over 300m, noise predictions have to be treated with caution as they are likely to represent an overprediction of construction noise level;
- **Construction Vibration:** The Study Area considered for the construction phase is 100 m from the closest construction activity with the potential to generate vibration, in line with guidance from DMRB;
- **Rail Noise:** The Study Area considered for the railway noise is up to 300 m from the rail movements within the Red Line Boundary, in line with the quoted ranges within CRN
- **Road Traffic Noise:** Off-site receptors within 50 m of any potentially affected route (defined as any route potentially experiencing a road traffic noise level change of +/-1 dB Short Term; and
- **Operational Noise:** Noise effects arising from the operation of the Proposed Development, will be limited to 1000 m from the Red Line Boundary.

Figure C 1 provides an overview of the site location and a graphical overview of the study areas described above.



2 Legislation, Policy and Guidance

2.1 Legislation

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

Part III of Control of Pollution Act (CoPA) 1974 gives local authorities powers to control construction site noise and vibration. Best Practicable Means (BPM) is defined in Section 72 of CoPA.

2.1.2 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.

2.1.3 The Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 ("the 2017 Regulations")

The 2017 regulations transpose the amendments made to the Environmental Impact Assessment (EIA) Directive 2011/92/EU by Directive 2014/52/EU and make a number of significant changes to the EIA regime in Wales. Changes to the EIA regime in Wales mirror those in England and Scotland closely.

2.1.4 The Environment (Air Quality and Soundscapes) (Wales) Act 2024

The Act make provision for improving air quality in Wales; for a national strategy for assessing and managing soundscapes in Wales.

2.2 Policy

2.2.1 Planning Policy Wales: Ed. 12, February 2024

The Planning Policy Wales states:

'Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales'.

2.2.2 Technical Advice Note (TAN) 11 Noise: October 1997. CL-01-15 Updates to TAN 11 Noise, Noise Action Plan (2013-18) Commitments

Technical Advice Note (TAN) 11 should be taken into account by local planning authorities in Wales in the preparation of development plans. This document provides guidance on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development.

'CL-01-15 Updates to TAN 11 Noise - Noise Action Plan (2013-18) Commitments' includes clarifications on how the amendments/ revision of the supporting legislation and British Standards affect the content of TAN11. This update includes references to the publication of the revised BS 4142:2014 'Methods for rating and assessing industrial and commercial sound'.

Annex B *'The Assessment of Noise from Different Sources'* of CL-01-15 includes a section related to industrial and commercial noise sources:

'In light of the introduction of the environmental permitting regime and the updating of British Standards, the existing paragraph B17 should be deleted and replaced with the following: B17. The likelihood of adverse impacts arising from noise of an industrial and/or commercial nature can be assessed, where the application of BS 4142:2014 is appropriate, using the guidance set out in that standard (...).'



'(...) BS 4142:2014 states that as an initial estimate: "A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context. A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context." However, this initial estimate of the impact may need to be modified due to the context, and determining whether this is the case should include consideration of absolute sound levels, the character and level of the residual sound compared to the specific sound, the sensitivity of the receptor, and good building design. Since background sound levels vary throughout a 24-hour period it will usually be necessary to assess the acceptability of sound levels for separate periods (e.g. day and night) chosen to suit the hours of operation of the proposed development. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week. In addition, general guidance on acceptable sound levels within buildings can be found in BS 8233:2014 (...).'

2.2.3 'Future Wales: the national plan 2040': 2019; updated in 2021

Future Wales is the national development framework for Wales addressing air quality, soundscape and noise. The documents provide criteria that there are no unacceptable adverse impacts by way of noise (P18) and identify a desire to ensure that noise pollution is reduced or minimised.

2.2.4 Noise and Soundscape Action Plan, 2023-2028, Welsh Government

Noise and soundscape action plan is the Welsh Government's central noise policy document. It outlines the Welsh public sector's strategic policy direction in relation to noise and soundscape management for the next 5 years.

2.2.5 Neath Port Talbot County Borough Council Local Development Plan (2011-2026) (Adopted January 2016)

Neath Port Talbot County Borough Council (NPTCDC) prepared a Local Development Plan (LDP) for the period 2011 to 2026, as required under the Planning and Compulsory Purchase Act 2004. This document *'(...) guides the future development of an area, providing a clear vision for the County Borough setting out where, when and how much new development can take place over the next 15 years (2011-2026). The aim is to provide developers and the public with certainty about the planning framework for Neath Port Talbot.'*

Policy EN8 *'Pollution and Land Stability'* includes considerations on noise pollution as follows:

'In relation to noise, potentially noisy proposals should not be located close to sensitive uses (such as hospitals, schools and housing) and new noise-sensitive developments should not be located near to existing noisy uses (including industry and existing or proposed transport infrastructure) unless it can be shown that adverse effects can be dealt with through mitigation measures incorporated into the design. Where noise levels are likely to be a significant issue, developers may be required to provide information to show that no nuisance is likely to be caused through increased noise levels at sensitive locations if the development proceeds. Policy EN10 sets out policy relating to designated Quiet Areas.'

Policy EN10 *'Quiet Areas'* list a number of areas of tranquillity that have been identified within urban locations. The below locations are located within the Port Talbot urban area:

- Talbot Memorial Park, Port Talbot (Reference EN10/7); and
- Vivian Park, Port Talbot (Reference EN10/8).

This policy *'protects quiet areas from significant increases in noise or other impacts from development that would adversely affect these criteria. Where development is proposed near to a quiet area, it will be assessed in relation to its effects on the 'pillars' of urban tranquillity and will be required to ensure that there are no significant adverse effects.'* Both Talbot Memorial Park and Vivian Park are located at distances greater than 2.5km from the development site and therefore any impacts from the proposal are considered to be negligible; however, this will be fully considered within this noise assessment report.



2.3 Guidance

2.3.1 BS 5228-1 & -2: 2009+A1:2014 'Code of Practice for noise and vibration control on construction and open sites. Noise and Vibration'

The two parts of BS 5228 provide guidance on the control of noise and vibration on construction and open sites. BS 5228-1 contains a methodology for predicting construction noise levels taking both stationary and mobile noise sources into consideration within designated construction areas. BS 5228-1 also contains methodology for assessing construction noise levels, and methods of reducing noise emissions from construction sites.

Annexe E of BS 5228 provides broad guidance on the significance of construction noise on residential and commercial sensitive receptors. This includes significance based on absolute limit levels and those according to magnitude of change in ambient levels. In terms of absolute limits, Section E.2 recommends that daytime construction noise should not exceed 70 dB(A) in rural & suburban environments and 75 dB(A) in urban environments close to main roads or heavy industry, in order to limit overall impact on receptors. This absolute criterion can be applied to both residential and commercial receptors.

Section E.3 of BS5228 presents two methods of deriving construction noise criteria, based on existing ambient noise levels. The first method looks at the existing ambient noise in combination with threshold values for day, evening and night-time periods, and then prescribes the appropriate value, as shown in Table 7.

Assessment category and threshold value period	Threshold value in decibels (dB) (LAeq, T)		
	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
<p>NOTE 1 A potential significant effect is indicated if the LAeq,T noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.</p> <p>NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total LAeq,T noise level for the period increases by more than 3 dB due to site noise.</p> <p>NOTE 3 Applied to residential receptors only.</p>			
<p>A Category A: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB(A)) are less than these values.</p> <p>B Category B: Threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as the category A values.</p> <p>C Category C: Threshold values to use when the ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.</p> <p>D 19.00 – 23.00 weekdays, 13.00-23.00 Saturdays and 07.00 – 23.00 Sundays.</p>			

Table 7 Example threshold of potential significant effect at dwellings (BS5228 Table E.1)

The second method identifies significance where a 5 dB(A) increase in the ambient noise levels occur, subject to lower cut off values of 65, 55 and 45 dB(A) for each assessment period respectively. For the purpose of this assessment a conservative assumption has been applied and the lower criteria of the two methods have been applied.

In addition to the general construction assessment criteria, Section E.4 of BS 5228 provides thresholds at which consideration to noise insulation should be given. Given the distances and activities involved the likelihood of any of these applying is considered negligible.

BS 5228-2 provides guidance on vibration levels that can be used to assess the likely impacts of construction activities on buildings and on humans. Annex B of the standard gives guidance on the significance of vibration effects in terms of human response to vibration and structural response.



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 8.

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 8 Guidance on Effects of Vibration Levels (Table B.1 – BS5228-2: 2009)

Structural Response to Vibration

BS 7385-2:1993 'Evaluation and measurement for vibration in buildings –Part 2: Guide to damage levels from ground borne vibration' and BS ISO 4866:2010 'Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and their effects on structures' provide guidance on vibration measurement, data analysis and reporting as well as building classification and guide values for building damage.

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 9 Damage Criteria

Limits for transient vibration, above which cosmetic damage could occur, are given numerically in Table 10 and graphically in Figure 1 in terms of the component PPV.

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		



Line	Type of Building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
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 10 *Transient Vibration Guide Values for Cosmetic Damage*

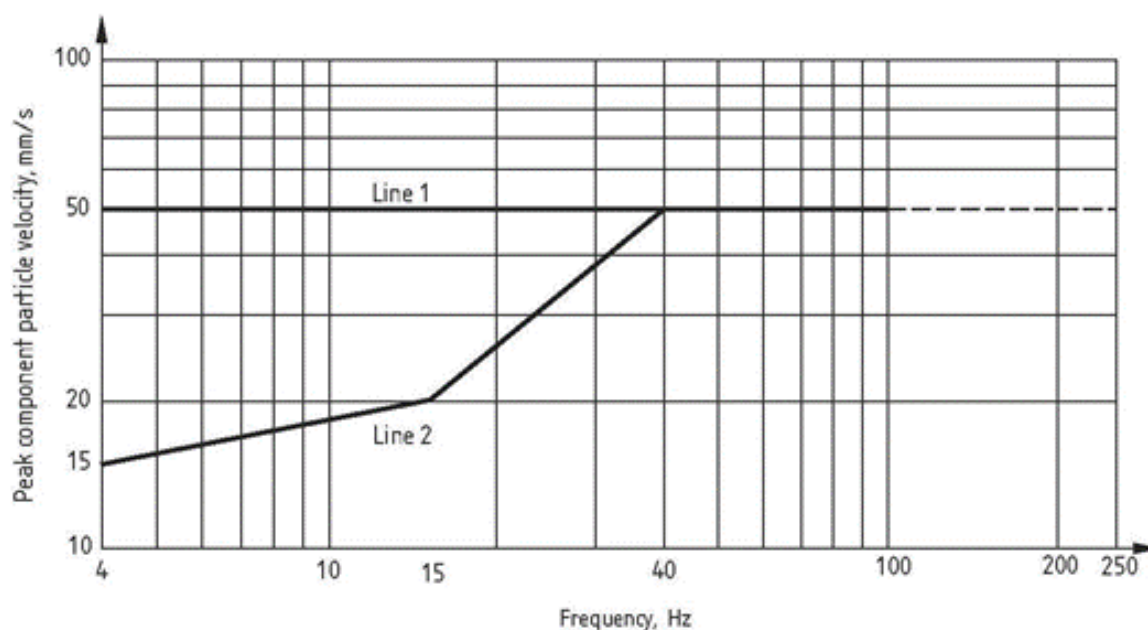


Figure 1 *Transient Vibration Guide Values for Cosmetic Damage (BS7385-2: 1993, page 6)*

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.

2.3.2 BS 4142:2014+A1:2019 'Method for rating and assessing industrial and commercial sound'

BS 4142:2014+A1:2019 provides a method for rating industrial and commercial sound and assessing the resulting impacts upon surrounding receptors. The method is applicable to fixed plant installations, sound from industrial and manufacturing process and other associated activities. The rating method considers specific acoustic characteristics of the noise source, such as tonality, impulsivity and intermittency.

The impact assessment procedure described in BS 4142:2014+A1:2019 is based on a comparison of rating level from the noise source with the background sound level prevailing at the receptor locations. The assessment of impact and likelihood of complaints is made based on the following differences:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on context; and



- Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Where the initial estimate of the impact needs to be modified due to the context, the following factors should be considered:

- The absolute level of sound;
- The character and level of the residual sound compared to the character and level of the specific sound; and
- The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions such as:
 - Façade insulation treatment;
 - Ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
 - Acoustic screening.

2.3.3 BS 8233: 2014 'Guidance on sound insulation and noise reduction for buildings'

Internal Noise Criteria

BS 8233 establishes internal ambient noise levels for dwellings based upon occupancy patterns and derived from World Health Organisation (WHO) 'Guidelines for community noise'. These are summarised in Table 11.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living room	35 dB $L_{Aeq,16h}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

Table 11 Summary of internal noise levels criteria

It should be noted that the internal target levels as shown in Table 11 can be relaxed by 5 dB where the proposed development is considered 'necessary or desirable' and reasonable internal conditions would still be achieved, as per Paragraph 7.7.2 of BS 8233.

External Noise Criteria

BS8233 also provides design criteria for external noise and Paragraph 7.7.3.2 states:

'For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces but should not be prohibited.'



2.3.4 Professional Planning Guidance on Planning and Noise (ProPG)

The ProPG: Planning and Noise guidance document was published by the Association of Noise Consultants (ANC), the Institute of Acoustics (IoA) and the Chartered Institute of Environmental Health (CIEH) , together with practitioners from a planning and local authority background, in May 2017.

ProPG encourages the use of good acoustic design as a means to inform the site masterplans and is key to avoiding or reducing to a minimum any adverse effects on any sensitive internal or external spaces. In considering acoustic design, consideration should be given by the developer to the management of noise through a hierarchy of potential mitigation measures which may include:

- Maximising the separation distance between source and receiver;
- Incorporate noise barriers (where applicable) to screen the development site (or individual plots) from significant sources of noise;
- Use existing features to reduce noise propagation across the site;
- Orientate the buildings in a manner which reduces the noise levels within habitable rooms (particularly bedrooms); and
- Building envelope design to mitigate the noise to acceptable levels, whilst providing adequate ventilation.

2.3.5 Calculation of Road Traffic Noise (CRTN), 1988

The Calculation of Road Traffic Noise (CRTN) sets out standard procedures for calculating noise levels from road traffic. The calculation method uses a number of input variables, including traffic flow volume, average vehicle speed and percentage of heavy-duty vehicles (HDV), to predict the $L_{A10,18\text{hour}}$ noise level for any receptor point at a given distance from the road.

2.3.6 Design Manual for Roads and Bridges, LA111 (DMRB)

The key part of the Design Manual for Roads and Bridges (DMRB) with relevance to this assessment is LA 111 Revision 2 (May 2020).

DMRB advises that the Calculation of Road Traffic Noise (CRTN) method should be used to model road noise emissions. DMRB also provides additional procedural guidance on the use of CRTN that reflects more recent developments in understanding of road noise prediction.

The CRTN method has been used to predict road noise emissions, as described below. The additional procedures recommended in DMRB have also been adopted.

Typically, the impact of the proposed development on the noise climate in the surrounding areas is based on the change in noise levels at noise sensitive receptors due to the changes in the volume of road traffic generated by the proposed development.

The DMRB provides two magnitude scales of impact for the change in noise levels in the 'short-term' (opening year) and in the 'long-term' (future year).

The traffic data has been provided by the transport consultants, SCP Transport, for the year 2026, the magnitude of impact at noise sensitive receptors has therefore been determined in accordance with the more stringent short-term magnitude scale. The magnitude of impact is presented in Table 12 below and has been applied to both the construction and the operational traffic.

Magnitude of Impact	Short term Noise Change (dB $L_{A10,18h}$)
Major	Greater than or equal to 5 dB



Magnitude of Impact	Short term Noise Change (dB $L_{A10,18h}$)
Moderate	3.0 to 4.9 dB
Minor	1.0 to 2.9 dB
Negligible	Less than 1 dB

Table 12 Magnitude of change

2.3.7 Calculation of Railway Noise (CRN) (1995), Department of Transport

The Calculation of Road Traffic Noise (CRTN) sets out standard procedures for calculating noise levels from road traffic. The calculation method uses a number of input variables, including traffic flow volume, average vehicle speed and percentage of heavy-duty vehicles (HDV), to predict the $L_{A10,18\text{hour}}$ or $L_{A10,1\text{hour}}$ noise level for any receptor point at a given distance from the road.

2.3.8 BS 7445-1,-2,-3 'Description and measurement of environmental noise. Guide to quantities and procedures'

The three-part standard (BS) 7445 provides the framework within which environmental noise should be quantified.

BS 7445 does not prescribe the meteorological conditions under which noise measurements should or should not be taken, although it recommends that in order to facilitate the comparison of results, measurements should be undertaken under certain weather conditions (wind speed not exceeding 5 ms⁻¹, no strong temperature inversions and no heavy precipitation).

2.3.9 International Standard ISO 9613-2:1996 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'

International Standard: ISO 9613-2: 1996(E): 'Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation' enables the prediction of noise levels in the community from sources of known sound emission.

The noise prediction method described in this part of the standard is general and is suitable for a wide range of engineering applications where the noise level outdoors is of interest. The noise source(s) may be moving or stationary and the method considers the following major mechanisms of noise attenuation:

- Geometrical divergence (also known as distance loss or geometric damping);
- Atmospheric absorption;
- Ground effect;
- Reflection from surfaces; and
- Screening by obstacles.

The method predicts noise levels under meteorological conditions favourable to noise propagation from the sound source to the receiver, such as downwind propagation, or equivalently, propagation under a moderate ground-based temperature inversion as commonly occurs at night.

The propagation algorithms described in ISO 9613-2 are implemented into the three-dimensional noise modelling software package SoundPLAN v9.0, which has been used to undertake the propagation calculations for this assessment.

In terms of ISO9613, the assessment provided within this technical report uses the algorithms contained within the ISO 9613-2: 1996. The proprietary software used to calculate sound propagation (SoundPLAN v9.0) has not made the most recent ISO 9613-2 changes mandatory.



Given the previous version of ISO 9613-2 has been used for over 20 years, we do not believe this to be a limitation in the modelling. We have contacted SoundPLAN for comment and they confirmed that the new version of ISO 9613-2 is unlikely to have significant impacts on the results presented.

It is noted that most of the changes incorporated into ISO 9613-2 are already available as options within the software and have been implemented on this project. One item which is not included is the implementation of changes to foliage and stack directivity, but these are informative and not mandatory (or applicable here). As such, we don't see the use of ISO 9613-2: 1996 as a project limitation.

2.3.10 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 13 IECS noise impact criteria

The noise unit in Table 13 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.

2.3.11 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).



3 Baseline Sound Survey

This section provides an overview of the baseline sound survey work undertaken related to the EAF Project, the methodologies implemented and the results of any baseline sound survey undertaken.

3.1 Methodology

All baseline sound survey monitoring was undertaken in general accordance with BS 4142:2014+A1:2019 Section 6 (Measurement procedure).

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.

3.2 Baseline Monitoring

3.2.1 Previous Baseline Monitoring

Baseline monitoring was undertaken at various positions representative of nearby NSRs during 2018, 2019 and 2022.

Following consultation with NPTC, it was confirmed that the baseline data from 2022 would be considered relevant to provide context relating to the acoustic environment (established baseline i.e. including 'heavy end'), with respect to both the ambient sound level (dB $L_{Aeq,T}$) and individual sound events (dB L_{AFmax}).

Data collected during 2018 and 2019 was considered to be collected too far in the past to be representative of the existing acoustic environment and has therefore not been included within this assessment.

A summary of the results from the survey is provided in Table 14. Further details and results of the baseline monitoring survey are provided in Appendix D – Baseline Sound Survey. The location of the NSRs identified in Table 14 are shown in Figure C 3.

NSR Ref.	Average Sound Level $L_{Aeq,T}$ (dB)		Background Sound Level $L_{A90,T}$ (dB)		Maximum Sound Level L_{AFmax} (dB)	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
R1	52	56	47	42	85	80
R2	53	53	47	42	85	93
R3	55	51	47	42	89	86
R4	58	56	52	47	94	84
R5	65	60	48	37	106	85

Table 14 2022 baseline result summary

As it was not possible to shut down the existing site operation during the 2022 survey, the data collected is not suitable to determine a background sound level (dB $L_{A90,T}$) without contribution from the specific sound source (Port Talbot Steelworks).

The measurement and derivation of the background sound level (dB $L_{A90,T}$) used for the assessment against BS 4142:2014+A1:2019 is detailed in the below section.



3.2.2 2024 Baseline Monitoring

To ensure that the specific sound source (Port Talbot Steelworks) did not contribute to the background sound levels measured during the monitoring period, a comparable alternative measurement position (proxy) has been used to represent the existing acoustic environment.

The proxy survey was conducted in June 2024 at a proxy location to establish a background sound level (dB $L_{A90, T}$) for the NSRs. The following was considered in determining an appropriate location for the proxy measurement position:

- Distance to the M4 motorway;
- Lack of contribution from the specific sound source (Port Talbot Steelworks);
- Minimising of uncertainty (see Section 5.6);
- Other significant sound sources which could misrepresent the acoustic environment; and
- Recognising that industrial and/or commercial sound forms a component of the acoustic environment at NSRs in close proximity to the Port Talbot Steelworks.

The proxy monitoring location was decided upon following three separate baseline surveys, whereby two of the monitoring positions / period results were discarded due to contribution from unknown and significant sound sources nearby.

The proxy monitoring location is identified in Table 15 and within Figure C 3 of Appendix C – Figures.

Ref.	Description	Type of Receptor	Easting	Northing
P01	Residential area within North Cornelly	Residential	281456	181930

Table 15 Proxy Monitoring Location

The position was decided upon as it is a similar distance from the M4 motorway to the majority of the Margam Port Talbot residential dwellings (those potentially most impacted by the EAF Project) and is located approximately 3 km south of the specific sound source (Port Talbot Steelworks) and is therefore unlikely to include contribution from the Port Talbot Steelworks.

The data collected from the proxy monitoring location was essential to both derive a background sound level (dB L_{A90}) that did not have contribution from the specific sound source and to allow for an assessment in line with BS 4142:2014+A1:2019.



3.2.3 2024 Proxy Survey Results

A summary of the results collected at the proxy monitoring location is provided in Table 16 below.

Date	Time	Measured noise levels (dB)		
		$L_{Aeq,T}$	L_{AFmax}	$L_{A90,T}$
Wednesday 5 June 2024	15:00-23:00	55	-	49
	23:00-07:00	49	69	40
Thursday 6 June 2024	07:00-23:00	55	-	50
	23:00-07:00	51	87	43
Friday 7 June 2024	07:00-12:00	55	-	51
Summary	Daytime	55 (48 - 60)	-	50 (41 - 57)
	Night-time	50 (42 - 53)	87 (51 - 87)	41 (33 - 54)

Table 16 Proxy Measurement Data Summary

During the survey, RSKA deployed a Davis Vantage pro weather station on site, any periods with rainfall or wind speeds above 5 m/s were measured have been excluded from the results.

A graphical summary of the statistical analysis undertaken to derive the 'background sound level' is provided in Figure 2 below. The background sound level informs the assessment against BS 4142:2014+A1:2019.

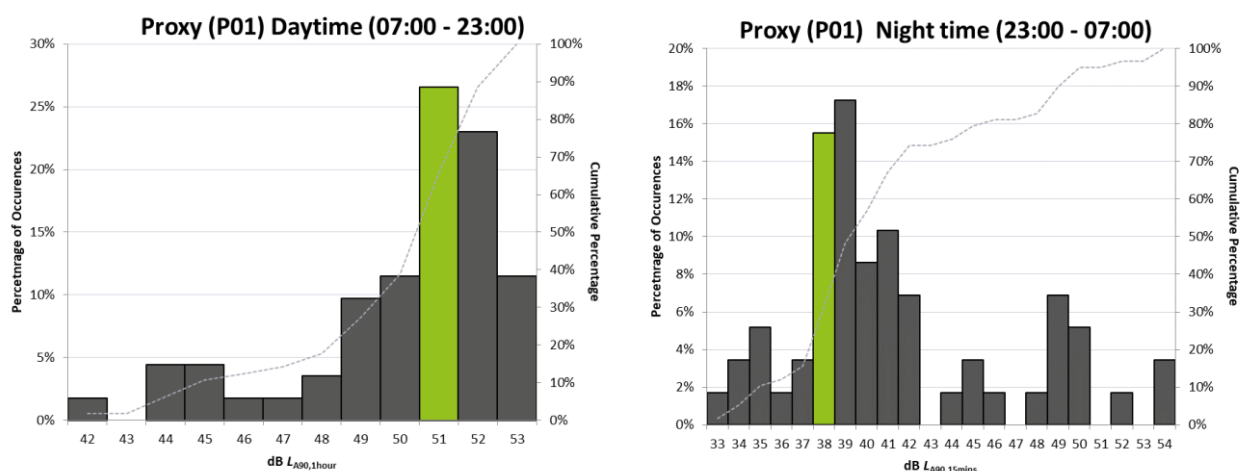


Figure 2 Statistical analysis of background noise levels for day and night-time ($L_{A90,T}$)

Based on the statistical analysis of the data collected, background sound levels of 51 dB $L_{A90,1hour}$ and 38 dB $L_{A90,15mins}$ are considered representative of the background sound level for both daytime and night-time, respectively.



3.2.4 Ecological Receptor Baseline Sound Survey

Two baseline sound surveys were also undertaken at ecological receptors from Tuesday 7 May to Wednesday 22 May (R6 and R7) and Wednesday 22 May to Tuesday 28 May 2024 (R6). The location of each baseline sound survey is provided in Table 17.

NSR Ref.	Description	Easting	Northing
R6	Margam Moors SSSI	278256	185312
R7	Eglwys Nunydd reservoir	279769	185040

Table 17 Noise monitoring locations (2024)

The location of the NSRs identified in Table 17 and within Figure C 3 of Appendix C – Figures.

3.2.5 Ecological Receptor Baseline Sound Survey Summary

Average noise levels and representative baseline noise levels across daytime and night-time for each monitoring location are shown in Table 18 below:

NSR Ref.	Average Sound Level $L_{Aeq,T}$ (dB)		Representative Baseline $L_{A90,T}$ (dB)		Maximum Sound Level L_{AFmax} (dB)	
	Daytime	Night-time	Daytime	Daytime	Daytime	Night-time
R6	49	50	41	46	83	85
R7	60	57	52	46	82	78

Table 18 Ecological receptor baseline sound survey result summary

It is noted that the survey location at R7 was impacted by its proximity to the nearby (~150m) motorway (M4). Although results are representative of areas of the reservoir a similar distance from the motorway, care should be taken in using the data as representative of the Eglwys Nunydd reservoir as a whole.

During the survey, L_{AFmax} events were measured. An analysis of the typical number of events has been undertaken and is summarised below. 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} 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.

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.

Further details and results of the baseline monitoring survey are provided in Appendix D – Baseline Sound Survey.



3.2.6 Soundscape

The assessment of the soundscape of the area was identified as required as part of the noise and vibration impact assessment during consultation with NPTC. The latest Noise and Soundscape Plan for Wales 2023 – 2028 has been published in line with the Environment (Air Quality and Soundscapes) (Wales) Act 2024. The Noise and Soundscape Plan for Wales provides no guidance on the assessment of soundscapes but does refer to the drafted Tan Advice Note (TAN 11).

The draft TAN11 indicates that a soundscape design approach should only be required by planning authorities instead of, or in addition to, a conventional noise control or acoustic design, where it is considered necessary to create an appropriate soundscape and is likely to result in better placemaking.

The supporting document 1 of the draft TAN11 entitled “Soundscape Design”, provides further guidance in the form of Table 1, which suggests that for a scheme with ‘Low Potential for better placemaking through soundscape design’ and that has a medium to high noise risk, one should “Achieve good acoustic quality through good acoustic design.”

In terms of the type of development proposed, none provided within Table 2 of the supporting document of the draft TAN11 accurately describe the Proposed Development. As the Proposed Development is situated on an existing and historic industrial site, it is considered that there would be relatively low potential for better placemaking through soundscape design, especially as the potential for any improvement to the surrounding soundscape would be limited to the design or incorporation of mitigation on the development site only.

Based on the above, the achievement of good acoustic quality will be undertaken through good acoustic design of the Proposed Development. This is discussed further in Section 4.3.

The observed sound climate at each position is described in Table 19 below.

Location	Name	Daytime Soundscape Observations	Night-time Soundscape Observations
R1	West End	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Towards the end of West End, road traffic noise from A4241 become dominant. Occasional railway noise due to nearby line. Sounds from nature include bird calls and some noise from foliage moving in the wind.	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Occasional roadway traffic noise from A4241, however this is infrequent. Sounds from nature include some noise from foliage moving in the wind.
R2	Prince Street	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Road noise from A4241 is also prominent. Sounds from nature include occasional bird calls and foliage moving in the wind	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Occasional roadway traffic noise from A4241, however this is infrequent. Sounds from nature include foliage moving in the wind
R3	Brynhyfryd Road	Urban location dominated by sounds generated through human activity, specifically noise from nearby industrial site and roadway traffic from the A4241 and A48. Sounds from nature include bird calls and some noise from foliage moving in the wind.	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Occasional roadway traffic noise from A4241 and A48, however this is infrequent. Sounds from nature include some noise from foliage moving in the wind.



Location	Name	Daytime Soundscape Observations	Night-time Soundscape Observations
R4	Longland Lane	Urban location dominated by sounds generated by human activity, specifically noise from the nearby industrial site (BOC) and roadway traffic from the A48 and M4 motorway. Sounds from nature include bird calls and some noise from foliage moving in the wind.	Urban location dominated by sounds generated by human activity, specifically noise from the nearby industrial site (BOC). Occasional roadway traffic noise from A48 and M4 however this is infrequent. Sounds from nature include some noise from foliage moving in the wind.
R5	Eglwys Nunydd	Urban location dominated by noise from motorised traffic on the nearby motorway (M4) which is approximately 200 m west of the location and the B4283. Sounds from nature included occasional bird calls.	Urban location dominated by noise from motorised traffic on the nearby motorway (M4) which is approximately 200 m west of the location and the B4283. Sounds from nature included some noise from foliage moving in the wind.
R6	Margam Moors	Wilderness location adjacent to significant industrial site. Acoustic environment varies depending on adjacent industrial activities. Noise from motorised traffic on the local road network is audible. Sounds from nature included birds calls and insects.	Wilderness location adjacent to significant industrial site. Acoustic environment dominated by sounds generated by human activity, specifically from adjacent industrial activities. Occasional noise from the local road network (M4 motorway) and railway movements, however these were both infrequent. Sounds from nature included birds occasional calls and insects.
R7	Eglwys Nunydd reservoir	Wilderness location dominated by sounds generated by human activity, specifically noise from the local road network (M4 motorway) as well as nearby industrial activity. Natural sounds include bird calls and some noise from foliage moving in the wind.	Wilderness location dominated by sounds generated by human activity, specifically nearby industrial activity and occasional noise from the local road network (M4 motorway), however this was infrequent. Natural sounds include some noise from foliage moving in the wind.
R8	Vivian Park	Urban location dominated by sounds from nature, such as occasional bird calls and some noise from foliage moving in the wind. Some sounds generated by human activity were audible, such as roadway traffic noise, however this infrequent and non-localised.	Urban location where continuous sound generated by human activity, specifically noise generated from the nearby industrial site, was audible but quiet. Road traffic noise from the A4241 was louder, as were sounds generated by nature, such as foliage moving in the wind, however both were infrequent.
R9	Talbot Memorial Park / Parc Coffa Talbot	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Some road traffic noise from A4241 is also prominent. Sounds from nature include occasional bird calls and foliage moving in the wind.	Urban location dominated by sounds generated by human activity, specifically noise from nearby industrial site. Some road traffic noise from A48 and M4, however this is infrequent. Sounds from nature include constant noise from a nearby water course (Ffwrdd Wylt) and foliage moving in the wind, however this was infrequent.
Proxy	Heol Fach, North Cornelly	Urban location dominated by sounds generated by human activity, specifically roadway traffic noise from the M4 motorway and	Urban location dominated by sounds generated by human activity, specifically roadway traffic noise from the M4 motorway and B4283. Sounds from



Location	Name	Daytime Soundscape Observations	Night-time Soundscape Observations
		B4283. Sounds from nature include occasional bird calls and some noise from foliage due to wind.	nature include some noise some noise from foliage moving in the wind.

Table 19 Soundscape Observations



4 Assessment Methodology

4.1 Overview

The following quantitative assessments have been undertaken within this noise and vibration assessment report:

1. EAF vs established baseline proxy background sound level (Section 5.5);
2. EAF + established baseline ambient sound level vs established baseline ambient sound level (Section 5.5.2);
3. EAF Project (EAF + Scrap handling facility in-combination cumulative) vs established baseline proxy background (Section 6.1.2);
4. EAF Project (EAF + Scrap handling facility in-combination cumulative) + established background ambient sound level vs established background ambient sound level (Section 6.1.3);
5. EAF maximum noise events vs established baseline maximum event analysis (Section 5.5.2); and
6. EAF Project vs established baseline maximum event analysis (Section 6).

The assessments undertaken are considered to be very much a worst-case assessment scenario. This is because the interim baseline ambient sound level is expected to be lower than the established baseline ambient sound level due to the shutdown of the 'Heavy End' (subject to current contribution at different receptors). Theoretically, these assessments including the 'established baseline' are adding the noise from the 'heavy end' to the predicted noise emissions from the Proposed Development, which will not be realised in practice.

The noise control measures embedded within the Proposed Development are based on the above worst-case assessment scenarios for the purpose of the noise and vibration impact assessment reports and associated ES submission.

However, once data is available relating to the interim baseline period (e.g. collected following the shutting down of the 'heavy end'), expected end of 2024, the results of this will be used to inform the proposed Operational Noise and Vibration Management Plan (ONVMP) and Proposed Development noise control strategy.

It is anticipated that the Proposed Development will be subject a planning condition requiring both the submission of the ONVMP and noise control requirements to NPTC, prior to the operation of the Proposed Development.

The ONVMP will include reference to the below operational and mitigation scenarios:

1. EAF + Interim baseline ambient sound level vs established baseline ambient sound level;
2. Scrap + Interim baseline ambient sound level vs established baseline ambient sound level; and
3. EAF Project + Interim baseline ambient sound level vs established baseline ambient sound level.



4.2 Operational Noise Assessment and Criteria

4.2.1 Residential Assessment and Criteria

The operational noise impact assessment has been undertaken in general accordance with BS 4142:2014+A1 2019, which is based on the comparison of rating levels during the site operation with respect to the background sound level prevailing at representative NSRs. According to this methodology, where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact on the receptors under investigation, depending on context. The assessment must also provide an understanding of the context in which the sound occurs / will occur to establish the significance of the impact.

The assessment of night-time noise considers the ProPG guidance for individual noise events (from all sources) to not exceed 45 dB L_{AFmax} more than 10 times a night, to achieve good acoustic design. This internal noise limit during the night-time is also reflected in the WHO Guidelines for Community Noise.

The assessment criteria were discussed and agreed with the NPTC and NRW in relation to the EAF Project. The project criteria were derived using a combination of proxy background measurement data, ambient measurement data and legislative/guidance documents.

Receptor	Contextual Ambient Sound Level Criteria dB $L_{Aeq, T}$ ¹		Background Sound Level dB $L_{A90, T}$		L_{AFmax} Criteria ²
	Daytime	Night-time	Daytime	Night-time	Night-time
R1	41	37	51	38	57
R2	43	37	51	38	57
R3	42	38	51	38	57
R4	47	44	51	38	57
R5	56	47	51	38	57
Note: 1 No increase in ambient noise therefore ambient sound minus 10 dB is set as target. Ambient sound level used to derive criteria provided in Table D 13; and 2 External criteria based on internal criteria of 45 dB L_{AFmax} where an openable window results in 12 dB attenuation of the external L_{AFmax} level.					

Table 20 Design Targets

4.2.2 SSSI Assessment and Criteria

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.



4.2.3 Quiet Area Assessment and Criteria

Although there is no defined applicable criteria for the quiet areas, a level that does not exceed 50 dB $L_{Aeq, T}$ is defined within BS 8223 as desirable for external spaces. Based on this, for the purposes of the assessment a level of 50 dB $L_{Aeq, T}$ has been used as a noise threshold for the onset of adverse impacts.

4.3 Operational Phase Embedded Mitigation Measures

During the development of the design of the EAF facility, the project team undertook a significant review of the available noise control mitigation measures available. This included the following:

- Identification of each item of the proposed plant, equipment or building breakout noise emissions that could contribute to noise levels at nearby NSRs;
- A review of the potential noise control and mitigation options for each item of the proposed plant, equipment or building (including noise control barriers, enclosures and operational adjustments to reduce noise emissions);
- Calculation of the potential benefits of each noise control and mitigation measure for the contributing plant and equipment; and
- Identification of a noise control regime that mitigated and reduced the potential for adverse impacts at NSRs.

As part of the above process, it was identified that the EAF and LF processes that are proposed within the existing BOS plant building have the potential to generate significant noise emissions. Following review of the initial propagation model outputs and various design team meetings, an onsite investigation and assessment relating to the sound insulation performance of the existing BOS plant building (including representatives from Tata Steel UK Limited, the EAF equipment supplier and RSKA), a set of embedded mitigation measures was identified that could result in acceptable or non-significant effects.

The noise control measures identified within Table 21 are embedded as part of the design for the EAF Project. Therefore, these would not be considered within the additional mitigation section of this report.

Element/s	Summary of control measures
Existing BOS Plant Building	Strategic enhancement of existing BOS building façade cladding (to become the EAF building ¹) to a total effective weighted sound reduction index of 48 dB R_w .
Continuous Steel building	Optimized cladding ranging from 28-48 dB R_w ; and 6-8m high reflective noise barrier (minimum surface/area density 15 kg/m ²) between the lagoon and the continuous steel building ¹ .
Compressor house	Enhancement of building façade cladding to a total effective weighted sound reduction index of 48 dB R_w .
Louvers	Louvers assumed to be a minimum of 300 mm deep, single bank and acoustically treated to achieve a minimum of ~20 R_w ¹ .
Access routes / doors	All access doors assumed to be acoustically treated to achieve a minimum of 30 R_w ¹ . Location, number and specification of access doors / openings to be determined at detailed design.
Any building not requiring specific additional embedded control measures	External roof and wall panel system used to achieve a minimum of 28 dB R_w .



Main fan / blower	Enclosure performance of 45 dB R_w^2 ; and Inline attenuator ³ .
MHS booster fan	Enclosure performance of 35 dB R_w^2 ; and Inline attenuator ³ .
LF Fan	Enclosure performance of 47 dB R_w^2 ; and Outlet attenuator ³ .
Notes: 1: Façade areas that require enhancement are detailed in Appendix G. 2: Exact location, number and specification performance required to be confirmed during detailed design; and 3: Assumed performance of enclosures and attenuators provided in Table 22.	

Table 21 Embedded Mitigation Measures



The performance of the enclosures and attenuators identified as part of the embedded mitigation provided in Table 21 are detailed below in Table 22.

Item	Octave band centre frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Main Fan Enclosure	-17	-23	-35	-50	-50	-50	-50	-50
MHS Booster Fan Enclosure	-14	-19	-23	-32	-43	-50	-50	-50
LF Fan Enclosure	-20	-25	-40	-48	-50	-50	-50	-50
Main Fan Outlet Attenuator (Stack side)	-14	-21	-35	-46	-48	-38	-23	-19
MHS Booster Fan - Inlet Attenuator	-3	-7	-11	-18	-20	-12	-9	-7
LF Fan - Outlet Attenuator (exposed duct side)	-4	-11	-25	-36	-38	-28	-13	-9

Table 22 Enclosures and attenuator performance

4.4 Operational Noise Modelling

To determine the predicted impact at the nearest noise sensitive receptors, a computer sound propagation model has been prepared. This uses a combination of noise source assumptions, including consideration of:

- Hours of operation;
- Mode of operation (e.g. continuous);
- Operational load (e.g. 100% load, number of movements);
- Location of sound sources;
- Specific source emission levels; and
- Any character adjustment (impulsive, tonal etc.).

All sound propagation predictions have been carried out using SoundPLAN v 9.0. An overview of the sound propagation modelling parameters is provided in Table 23 overleaf.



Item	Setting
Algorithms	International Standard: ISO 9613-2 (1996).
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 (ISO 9613-2)	10 degrees Celsius; 70 % humidity; and Wind from source to receiver.
Receptor Height	Ground Floor level set at 1.5 m above external ground level, first floor is set to 4.0m above external ground level.
Terrain	LiDAR DTM with a 1-metre resolution has been imported into the model.
Site Layout	Site layout according to drawings provided by the EAF Project team (see Figure C 2).
Character Corrections	For the purpose of the noise impact assessment against BS 4142:2014+A1 2019 criteria (i.e. proxy background) a character penalty of +6 dB has been applied relating to the activities likely impulsive characteristic.

Table 23 *Modelling Parameters*

The current model input has been discussed and agreed with the EAF Project team with respect to operational and noise source assumptions. The inputs have been derived through a combination of RSKA measurement data, educated assumptions, and specific data provided by the EAF Project team.

The model accounts for the typical operation of the EAF. As highlighted in Section 1.4.2, any activity relating to the delivery or processing of scrap prior to the delivery at the shredded scrap yard is assessed as part of the outline planning application (with all matters reserved) for the scrap handling facility.

The noise source assumptions included within the propagation model for the EAF are detailed below in Section 4.4.



4.4.1 Operational Noise Source Assumptions

The main noise source assumptions used to inform the propagation model and assessment are provided in Table 24 below.

Plant Item / Building Name	Plant items included	Ref (dB)
Cooling Towers	5 x cooling towers assumed power 2000 kW. Assumed cooling tower level 115 dB L _{WA} ² . Building volume 17500 m ³	98 dB L _{Aeq, T} ¹ .
HBI Building		80 dB L _{Aeq, T} ¹
Fume Treatment	Building volume 30625 m ³	83 dB L _{Aeq, T} ¹
Compressor Room	3 x compressors with assumed power >1750 kW. Assumed source level of 104 dB L _{WA} (each) 3 x dryer fans Assumed source level of 100 dB L _{WA} (each). Building volume 4200 m ³	92 dB L _{Aeq, T} ¹
Pump House	29 x pump units with assumed power >75 kW and assumed speed 3000-3600 RPM. Assumed source level of 105 dB L _{WA} (each). Building volume 16000 m ³	82 dB L _{Aeq, T} ¹
Secondary Pump House	10 x pump units with power >75 kW. Assumed source level of 91 dB L _{WA} (each). Building volume 16000 m ³	78 dB L _{Aeq, T} ¹
Lagoon Pump House	9 x pump units with power >75 kW. Assumed compressor level 91 dB L _{WA} (each). Building volume 24000 m ³	76 dB L _{Aeq, T} ¹
Transformer	Power rating of 12001-15000 kVA.	97 dB L _{WA} ²
Main fan / blower	Backwardly airfoil Power rating: 4000 kW Flow: 1200 m ³ /h Enclosure performance of 45 R _w	107 dB L _{WA} ²
MHS booster fan	Radial tip Power rating: 100 kW Flow: 50 m ³ /h Enclosure performance of 35 R _w	92 dB L _{WA} ²
LF Fan	2x fan type assumed (one not in operation and used for emergency or maintenance cover) Radial tip Power rating: 800 kW Flow: 450 m ³ /h Enclosure performance of 38 R _w	93 dB L _{WA} ²
Ducting	Ducting connection between fans, EAF building, Fume treatment and the stack	59 – 93 dB L _{WA} per m ²
Notes 1 – L _{Aeq, T} represents the internal reverberant noise level averaged during a worst-case 15 minute activity period; and 2 – Reference sound power level (dB L _{WA}) includes indicative noise control measures identified in Table 21.		

Table 24 EAF noise sources assumptions



It is recognised that the assumptions made will not represent all working positions or periods but due to the nature of the activity, but it is considered that plant locations, estimated operational on-times represent the typical worst case scenario for the proposal.

Plant	Location	Qty.	On-time	Ref. L _{WA} (dB)
Front end Loaders	Shredded scrap yard (05)	2	80%	105 dB L _{WA}
Excavators		1	80%	108 dB L _{WA}
25t tipper lorry (shredded scrap)	Continuous steel conveyor building (03)	2	1 movement and tip per ~15 mins	112 dB L _{WA}
25t tipper lorry (OA scrap)		2	1 movement and tip per ~15 mins	116 dB L _{WA}

Table 25 Scrap plant list and noise sources assumptions

All noise source assumptions have been derived following review of available information or project meetings with Tata Steel UK Ltd. All assumptions have been reviewed and agreed as appropriate by Tata Steel UK Ltd.

4.4.2 Operational Traffic Assumptions

The road traffic noise assessment considers the change in ambient noise levels at existing receptors as a result of changes in the 18-hour AAWT traffic flows between the potential future traffic flows with and without the proposed development.

The operational traffic data provided by the transport consultants, SCP Transport, does not separate the operational traffic for the EAF and for the Scrap handling facility proposals. Therefore, the future traffic flows with the EAF Project used in the assessment includes the operational traffic for the entire EAF Project, which is considered a worst-case assessment.

The future traffic flows provided also include committed developments in the vicinity of the site. The traffic data provided is presented in Table E1 of Appendix E and the assessment has been based on the criteria presented in Table 12.

4.4.3 Operational Rail Assumptions

There are no rail traffic movements associated with the Proposed Development. All rail traffic movements is associated with the EAF Project are considered and assessed as part of the Scrap Handling Facility. Therefore, rail traffic is not considered any further as part of this assessment.

4.4.4 Operational Assumptions

Based on the operational data as provided by the project team, the following assumptions have been made:

- The EAF and all associated plant and equipment are proposed to be operational 24 hour per day, seven days a week;
- The assessment is based on the drawings provided by Tata Steel UK Limited (see Figure C 1), RSKA interpretation of these drawings and the noise generating aspects of the project has been communicated, reviewed and agreed as appropriate by Tata Steel UK Limited;
- All assumptions have been confirmed by the EAF Project team following review of available information or project meetings.



4.5 Construction Noise Assessment Methodology

4.5.1 Construction Noise Assessment and Noise Criteria

The construction noise criteria, as shown in Table 26 below, have been established in accordance with BS5228 Table E.1, presented in Table 7, and based on the measured 2022 baseline noise levels at each of the noise monitoring locations.

It should be noted that the majority of the construction works will be undertaken 07:00 – 19:00 Monday to Friday and 07:00 – 13:00 on Saturdays. No works are scheduled to occur outside of the above hours.

Noise Sensitive Receptors/ Nearest Monitoring Location	Threshold values as per BS5228 Table E.1 ($L_{Aeq,T}$)		
	Daytime	Evenings and weekends	Night-time
R1	65	60	56
R2	65	60	55
R3	65	55	55
R4	65	60	56
R5	70	65	60
R6	55 (L_{AFmax})		
R7	55 (L_{AFmax})		

Table 26 Noise Assessment Criteria (Construction Noise)

4.5.2 Construction Noise and Vibration Assumptions

The proposed development includes the demolition of existing buildings and structures and the construction of a new EAF steel production facility and scrap facility. The construction team identified a list of primary construction activities for assessment purposes. However, these consider the entire EAF Project.

The activities include:

- Task 1 Demolition Works (*Demolition, internal building demolition, foundations and substructure works*);
- Task 2 Piling Works (*Piling will be required for the construction of the proposed commercial and industrial uses*);
- Task 3 Earthworks (*Site preparation, ground remediation, earth works and landscaping*);
- Task 4 Civil Enabling Works (*Road works*);
- Task 5 Concreting Works (*Building erection and superstructure works*);
- Task 6 Structural Steel Erection Work (*Building erection, superstructure works, construction and fit-out*);
- Task 7 Mechanical Erection Work (*Building erection, superstructure works, construction and fit-out*); and
- Task 8 Electrical Work (*construction and fit-out*).



An early indication of the proposed task methodology, working hours and plant lists for each construction activity is shown in Appendix D. Information relating to number of plant items and on-time utilisation for each construction activity is based on professional judgement.

The location of both construction activities is based on a construction layout provided by the EAF Project team and reproduced in Figure C 4.

Predictions are considered as a worst-case, as they assume all plant within a given construction task are undertaken at the shortest separation distance from the receptor. In reality this is unlikely to be the case, therefore noise levels and associated impacts are likely to be marginally lower than those predicted.

The assessment also includes the demolition and construction activities for the entire EAF Project as the data was provided together.

4.5.3 Construction Traffic Assumptions

The construction traffic noise assessment considers the change in ambient noise levels at existing receptors as a result of changes in the 18-hour AAWT traffic flows between the potential future traffic flows with and without the construction traffic.

The construction traffic provided by the transport consultants, SCP Transport, does not separate the construction traffic for the EAF and for the scarp proposals and includes both, which is considered a worst case assessment.

The future traffic flows provided also include committed developments in the vicinity of the site. The traffic data provided is presented in Table E1 of Appendix E and the assessment has been based on the criteria presented in Table 12.

4.6 Assumptions and Limitations

The assessment assumes the use of standard construction techniques and practices commensurate for works of this nature. The final techniques, plant selection and programme would be determined by Tata Steel Ltd and their contractors, in consultation with relevant authorities prior to commencement of construction.

Construction activities would involve the use of a variety of working methods, for which an estimate of the expected noise levels over a representative period has been prepared, in accordance with industry best practice. Noise levels from the construction works experienced by a receptor would vary over time as the distances to noise producing plant and the type of construction activity change.

Information related to the construction programme, phasing and specific plant items has not been provided. A detailed construction noise and vibration assessment will be required when this information becomes available, as the Project progresses. It is assumed that this will be secured through a suitably worded planning condition.

The assessment is based on construction activities taking place during daytime (07.00 – 19.00 Monday to Friday, 07.00 – 13.00 Saturday) only with no work on Sundays or Bank Holidays. Further detailed assessments will be required if evening or night-time operation is expected.

At this stage in the design, specific noise data is not available for the proposed equipment installations. To inform the operational phase assessment, prospective equipment suppliers have provided information regarding the expected plant/equipment installations, including typical sound emission data. The resulting information has been used as part of the assessment to demonstrate that a workable solution can be achieved which does not result in significant adverse effects.



The operational assessment methodology requires specific locations to be modelled for operational phase noise sources, which has been achieved by producing a sound propagation model of the proposed EAF Project drawings and 3D design model. The propagation model is an approximation of the design drawings and 3D model with the inclusion of noise source assumption data.

Detailed design information is not available at this stage. Noise data, positioning and dimensions of specific sound sources are proportionate to the level of information available at this stage in the design. The source assumptions and design assumptions used to inform the assessment are required to be verified during the detailed design of the Proposed Development to ensure that any changes to the design or proposed plant and equipment does not impact the predicted noise levels of conclusions of the assessment provided in this report. It is assumed that this will be secured through a suitably worded planning condition.

In terms of ISO9613 was updated in 2024. The changes to the calculation algorithms are not currently mandatory applied within SoundPLAN v9.0. Although the modelling software does implement the relevant updates as optional items (included for this project where relevant).



5 Noise Assessment

5.1 Construction Noise Assessment

An initial prediction of the likely construction noise levels for each activity is presented in Table 27 below. These noise levels are given in terms of the construction noise in isolation, without any contribution from ambient noise levels, in accordance with methodology in BS 5228+A1:2014.

Receptor	Construction Activity*							
	1	2	3	4	5	6	7	8
R1	35	32	37	37	33	30	29	31
R2	38	33	38	41	34	31	30	32
R3	44	40	45	42	41	38	37	39
R4	42	34	39	40	35	32	31	33
R5	38	27	32	34	28	25	24	26
R6**	52	37	42	49	38	35	34	36
R7**	48	33	39	37	35	32	31	33

Note:
 * Construction activities as shown in Section 4.5.2; and
 ** $L_{Aeq,T}$ and L_{AFmax} Criteria as related to an ecological receptor.

Table 27 Calculated construction noise levels in dB $L_{Aeq,T}$

Calculations show that the worst case predicted noise levels are likely to be below the proposed criteria at all receptors.

Despite the low impact predicted during the construction works, it is recommended that a Demolition and Construction Environmental Management Plan is put in place and that all noise control measures and Best Practicable Means are implemented across the EAF Project.

5.2 Construction Vibration Assessment

It is understood that the works identified with the potential to generate discernible levels of vibration would be Task 1 'Demolition Works', Task 2 'Piling Works' and Task 3 'Earthworks'. The proposed demolition works, the operation of the drilling and piling rigs as well as the rolling and compaction activities could generate levels of vibration in close proximity to the construction site.

With reference to BS 5228-2 assessment criteria, resultant vibration levels have the potential to be intolerable for the occupants of those nearest properties situated within a 12-metre radius if works of this nature are undertaken for any more than a very brief period. Furthermore, if vibration levels were to persist at this level, there is potential for cosmetic damage to occur at these properties, depending on the frequency output of the activity.

Due to the large distances separating the vibratory activities at the identified residential receptors, of over 500 m, the impact is likely to be negligible and has not been considered further.

5.3 Construction Traffic Noise Assessment

The predicted change in noise levels, between the 'Construction Phase' scenario and the 'Established Baseline' scenario, based on the traffic flow predictions along all the roads links provided by the transport consultants, SCP Transport, is provided in Table F 2 of Appendix F – Traffic Noise Assessment (Input Data and Results).



Calculations indicate that the change in noise levels due to construction traffic is likely to be below 1 dB at all noise sensitive receptors. The impact of construction traffic noise is therefore considered negligible and no mitigation is deemed necessary.

5.4 Operational Traffic Assessment

The predicted change in noise levels, between the 'Future with Development' scenario and the 'Established Baseline' scenario, based on the traffic flow predictions along the roads links provided by the transport consultants is provided in Table E2 of Appendix E.

Calculations indicate that the change in noise levels due to operational traffic is likely to be less than 1 dB at all noise sensitive receptors. The impact of operational traffic noise is therefore considered negligible at all receptors and no mitigation is deemed necessary.

5.5 Operational Noise Assessment

5.5.1 Residential Assessment

Table 28 below provides the predicted results for the Proposed Development. The specific sound level results are also provided in graphical form as a contour noise map in Figure C 5.

All rating Level results presented in the below tables include a +6 dB character correction, which is relevant for the comparison with the background sound level (dB $L_{A90, T}$) in line with the assessment methodology of BS 4142:2014+A1:2019. The +6 dB character correction relates to the potential for impulsive noise events being clearly audible at NSRs.

NSR	Prediction Results		Background Sound Level (dB $L_{A90, T}$)	
	Specific Sound Level dB $L_{Aeq, Tr}$	Rating Level dB $L_{Ar, Tr}$	Daytime	Night-time
R1	32	38	51	38
R2	34	40	51	38
R3	33	39	51	38
R4	32	38	51	38
R5	27	33	51	38

Table 28 EAF Predicted Results

Review of the results provided in Table 28 indicates that the predicted rating levels from the Proposed Development are significantly below the background sound level (dB $L_{A90, T}$) during the daytime at all NSRs.

During the night-time, the predicted rating levels do not exceed the background sound level at R1, R4 and R5. This is an indication of the specific source having a low impact, depending on the context.

The night-time results exceed the background sound level (dB $L_{A90, T}$) by 1 dB (R3) and 2 dB (R2). A difference of around +5 dB is likely to be an indication of adverse impact, depending on context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.



5.5.2 Context Discussion

Following the initial estimate of impact, the following contextual considerations have been identified:

- Scrap material handling and movement already occurs onsite during both day and night-time. During the night-time, the existing scrap material can be moved from stockpiles to the scrap handling area behind the existing BOS plant up to four times per hour;
- The existing site operates using similar mobile plant activities during both the day and night-time. Based on night-time observations of the existing activity from nearby NSRs, similar existing activities to those proposed are audible at times;
- The proposed consteel conveyor will receive scrap materials scrap material into an enclosed area with open areas throughout the day and night-time period, it is expected that events related to the delivery of scrap material will be clearly audible at nearby NSRs and are considered as part of the character correction applied within the assessment;
- Clearly audible impulsive events are already present at nearby NSRs due to the scrap material handling discussed above. This has the potential to limit the potential impact of this aspect of the activity at nearby NSRs;
- The highest predicted L_{AFmax} levels at NSRs are in the order of 50 dB L_{AFmax} (loudest predicted is 50 dB L_{AFmax} at R3). Assuming a 12 dB attenuation from an open window, the internal noise levels would be below 45 dB L_{AFmax} during the night-time;
- Based on the data collected during the baseline monitoring survey, all NSRs are subject to levels of above 50 dB L_{AFmax} individual event levels from the Proposed Development on a regular basis. For example, at R3 an average of over 900 events between 50 – 55 dB L_{AFmax} , 400 events between 55 – 60 dB L_{AFmax} and over 150 events between 60 – 65 dB L_{AFmax} were measured over each night-time period;
- Guidance provided within ProPG indicates that it normally requires internal noise levels higher than 45 dB L_{AFmax} before significant adverse effects such as behavioural awakenings, difficulty getting to sleep, premature awakenings or difficulty getting back to sleep generally occur. Although the ProPG guidance is provided primarily relating to the design of new residential developments, it is considered that the Proposed Development's embedded mitigation is a representation of good acoustic design. The embedded mitigation measures aim to both avoid the potential significant adverse effects of individual noise events on sleep i.e. behavioural awakenings, and to appropriately mitigate and minimise the physiological adverse effects from individual noise events on sleep;
- As predicted individual noise events are predicted to result in internal levels of below the threshold of 45 dB L_{AFmax} in bedrooms at night, the effects of individual noise events on sleep are not considered as significant;
- The EAF will implement a wide range of embedded mitigation measures to reduce potential noise impacts and an environmental management plan that includes measures to ensure that the all activity is undertaken in accordance with Best Practicable Means;
- Both historically and up until the present day, the site and surrounding area has been subject to industrial activities on the Land at Port Talbot Steel works in Port Talbot both from Tata Steel UK Limited activities, as well as various other existing industrial activities;
- The highest calculated specific sound level (34 dB $L_{Aeq,Tr}$) at the worst affected façade of the identified NSRs falls below the relevant criteria in World Health Organisation and BS8233 guidelines with respect to noise levels in external amenity areas;



- Assuming a 12 dB attenuation from an open window, the internal noise levels would also meet the relevant criteria in BS 8233 guidelines with respect to internal ambient noise levels (dB $L_{Aeq, T}$) during both the daytime and the night-time; and
- When the specific sound levels are compared with the prevailing established baseline average ambient sound levels (see Table D 13), the specific sound levels are shown to be at least 10 dB below the average ambient sound levels at each NSR. This indicates that the Proposed Development would not contribute to the average ambient sound levels at the NSRs (see Table D 13).

After consideration of the levels in the assessment, including a +6 dB acoustic character correction for clearly perceptible impulsivity, the rating level is determined to exceed the background sound level by up to 2 dB. After accounting for context it is indicated that there is unlikely to be an adverse impact.

5.5.3 SSSI Assessment

Table 29 below provides the predicted results for the Proposed Development at nearby SSSI receptors.

NSR	Prediction Results (dB)	
	$L_{Aeq, T}$	L_{AFmax}
R6	34	48
R7	28	41

Table 29 EAF Predicted Results SSSI

Average predicted noise levels during the operational scenario at the ecological receptors range between 28 dB $L_{Aeq, T}$ and 34 dB $L_{Aeq, T}$. Although the applicable criteria for ecological receptors are concerned with the impact of construction related noise, predicted noise levels are considerably below the adopted 55 dB (A) threshold and consequently considered not significant.

Maximum predicted noise levels during the operational scenario at the ecological receptors range between 41 dB and 48 dB L_{AFmax} . Based on an analysis of the measured L_{AFmax} events during the baseline survey, both SSSI areas are subject to levels (>75 dB L_{AFmax}), well in excess of the predicted L_{AFmax} levels.

Based on the predicted levels below the 55 dB L_{AFmax} threshold and the existing habituation of one off noise events in excess of both the predicted L_{AFmax} levels and the 55 dB L_{AFmax} threshold, it is considered unlikely that the predicted L_{AFmax} levels from the Proposed Development would result in significant effects on the ecological receptors.

5.5.4 Quiet Area Review

Table 30 below provides the predicted results for the Proposed Development at nearby quiet areas.

NSR	Prediction Results (dB)	
	$L_{Aeq, T}$	L_{AFmax}
R8	28	40
R9	29	38

Table 30 Predicted Results within Quiet Areas

Average predicted noise levels during the operational phased of the scrap handling facility are below of 30 dB $L_{Aeq, T}$ (28 dB $L_{Aeq, T}$ and 29 dB $L_{Aeq, T}$ at N8 and R9, respectively). Maximum noise levels are shown to be equal to or below 40 dB L_{AFmax} .



Although there is no defined applicable criteria for the quiet areas, predicted noise levels (both $L_{Aeq,T}$ and L_{AFMax}) are expected to be significantly lower than those deemed to be desirable for external spaces (e.g. the noise level does not exceed 50 dB $L_{Aeq,T}$). Furthermore, due to the proximity of the strategic road network, it is likely that the predicted noise levels are also below those of the existing acoustic environment.

Therefore, it is considered unlikely that the predicted levels from the Proposed Development would reduce the perceived acoustic quality of the quiet areas or result in significant adverse effects.

5.6 Interim Site Activity Scenario

During the interim period between the switching off of the 'heavy end' and the operation of the EAF Project, it is anticipated that the Tata Steel UK Limited steelmaking activity at Port Talbot would generate less noise than compared with the existing activity (which includes the 'heavy end').

This is expected to occur as the majority of the noisier external plant and equipment associated with the steelmaking process are directly linked to the operation of the 'heavy end'. This conclusion is considered to be appropriate based on the common sense understanding of the site operation, the anticipated contribution to noise emissions from the 'heavy end' and following detailed discussion with Tata Steel UK Limited staff.

Based on the above, the interim baseline noise levels are expected to reduce across the site and at nearby NSRs following the switching off of the 'heavy end'. This is particularly relevant at dwellings situated closest to the 'heavy end', such as Taibach off West End (R1) and Prince Street (R2) where 'heavy end' noise emissions have been observed to be a dominant noise source at times.

Based on the reduction in noise levels, the potential change would be considered as a short-term benefit within the nearby areas and at NSRs.

5.6.1 Uncertainty

Uncertainty has been limited where possible through the monitoring methodology and conservative assessment approach. It is considered unlikely that uncertainty would adversely impact the assessment outcomes.

The following measures have been taken to reduce uncertainty:

- Use of monitoring equipment in accordance with section 5 of BS 4142: 2014+A1: 2019, using Class 1 instrumentation;
- Measurement procedures followed in general accordance with section 6 of BS 4142: 2014+A1: 2019 with all precautions taken to minimize interference whilst maintaining the security of both personnel and monitoring equipment;
- Monitoring of background sound levels at proxy measurement position during representative periods during both the day and night-time hours;
- Use of computer noise modelling techniques to calculate sound propagation levels using accurate design layouts and plant noise emission assumptions derived with input from the project team and the client;
- Assessment of a conservative operational scenario assuming concurrent operation of all proposed fixed plant items and HGV and Rail movements; and
- Specific sound level propagation has been calculated in accordance with the requirements of ISO 9613-2:1996 which is the widely accepted procedure for the calculation of sound propagation, including favorable wind conditions from source to receiver.



6 Cumulative Impacts

6.1 In-combination Cumulative Impact Overview

As there are multiple activities that are both existing and proposed on the land at Port Talbot steelworks, it is important to establish whether any combination of the activities occurring could result in adverse impacts at nearby NSRs.

This section provides consideration of cumulative noise impacts from the EAF Project as a whole including both the scrap handling facility and the EAF operation, as well as the ongoing continuation of the Port Talbot steelworks during both the construction and operational phases of the EAF Project. This section does not consider wider cumulative impacts from activities outside of the development site, these are to be covered in the ES chapter related to the EAF Project.

The objective of the cumulative impact review is to identify any potential for adverse cumulative impacts, and where any are found, provide appropriate mitigation and/or recommendations to ensure that any adverse impacts are reduced or avoided.

It should be noted that there will be no scenario where the construction phase, EAF or Scrap facility will operate at the same time as the 'heavy end'.

The section is split to cover the following aspects of the EAF Project that could result in in-combination cumulative noise effects, including:

- EAF Project Demolition and Construction (including both EAF and Scrap handling facility);
- EAF Project Operation (including both EAF and Scrap handling facility);
- Existing Port Talbot Steelworks activity (interim baseline);
- Traffic noise (including both EAF and Scrap handling facility); and
- Railway noise (including both EAF and Scrap handling facility).

6.1.1 Demolition and Construction;

The demolition and construction noise and vibration assessments presented in Paragraphs 5.1 and 5.2 include demolition and construction activities for both the scrap and the EAF proposed developments. The cumulative impact is therefore already included in the assessments.

The noise and vibration impacts during construction are therefore as per the impact presented in Paragraphs 5.1 and 5.2, which is negligible at all receptors.

The assessment of construction traffic noise presented in Paragraph 5.3 of this report includes the construction traffic for both the scrap and the EAF proposed developments. The cumulative impact is therefore already included in the assessment.

The impact is therefore as per the impact presented in Paragraph 5.3, which is negligible at all receptors.



6.1.2 Operation of the scrap facility and the EAF

During the operation of the EAF Project, both the scrap handling facility and the EAF will operate together. The predicted specific sound levels from the scrap handling facility and EAF are provided in Table 31 below.

All rating Level results presented in the below tables include a +6 dB character correction, which is relevant for the comparison with the background sound level (dB $L_{A90, T}$) in line with the assessment methodology of BS 4142:2014+A1:2019. The +6 dB character correction relates to the potential for impulsive noise events being clearly audible at NSRs.

NSR	Scrap Handling Facility (Phase One) ¹	Scrap Handling Facility (Phase Two) ¹	EAF
	Specific Sound Level dB $L_{Aeq, Tr}$	Specific Sound Level dB $L_{Aeq, Tr}$	Specific Sound Level dB $L_{Aeq, Tr}$
R1	31	32	32
R2	34	34	34
R3	37	37	33
R4	32	33	32
R5	28	28	27
Notes: 1 2062419-RSKA-RP-002-(01) Appendix 7.1 Noise and Vibration Impact Assessment – Scrap Handling Facility			

Table 31 Specific sound level results

The predicted specific sound levels from both phase one and two are shown to be equivalent to each other in terms of the specific sound level predicted (within 1 dB). Based on this, the predicted specific sound levels and rating levels from the EAF Project as a whole are provided in Table 32. The following analysis could be applied to both phase one or phase two of the scrap handling facility noise emissions in-combination with the EAF.

NSR	EAF Project In-combination Cumulative Impact		Comparison with Background Sound Level (dB $L_{A90, T}$)	
	Specific Sound Level dB $L_{Aeq, Tr}$	Rating Level dB $L_{Ar, Tr}$	Daytime	Night-time
R1	35	41	51	38
R2	37	43	51	38
R3	39	45	51	38
R4	35	41	51	38
R5	30	36	51	38

Table 32 EAF Project in-combination cumulative (Scrap handling facility Phase Two (alternate scrap handling activity location with EAF))

The in-combination cumulative rating levels are shown to be significantly below the background sound level (dB $L_{A90, T}$) during the daytime at all NSRs.

During the night-time, the predicted cumulative rating levels are below the background sound level at R5. This is an indication of the specific source having a low impact, depending on the context.



Predicted in-combination cumulative rating levels are shown to exceed the background sound level (dB $L_{A90, T}$) by 3 dB (R1 and R4), 5 dB (R2) and 7 dB (R3). Based on the advice provided in BS 4142, a difference of around +5 dB is likely to be an indication of adverse impact with a difference of +10 dB or more likely to be an indication of significant adverse impact, depending on context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.

6.1.3 Summary of Cumulative Impacts from the EAF Project

Based on the predicted levels provided in the above section, the EAF Project is likely to produce cumulative noise levels that are in the order of 1 – 3 dB louder than those produced when only considering the scrap handling facility or the EAF aspect of the EAF Project (depending on NSR location).

If assessed in terms of impact against BS 4142:2014+A1:2019 the worst-case impacted receptor (R3) a rated noise level is predicted which is + 7 dB above the background sound level dB $L_{A90, T}$. A difference of around +5 dB is likely to be an indication of adverse impact with a difference of +10 dB or more likely to be an indication of significant adverse impact, depending on context.

As the NSRs are the same for the EAF, scrap handling facility or the EAF Project, the context of the cumulative specific sound level is almost identical as those discussed in Section 5.5.2. However, the potential contribution to the ambient sound levels has increased slightly, as shown in Table 33.

NSR	EAF Project Specific Sound Level	Average Ambient Sound Level ¹	EAF Project plus Average Ambient Sound Level	Predicted noise level increase ²
	dB $L_{Aeq, Tr}$	dB $L_{Aeq, T}$	dB $L_{Aeq, T}$	dB $L_{Aeq, T}$
R1	35	47	47	0.3
R2	37	47	47	0.4
R3	39	48	49	0.5
R4	35	54	54	0.1
R5	30	57	57	0.0

Note:
 1: As detailed in Table D 13; and
 2: Typically, a change or difference in noise level of 1 dB is just perceptible under laboratory conditions, a 3 dB is perceptible under most normal conditions.

Table 33 EAF Cumulative Impacts (night-time)

When compared to the average ambient sound levels during the night-time the specific sound level results shown in Table 33 indicate that a potential increase of less than 1 dB is predicted. An increase of 1 dB is typically considered as almost imperceptible to the human ear. Given the context of the site and the existing industrial nature of the site, an imperceptible increase in the average ambient sound level are not considered as significant.

During the daytime, no increase in the average ambient sound levels during the night-time is predicted.

Based on the above and the context of the area, the Port Talbot Steelworks site, the adverse impact identified within the initial BS 4142:2014+A1:2019 assessment relating to in-combination cumulative impacts is not considered as significant.



6.1.4 Traffic noise

The road traffic noise assessment in Section 5.4 of the report considers the change in ambient noise levels at existing receptors as a result of changes in the 18-hour AAWT traffic flows between 'Future with Development' scenario, which includes traffic numbers for both the scrap and the EAF proposed developments, and the 'Established Baseline' scenario. The cumulative impact is therefore already included in the assessment.

The impact is as per the impact presented in Section 5.4, which is likely to be a negligible impact at all receptors.



7 Mitigation

7.1.1 EAF Project Operation

Other than the embedded mitigation measures identified within this document (see Section 4.3), the Proposed Development will implement an Operational Noise and Vibration Management Plan (ONVMP) which will include details of the Proposed Development noise control strategy.

The ONVMP will allow for ongoing clarification of the mitigation strategy required for the Proposed Development. It is anticipated that the Proposed Development will be subject a condition of consent requiring both the submission of the ONVMP and noise control requirements to NPTC for review, prior to the operation of the Proposed Development.

7.1.2 Mitigation Construction Phases (Noise)

The Proposed Development will include Best Practicable Means (BPM) as part of the of the planning application submission. Examples of such measures to be included as part of the planning application are presented below:

- During the construction phase, the contractor will apply BPM as defined under Section 72 of the CoPA to minimise noise and vibration impacts;
- A Construction Environmental Management Plan (CEMP), Construction Noise and Vibration Management Plan (CNVMP) or relevant equivalent will be provided as part of the planning application submission;
 - Prior consent agreement for any works outside weekday and Saturday core hours, where there is potential for significant adverse effects;
 - Contact details for nominated site contact for local residents to deal with complaints and engaging with local residents;
 - Selection of quiet and low noise equipment and methodologies;
 - Optimal location of acoustic screening, where required to minimise noise adverse effects;
 - Optimal location of equipment, where required to minimise noise disturbance at nearby NSRs;
 - The provision of acoustic enclosures around static plant, where required to minimise noise adverse effects; and
 - Use of less intrusive alarms, such as broadband vehicle reversing warnings.

Demolition and Construction Phases (Vibration)

Although significant vibration effects are considered unlikely, we understand that the contractor will apply BPM as defined under Section 72 of the CoPA to minimise any potential vibration impact.



8 Conclusion

RSK Acoustics Limited (RSKA) has undertaken a noise and vibration assessment for Tata Steel UK Limited related to a full planning permission application for an EAF based steel production facility (Proposed Development) located on Tata Steel UK Limited Land at Port Talbot Steel works in Port Talbot, South Wales.

The full planning permission for the demolition of existing buildings and structures, partial infill of the Basic Oxygen Steelmaking (BOS) lagoon, and construction of a new electric arc furnace-based steel production facility (1 no. arc furnace, 2 no. ladle furnaces).

The development includes an upgraded slag processing facility, chemical/material storage and transfer infrastructure and pipework and cabling (above and below ground), buildings, fume and dust treatment plant, water treatment facility and material handling systems. Electrical control rooms and power infrastructure. Offices and ancillary facilities together with new and amended transport infrastructure, landscaping and green infrastructure, and associated development (Proposed Development).

Consultation with the Neath Port Talbot Council (NPTC) included general agreement to the proposed baseline monitoring and the noise and vibration assessment methodology.

The noise and vibration assessment includes consideration of activities associated with the Proposed Development that have the potential to give rise to adverse impacts. The noise and vibration limits or thresholds referred to within the assessment have been derived following review of relevant legislation, policy and technical guidance.

Due to the nature of the existing industrial activity on the Land at Port Talbot Steel works in Port Talbot, a combination of baseline sound surveys at existing noise sensitive receptors (including both residential and ecological receptors) and the use of a proxy monitoring location were undertaken to inform the assessment.

A sound propagation computer model has been developed to predict noise emissions from the Proposed Development at nearby noise sensitive receptors. Noise source and operational assumptions that inform both the prediction and assessment of noise and vibration have been derived following review of available information provided by Tata Steel UK Limited or following project meetings with the EAF Project Team.

The development of the Proposed Development design included a significant investigation of available noise control measures that could be implemented in order to minimise or remove the potential for adverse noise impacts. The mitigation measures identified during this process have been embedded within the design to reduce the potential for adverse noise impacts.

The potential impacts during the construction and demolition phases are summarised below:

- Construction noise levels are likely to be below the thresholds for significant impacts at all receptors;
- Any adverse impacts from construction vibration are likely to be negligible due to the large distances between the proposed construction activities and sensitive receptors; and
- The impact of construction traffic noise is considered to be negligible due to the potential for an insignificant (less than 1 dB) and short term change in noise level.

The operational phase of the Proposed Development is not considered to give rise to significant adverse impacts at nearby residential or ecological noise sensitive receptors. A summary of the results and contextual considerations that contribute to the overall assessment conclusion is provided below:



- Predicted rating levels from both phases of the Proposed Development are significantly below the background sound level (dB $L_{A90, T}$) during the daytime. This is an indication of the specific source having a low impact;
- During the night-time, the results are below or equal to the background sound level (dB $L_{A90, T}$) at R1, R2 and R5. At R3 and R2 predicted rating levels are shown to be in excess of the background sound level by 1 dB and 2 dB, respectively. A difference of around +5 dB is likely to be an indication of adverse impact, depending on context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact;
- Predicted external L_{AFmax} levels are in the order of 50 dB L_{AFmax} (the loudest predicted is 52 dB L_{AFmax} at R3). Based on the measured baseline data, all NSRs are often subject to maximum event noise levels in excess of the predicted L_{AFmax} levels;
- When compared with the measured ambient sound levels at each noise sensitive receptor, predicted noise levels are shown to be 10 dB or more below existing ambient sound levels, indicating that they would have limited impact. Therefore when context is taken into account the predicted adverse impacts are considered to be non-significant; and
- Predicted average and maximum levels are in line with low impact thresholds for ecological receptors and it is considered unlikely that the Proposed Development would result in significant effects on the ecological receptors.

The potential cumulative impacts from the EAF Project (EAF and scrap handling facility) have been considered as part of the assessment. When the average ambient sound levels are compared with the EAF Project specific sound level results they indicate that there is the potential to increase overall ambient sound levels by less than 1 dB. A increase of 1 dB is considered as almost imperceptible to the human ear. Given the context of the site, it is considered unlikely that an imperceptible increase in the average ambient sound level would be significant.

Based on the above, the adverse impact identified within the initial BS 4142:2014+A1:2019 assessment relating to in-combination cumulative impacts from the EAF Project are not considered significant.



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Appendix A – Glossary

Terms	Definitions
Ambient Noise Level $L_{Aeq,T}$: dB	Totally encompassing sound in a given situation at a given time, usually composed of sound from many sources near and far. Note: The ambient sound comprises the residual sound and the specific sound when present.
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. 2×10^{-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)
Background Sound Level $L_{A90,T}$: dB	A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.
EAF Project Baseline Terms	The ‘established baseline’ The steelworks with ‘heavy end’ as operating in early 2024 and for the majority of the preceding 50+ years. The ‘interim baseline’ The steelworks as they will operate at the time of planning determination with the closure of the ‘heavy end’.
Frequency	The repetition rate of a sound wave. The subjective equivalent in music is pitch. The unit of frequency is the Hertz (Hz), which is identical to cycles per second. A thousand hertz is often denoted as kHz, e.g. 2 kHz = 2000 Hz. Human hearing ranges approximately from 20 Hz to 20kHz.
$L_{Aeq,T}$	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.
Rating Level, $L_{Ar,Tr}$	Specific sound level plus any adjustment for the characteristic features of the sound.
Residual Sound:	Ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.
Residual Sound Level $L_r = L_{Aeq,T}$: dB	Equivalent continuous A-weighted sound pressure level of the residual sound at the assessment location over a given time interval, T.
R_w	Weighted sound reduction index. A single-number index which characterises the frequency dependent airborne sound insulation performance of building elements determined under laboratory conditions.



Sound insulation	The reduction or attenuation of airborne sound by a solid element between source and receiver.
Sound pressure level L_p dB	<p>Sound pressure level is given by the formula</p> $L_p = 10 \log \left(\frac{\rho}{\rho_0} \right)^2$ <p>where</p> <p>ρ is the root mean square sound pressure, in pascals (Pa);</p> <p>ρ_0 is the reference sound pressure (20 μPa)</p>
Specific sound source	sound source being assessed.
Specific sound level $L_s = L_{Aeq,Tr}$ dB	Equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, Tr .



Appendix B – Consultation

Alex West

From: Ashley Punter <ashley@redtwin.co.uk>
Sent: 30 May 2024 11:58
To: Alex West
Cc: Daniel Clare; Owen Francis; Rob Peters; Rob Edwards; Mark Cope; Mared Jones; Elise Power; Gareth Barton
Subject: RE: Baseline Survey Method Statement Update - EAF Project [Filed 30 May 2024 15:17]
Categories: Filed by Mail Manager

CAUTION: This email originated from outside the Organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Alex,

I've reviewed the document and I can confirm agreement with the methodology and proposals moving forward.

Kind regards,

Ashley

From: Alex West <Alex.West@rskacoustics.com>
Sent: Thursday, May 23, 2024 4:20 PM
To: Ashley Punter <ashley@redtwin.co.uk>
Cc: Daniel Clare <Daniel.clare@rskacoustics.com>; Owen Francis <owen.francis@turley.co.uk>; Rob Peters <rob.peters@turley.co.uk>; Rob Edwards <REdwards@rsk.co.uk>; Mark Cope <MCope@rsk.co.uk>; Mared Jones <mared.jones@turley.co.uk>; Elise Power <elise.power@turley.co.uk>; Gareth Barton <gareth.barton@turley.co.uk>
Subject: RE: Baseline Survey Method Statement Update - EAF Project

Hi Ashley

I hope you are well. Further to our call with yourself and the subsequent call with NRW, we have updated our note and provided it to council. I attach the note for your information.

We understood from our call with you that you were in agreement with the overall approach proposed. If you can confirm that our understanding of this is correct, it would be much appreciated.

Many thanks

Alex West
Senior Acoustic Consultant

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Appendix C – Figures



Figure C 1 Site overview and project study areas

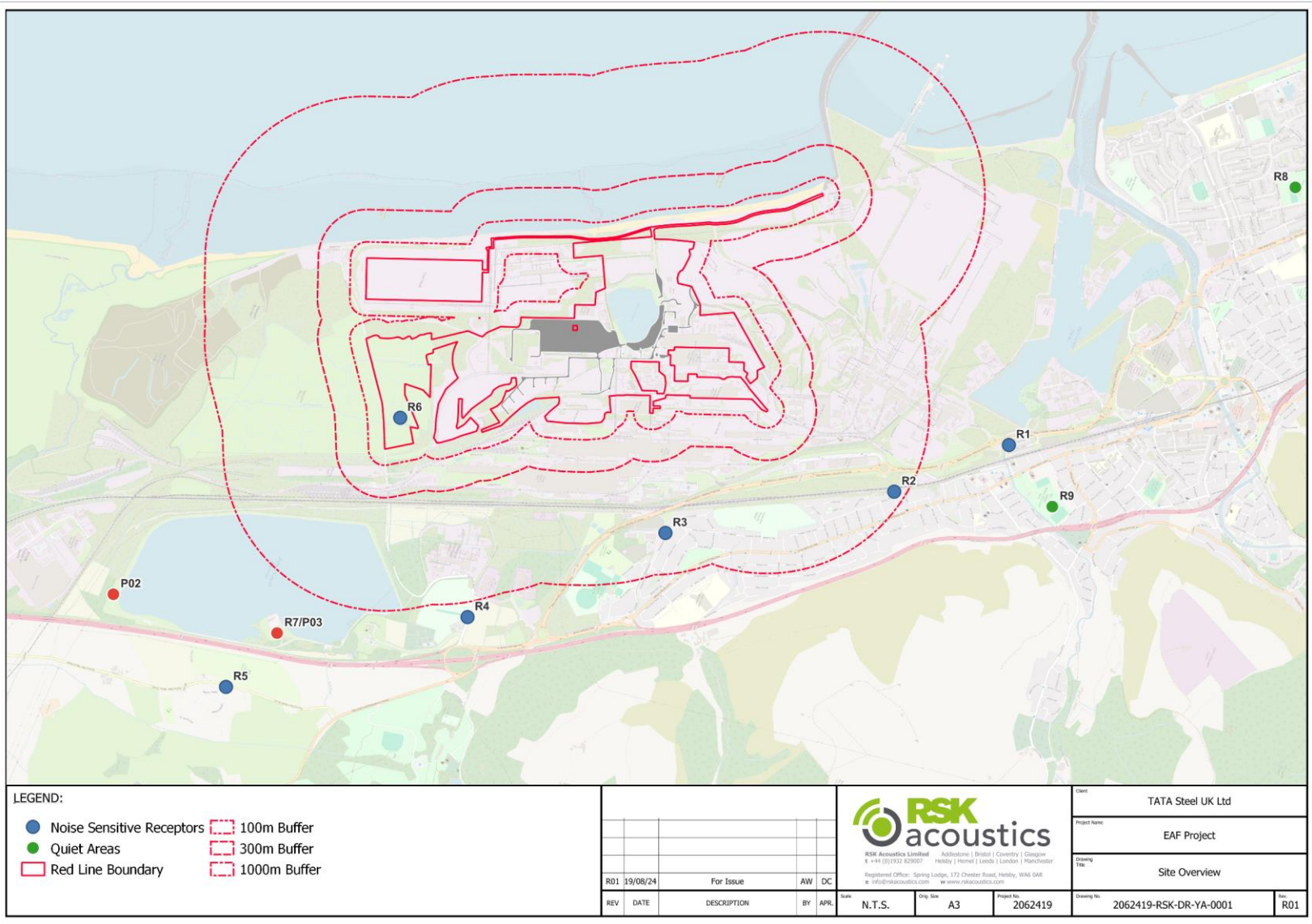
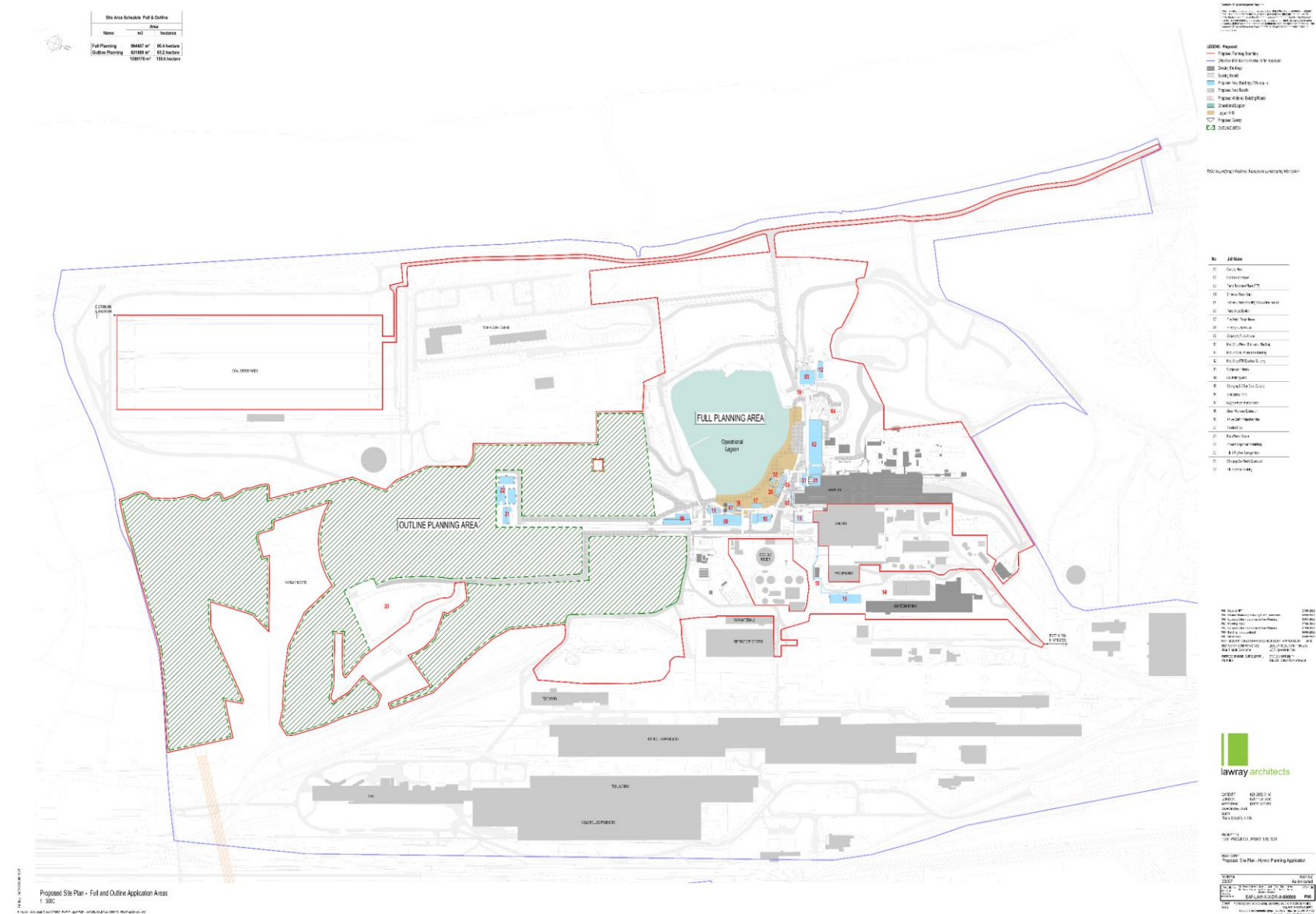


Figure C 2 Proposed Site Plan – Hybrid Planning Application EAF-LAW-X-X-DR-A-900009 P06



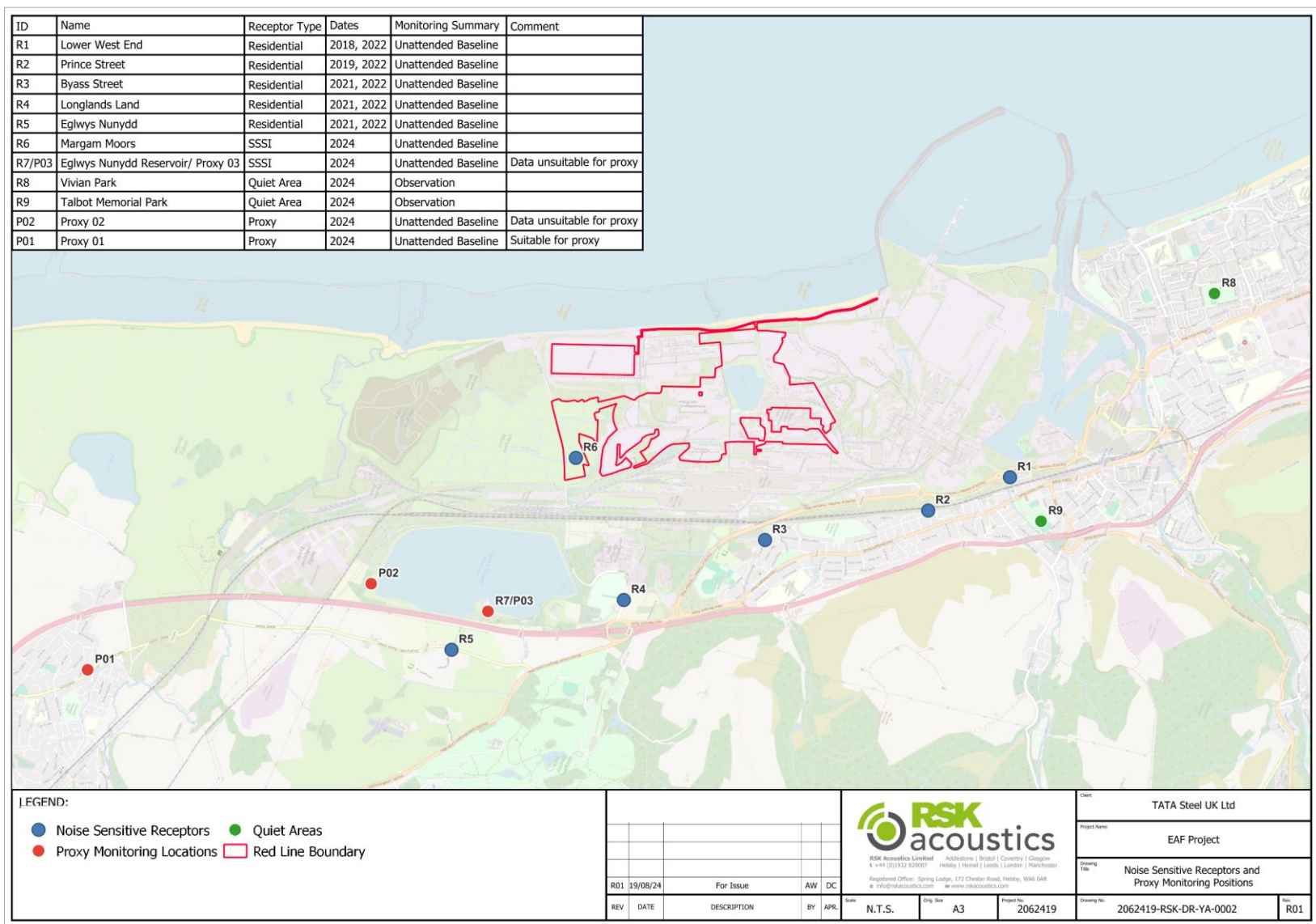


Figure C 4 Construction Activity Locations

CONSTRUCTION LAYOUT – NOISE EMISSIONS

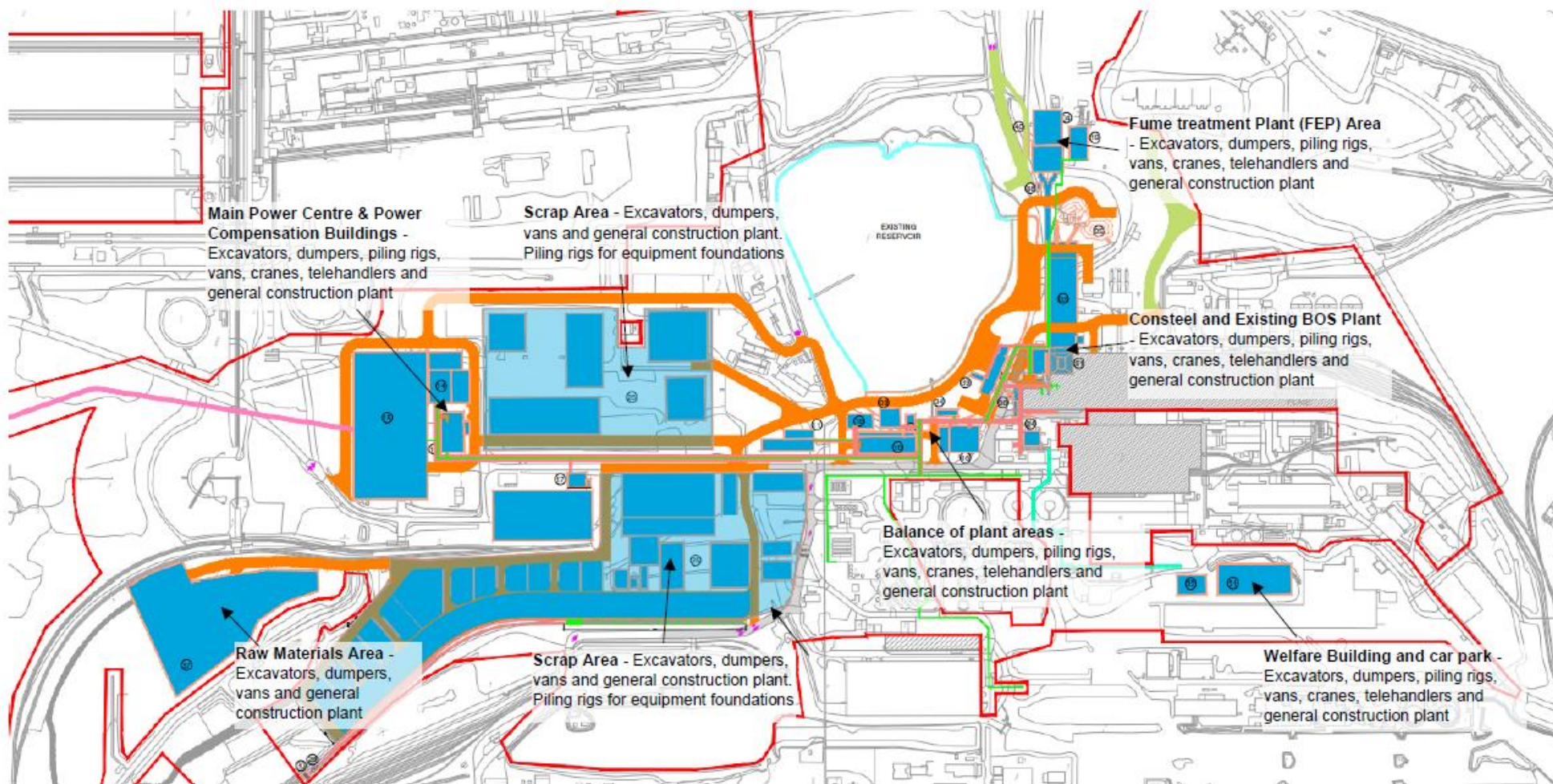


Figure C 5 EAF Only Noise Contour Plot

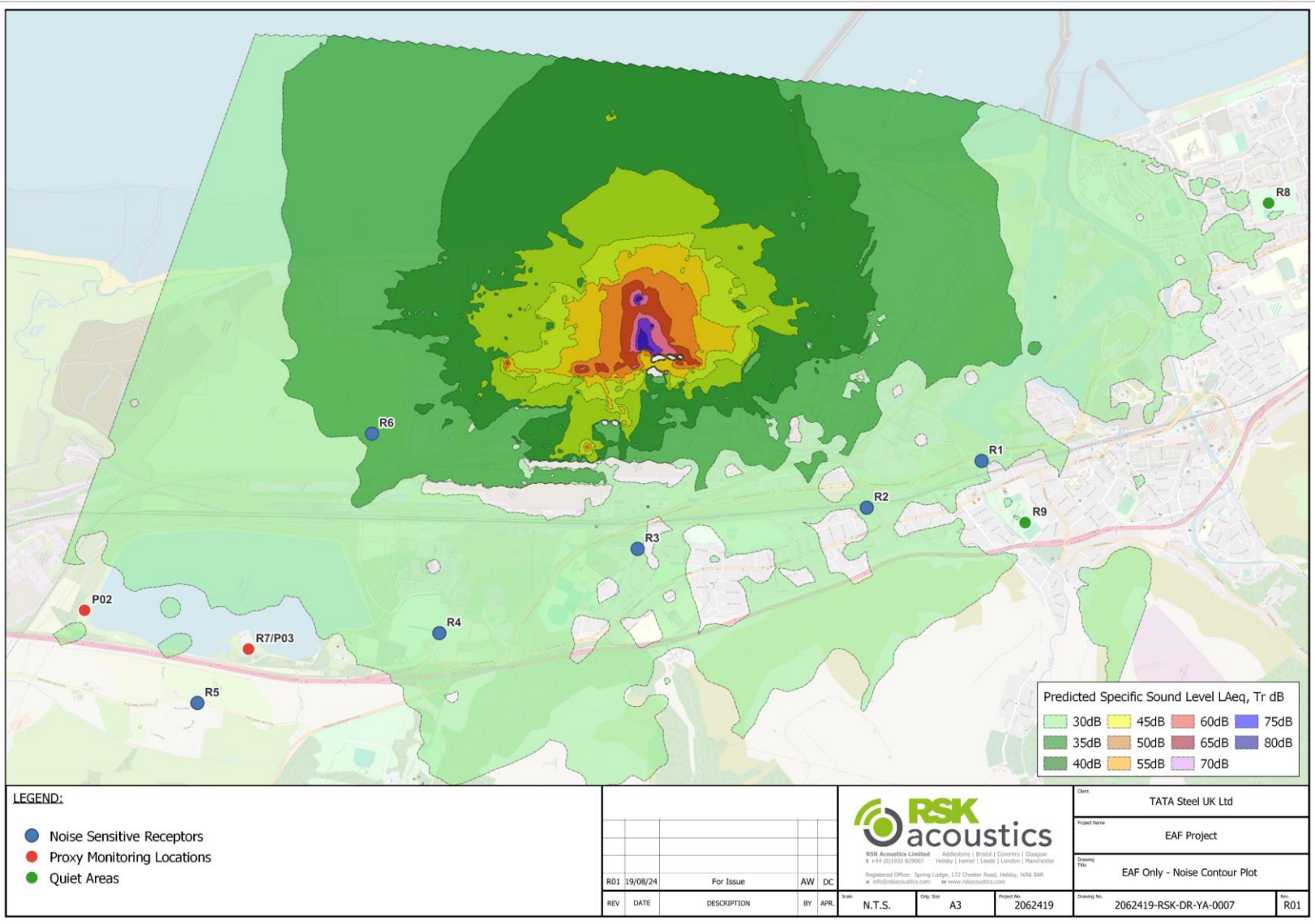
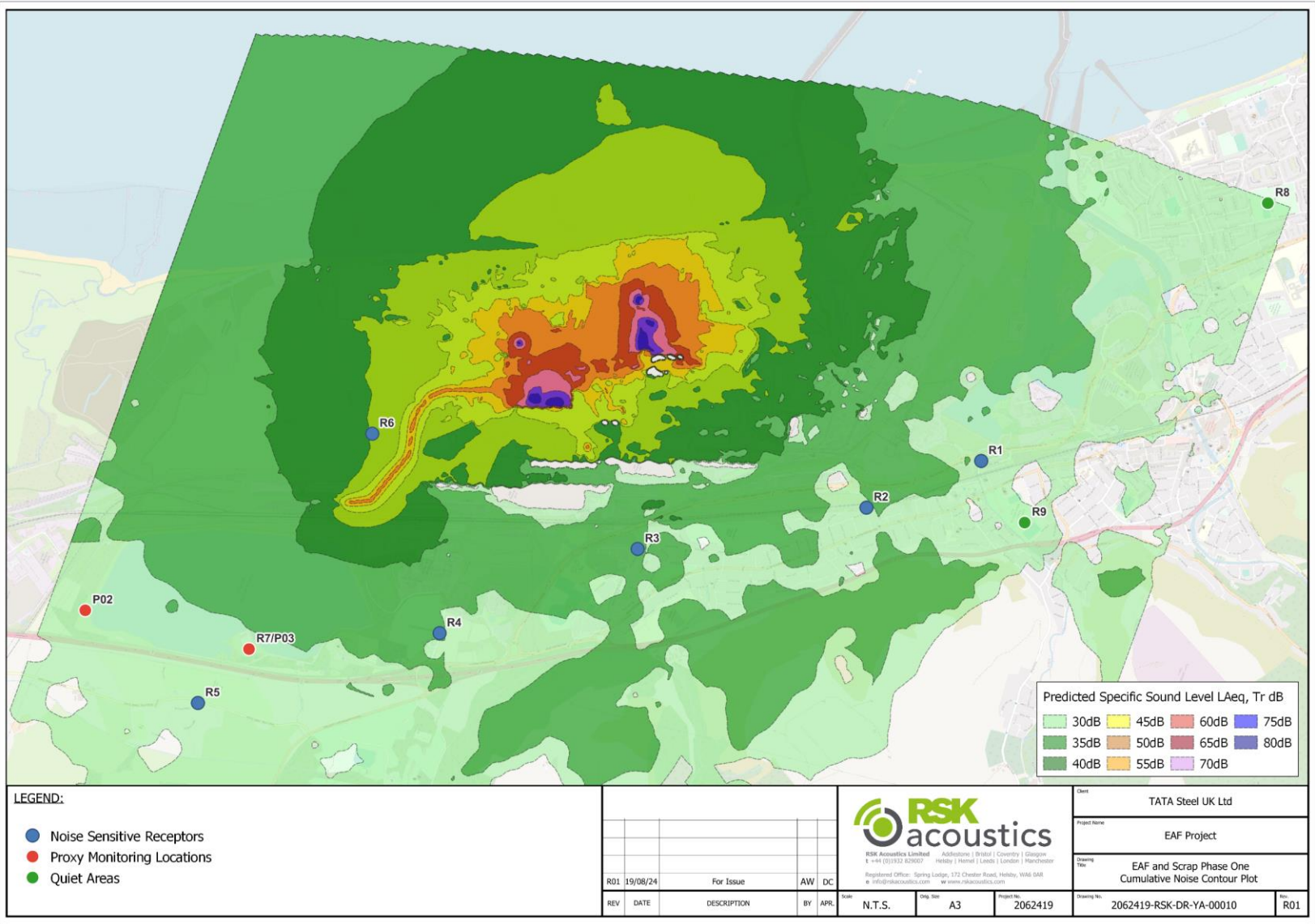
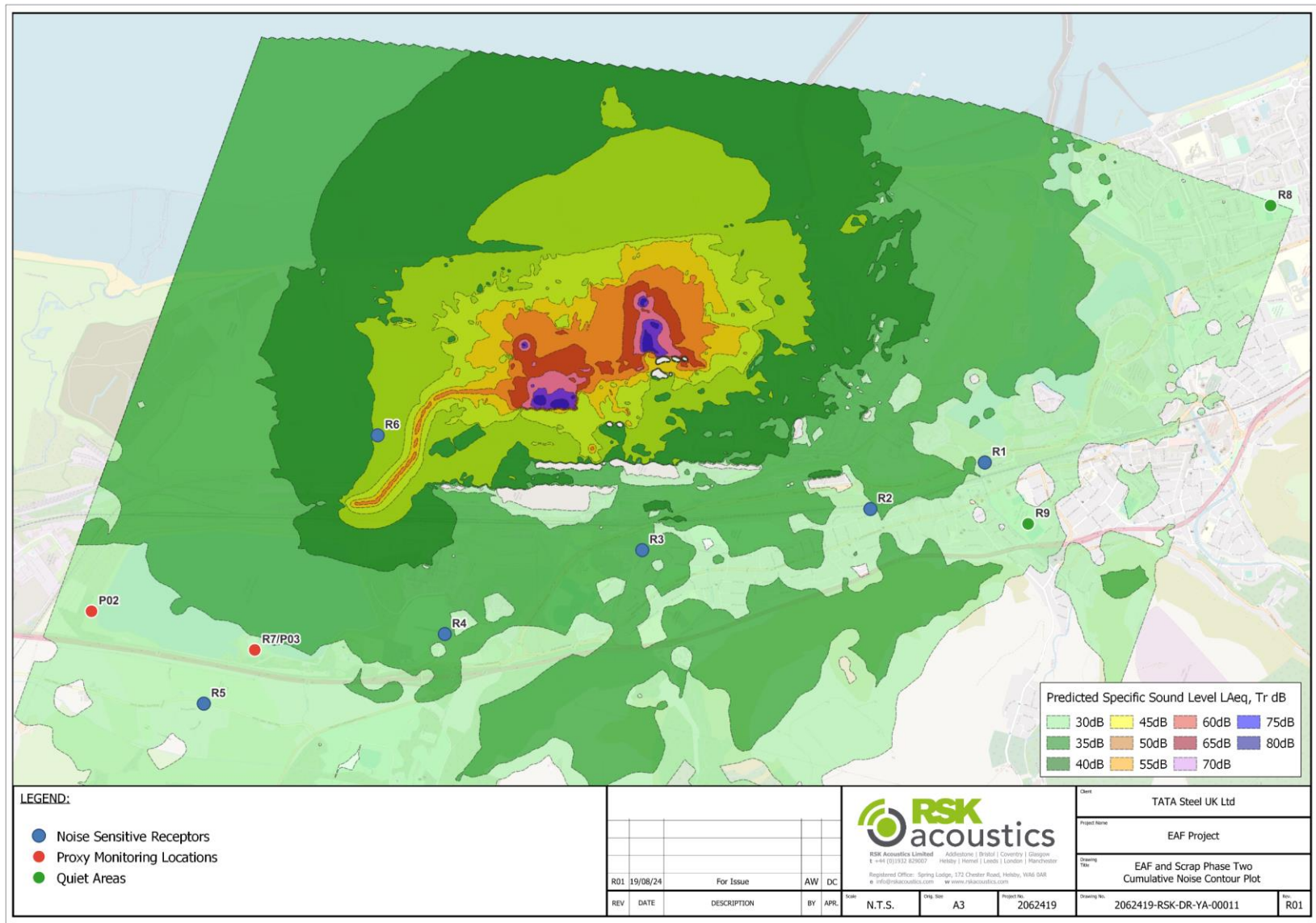


Figure C 6 EAF and Scrap Phase One - Cumulative Noise Contour Map





Appendix D – Baseline Sound Survey

This Appendix provides a summary of the methodology and results from the baseline monitoring that was undertaken in 2022 and 2024.

Monitoring Positions

Monitoring positions for all survey work are provided in Table D 1 below.

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
R6	Margam Moors	SSSI	278040	185241
R7	Eglwys Nunydd reservoir	SSSI	279744	184949
P03	Residential area within North Cornelly	Residential	281456	181930

Table D 1 NSR Locations

Baseline Survey Methodology

The instrumentation used in the 2022 baseline survey are listed in Table D 2 below.

Equipment	Type	Serial Number
Class 1 sound level meters	Rion NL-52	00976248
Class 1 sound level meters	Rion NL-52	01121392
Class 1 sound level meters	Rion NL-52	00197783
Class 1 sound level meters	Rion NL-52	00453835
Class 1 sound level meters	Rion NL-52	01276553
Class 1 sound level meters	Rion NL-52	00197782
Acoustic calibrator	Rion NC-75	34524127

Table D 2 2022 Baseline Survey Instrumentation

The instrumentation used for the 2024 baseline survey are identified in Table D 3 below.

Equipment	Type	Serial Number
Class 1 sound level meters	Rion NL-52	00553876
Class 1 sound level meters	Rion NL-52	00253698
Acoustic calibrator	Rion NC-75	35124522

Table D 3 2024 Baseline Survey Instrumentation



The instrumentation used for the proxy monitoring are identified in Table D 4 below.

Equipment	Type	Serial Number
Class 1 sound level meters	Rion NL-52	00386770
Acoustic calibrator	Rion NC-75	35124522

Table D 4 Proxy Location Survey Instrumentation

Meteorological Conditions

2022 Baseline Survey

Weather information has been obtained through Wunderground location IPOR TT3 (Port Talbot) to determine conditions throughout the unattended noise survey duration. The weather information has been summarised in Table D 5. Detailed weather information can be provided upon request.

Date	Temperature / °C	Precipitation (y/n)	Wind Speed / ms ⁻¹ (Average)
Wednesday 23/03/2022	9 to 18	N	2.3
Thursday 24/03/2022	5 to 16	N	1.0
Friday 25/03/2022	6 to 18	N	1.9
Saturday 26/03/2022	8 to 18	N	2.8
Sunday 27/03/2022	9 to 18	N	2.3
Monday 28/03/2022	6 to 16	N	1.3

Table D 5 Meteorological Conditions (2022 Survey)

2024 Baseline Survey

Weather information has been obtained through data provided by the council and by a weather station deployed on site by RSKA. The weather information has been summarised in Table D 6; data provided by the council has been used between Tuesday 7 May 2024 and Wednesday 22 May 2024, after this date the onsite weather station has been used. Detailed weather information can be provided upon request.

Date	Temperature / °C	Precipitation (y/n)	Wind Speed / ms ⁻¹ (Average)
07 May 2024	10 to 21	N	2.1
08 May 2024	12 to 21	N	1.3
09 May 2024	8 to 24	N	1.3
10 May 2024	11 to 28	N	1.9
11 May 2024	14 to 27	N	2.5
12 May 2024	18 to 25	Y	2.8
13 May 2024	14 to 15	N	3.9
14 May 2024	12 to 19	Y	4.0
15 May 2024	13 to 22	Y	4.1
16 May 2024	12 to 21	N	2.0
17 May 2024	11 to 26	Y	2.0
18 May 2024	11 to 20	Y	1.5
19 May 2024	13 to 25	N	1.8



Date	Temperature / °C	Precipitation (y/n)	Wind Speed / ms ⁻¹ (Average)
20 May 2024	12 to 25	Y	2.6
21 May 2024	11 to 23	Y	2.3
22 May 2024	14 to 19	N	1.1
23 May 2024	12 to 14	N	1.0
24 May 2024	10 to 15	N	0.3
25 May 2024	7 to 19	Y	0.1
26 May 2024	11 to 16	Y	0.4
27 May 2024	11 to 16	Y	0.4
28 May 2024	12 to 15	Y	0.4
29 May 2024	13 to 17	N	0.7
30 May 2024	13 to 17	N	1.0
31 May 2024	12 to 19	N	0.5
01 Jun 2024	9 to 20	N	0.2
02 Jun 2024	8 to 21	N	0.4
03 Jun 2024	10 to 17	N	0.4
04 Jun 2024	13 to 15	N	0.5
05 Jun 2024	5 to 20	Y	0.5
06 Jun 2024	10 to 15	Y	0.7
07 Jun 2024	8 to 15	Y	0.3

Table D 6 Meteorological Conditions (2024 Survey)

The collated weather data showed there were multiple periods of rainfall during the survey. Data points where rainfall was measured have been excluded from the results.



Environmental Sound Survey Results

2022 Baseline Survey

The survey locations are described in Table D 7 below.

Location	Description	Measurement Purpose
R1	The microphone was located in a free-field position at a height of approximately 1.5 m above ground level, along the rear of Lower West End.	Representative of sound levels at receptors at West End.
R2	The microphone was located in a free-field position at a height of approximately 1.5 m above ground level, along Prince Street.	Representative of sound levels at receptors at Prince Street.
R3	The microphone was located in a free-field position at a height of approximately 1.5 m above ground level, along the Cefn Gwrgan Road.	Representative of sound levels at receptors at Brynhyfryd Road.
R4	The microphone was located in a free-field position at a height of approximately 1.5 m above ground level, along Longlands Lane.	Representative of sound levels at receptors at Longlands Lane.
R5	The microphone was located in a free-field position at a height of approximately 1.5 m above ground level, along Water Street.	Representative of sound levels at receptors at Eglwys Nunydd.

Table D 7 Baseline Survey Location Description

A summary of the previous data collected in March 2022 is provided in Tab.

Data for R1 NSR in Taibach off West End is provided in Table D 8 below.

Date	Time Period	Measured noise levels, dB		
		$L_{Aeq, T}$	$L_{Amax, 15min}$	$L_{A90, T}$
23 March 2022	23:00-07:00	57	79	51
24 March 2022	07:00-23:00	52	82	48
	23:00-07:00	56	79	49
25 March 2022	07:00-23:00	51	82	47
	23:00-07:00	56	78	43
	07:00-23:00	53	82	47
26 March 2022	23:00-07:00	56	78	45
	07:00-23:00	53	85	47
	23:00-07:00	57	80	46
27 March 2022	07:00-23:00	53	85	47
28 March 2022	23:00-07:00	57	80	46

Table D 8 R1 Baseline Data Summary March 2022

Data for R2 NSR on Prince Street is provided in Table D 9 below.



Date	Time Period	Measured noise levels, dB		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
23 March 2022	23:00-07:00	56	87	51
24 March 2022	07:00-23:00	55	85	48
	23:00-07:00	55	80	51
25 March 2022	07:00-23:00	52	82	47
	23:00-07:00	52	93	43
26 March 2022	07:00-23:00	52	85	47
	23:00-07:00	51	77	45
27 March 2022	07:00-23:00	51	78	47
	23:00-07:00	53	80	48
28 March 2022	23:00-07:00			

Table D 9 R2 Baseline Data Summary March 2022

Data for R3 NSR in Margam off Brynhyfryd Road is provided in Table D 10 below.

Date	Time Period	Measured noise levels, dB		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
23 March 2022	23:00-07:00	52	74	48
24 March 2022	07:00-23:00	52	77	47
	23:00-07:00	53	86	49
25 March 2022	07:00-23:00	53	84	48
	23:00-07:00	48	76	43
26 March 2022	07:00-23:00	59	89	48
	23:00-07:00	48	73	44
27 March 2022	07:00-23:00	53	87	48

Table D 10 R3 Baseline Data Summary March 2022



Data for R4 NSR at Longland Lane is provided in Table D 11 below.

Date	Time Period	Measured noise levels, dB		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
23 March 2022	23:00-07:00	58	82	55
24 March 2022	07:00-23:00	59	94	54
	23:00-07:00	57	83	54
25 March 2022	07:00-23:00	58	86	53
	23:00-07:00	54	81	49
26 March 2022	07:00-23:00	58	92	54
	23:00-07:00	54	83	50
27 March 2022	07:00-23:00	53	87	48

Table D 11 R4 Baseline Data Summary March 2022

Data for R5 NSR at Eglwys Nynydd is provided in Table D 12 below.

Date	Time Period	Measured noise levels, dB		
		L _{Aeq, T}	L _{Afmax, 15min}	L _{A90, T}
23 March 2022	23:00-07:00	61	83	52
24 March 2022	07:00-23:00	66	89	59
	23:00-07:00	61	83	52
25 March 2022	07:00-23:00	66	99	52
	23:00-07:00	56	82	43
26 March 2022	07:00-23:00	65	95	48
	23:00-07:00	56	85	47
27 March 2022	07:00-23:00	65	95	48

Table D 12 R5 Baseline Data Summary March 2022



Table D 13 provides a summary of measured $L_{Aeq,15\text{ minute}}$ levels during the night-time periods of the baseline survey which is used to inform the discussion of context related to the BS 4142:2014+A1:2019 assessment. The table provides an arithmetic average of the modal values measured during each day or night-time period at each NSR. The modal values are the values that appear most often within the baseline survey dataset.

The ambient sound criteria levels are 13 dB below the modal values to account for the potential for cumulative noise impacts from the EAF Project.

The time basis for levels is 60 minutes during the daytime and 15 minutes during the night-time, in accordance with BS 4142:2014+A1 2019.

NSR	Average of modal values dB $L_{Aeq, T}^1$		Ambient Sound Criteria dB $L_{Aeq, T}$	
	Daytime	Night-time	Daytime	Night-time
R1	51	47	41	37
R2	53	48	43	37
R3	52	48	42	38
R4	57	54	47	44
R5	66	57	56	47
Notes: 1:				

Table D 13 Ambient sound criteria



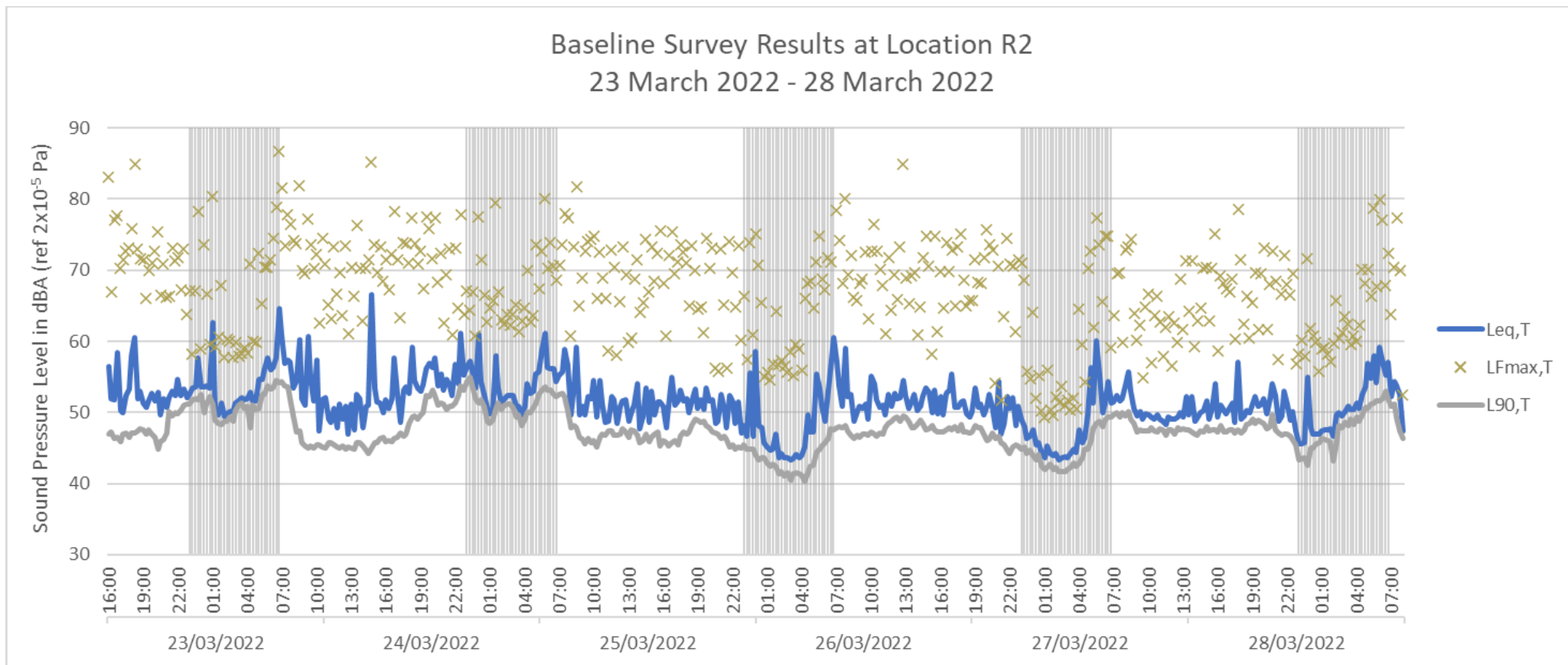


Figure D 2 R2 Baseline Results March 2022



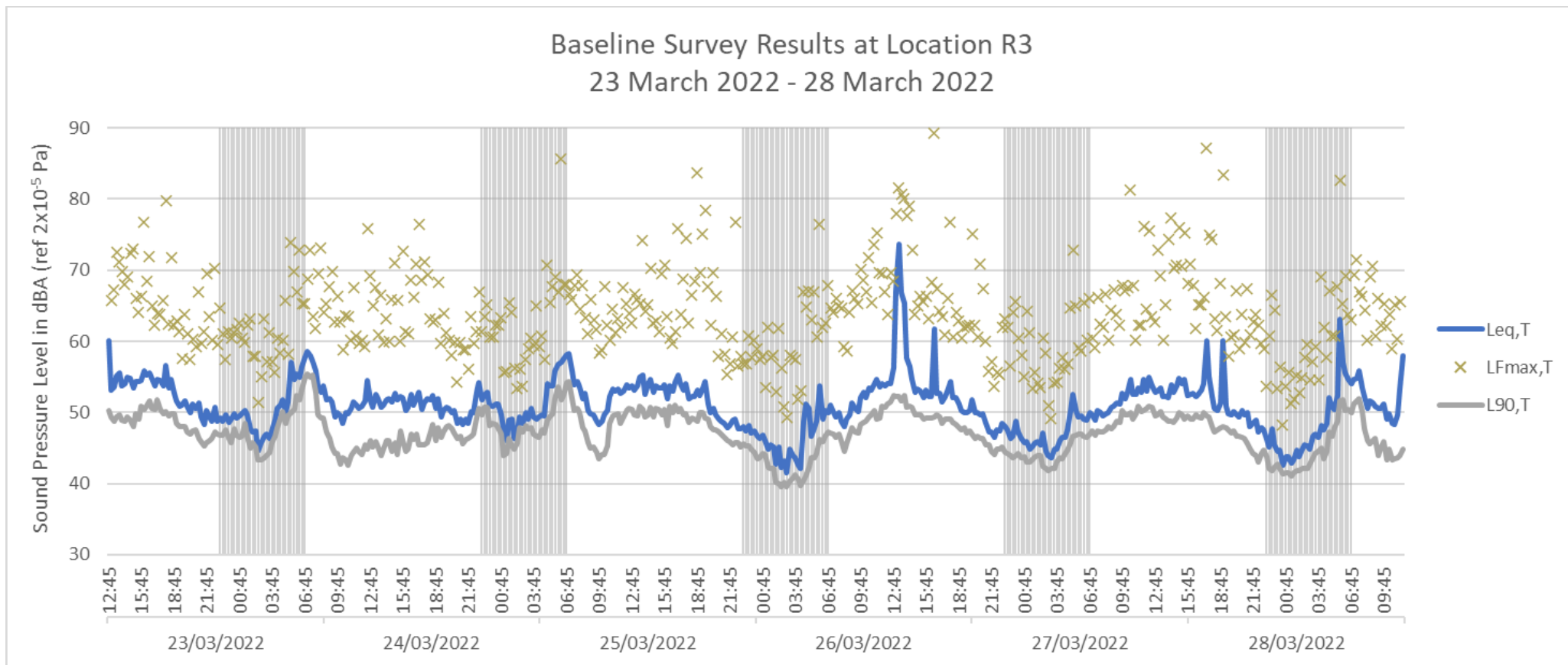


Figure D 3 R3 Baseline Results March 2022



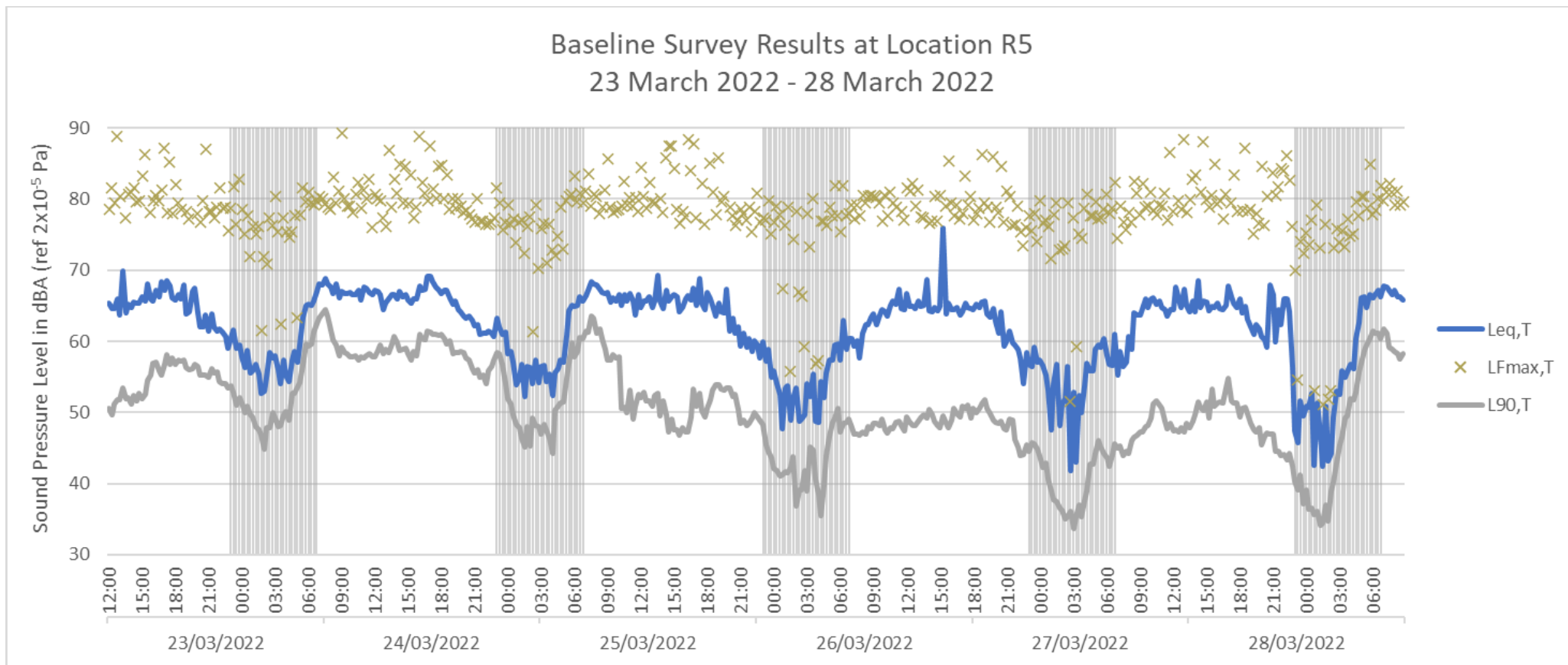


Figure D 5 R5 Baseline Results March 2022



2024 Baseline Survey

The baseline survey for R6 was undertaken in May 2024. A summary of the data collected is shown in below.

Date	Time Period	Measured noise levels, dB		
		$L_{Aeq, T}$	$L_{A_{fmax}, 15min}$	$L_{A90, T}$
22 May 2024	23:00-06:45	49	76	46
23 May 2024	07:00-22:45	50	79	46
	23:00-06:45	50	75	46
24 May 2024	07:00-22:45	47	77	41
	23:00-06:45	52	82	49
25 May 2024	07:00-22:45	46	77	42
	23:00-06:45	52	72	47
26 May 2024	07:00-22:45	46	72	42
	23:00-06:45	46	70	43
27 May 2024	07:00-22:45	45	72	42
	23:00-06:45	48	85	45
28 May 2024				

Table D 14 R6 Baseline Summary Data



The baseline survey for R7 was undertaken in May 2024. A summary of the data collected is shown in below.

Date	Time Period	Measured noise levels, dB		
		$L_{Aeq, T}$	$L_{A_{fmax}, 15min}$	$L_{A90, T}$
07 May 2024	23:00-06:45	54	69	44
08 May 2024	07:00-22:45	57	78	54
	23:00-06:45	58	75	52
09 May 2024	07:00-22:45	57	76	53
	23:00-06:45	58	74	53
10 May 2024	07:00-22:45	59	76	57
	23:00-06:45	56	71	51
11 May 2024	07:00-22:45	60	75	57
	23:00-06:45	54	70	48
12 May 2024	07:00-22:45	56	82	53
	23:00-06:45	57	74	49
13 May 2024	07:00-22:45	64	71	62
	23:00-06:45	60	70	52
14 May 2024	07:00-22:45	64	76	61
	23:00-06:45	58	73	50
15 May 2024	07:00-22:45	62	79	60
	23:00-06:45	56	73	49
16/06/2024	07:00-22:45	58	74	55
	23:00-06:45	57	68	52
17 May 2024	07:00-22:45	59	79	57
	23:00-06:45	57	78	52
18 May 2024	07:00-22:45	57	71	55
	23:00-06:45	57	74	52
19 May 2024				



Date	Time Period	Measured noise levels, dB		
		$L_{Aeq, T}$	$L_{A_{fmax}, 15min}$	$L_{A90, T}$
20 May 2024	07:00-22:45	56	77	52
	23:00-06:45	56	74	50
	07:00-22:45	59	75	57
	23:00-06:45	56	75	50
21 May 2024	07:00-22:45	57	73	54

Table D 15 R7 Baseline Summary Data



2022 Baseline Noise Survey Installation Photos



Figure D 6 R1 West End



Figure D 7 R2 Prince Street



Figure D 8 R3 Brynhrfryd Road



Figure D 9 R4 Longland Lane



Figure D 10 R5 Eglwys Nunydd



2024 Baseline Noise Survey Installation



Figure D 11 R6 Margam Moors



Figure D 12 R7 Eglwys Nunydd Reservoir



Figure D 13 Proxy, North Cornelly



Appendix E – Construction Activities (Methodology and Plant Lists)

Task	Works	Method Summary	Plant list
1	Demolition Works	<p>A number of structures currently present within the development site will be required to be demolished/ dismantled. Existing facilities to be demolished includes 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.</p> <p>The demolition of all structures will involve removal of structural steel member and 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:</p> <ol style="list-style-type: none"> 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. 	<p>Cranes; Excavators with breaker attachment; Pneumatic breakers; Circular saws; Compressors Dumpers; Wagons</p>
2	Earthworks	<p>For the Scrap Yard, Scrap Storage Yard, and National Grid Substation earthworks, the final platform level should 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 well trafficked and should be suitable to be reused as permanent works to reduce the volume of earthworks.</p> <p>Additionally, a part of the existing Works Reservoir needs to be infilled to provide space to construct roads, buildings and plant. The perimeter of the infill will be retained with a tied, twin-wall sheet pile wall to be piled from pontoons above the water. The affected areas of reservoir will be dredged and a stone platform will then be infilled with site-won 6A self-compacting stone that is infilled as a wet medium on top of the dredged bed. The sheet pile wall acts as a physical barrier to prevent contamination of the remaining reservoir during the infilling operation.</p>	<p>Chainsaws; Excavators; Dozers; Excavators with breaker attachment; Wagons; Water pumps; Vibratory plates; Rollers; Dumpers</p>



Task	Works	Method Summary	Plant list
3	Civil Enabling Works	<p>These construction activities include site access routes, temporary drainage for the site, construction of batching plants, building of hardstanding and parking areas and erection of site compounds, storage areas and site offices.</p> <p>Access Roads</p> <p>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 movement of vehicles, cranes, cars and other construction equipment safely. Access roads will be used to provide temporary access into and through construction site.</p> <p>The temporary access road should follow proposed permanent transport corridors within the plant.</p> <p>Temporary drainage</p> <p>Permanent storm water and foul water drainage systems will be required for the new facilities. Wherever temporary drainage is required for working platforms and temporary access roads, it will be aligned to the permanent works drainage as much as possible. Otherwise, temporary drainage consisting of local filter drains and earthworks channels will be used to manage surface water runoff. Siltbusters and interceptors will be used to protect existing drainage outfalls from silt and other site debris.</p> <p>Parking area</p> <p>Car parking area will be provided for the project staff and visitors within the P-Fields compound location.</p> <p>Laydown Area</p> <p>Hardstanding areas will be prepared to use those for material laydown/ storage, repairs/ 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.</p>	<p>Cranes; Excavators; Dumpers; Ready-mix lorries; Vibrating pokers; Telescopic handlers; Vibratory plates; Vibratory rollers; Water pumps; Dozers; Wagons</p>
4	Concreting Works	<p>Concreting Works</p> <p>There is an estimated 65,000m3 of reinforced concrete works as part of the project.</p> <p>Reinforced concrete is formed from steel reinforcement bars that are fixed in-situ and surrounded with fresh concrete. The concrete is cured in-situ to the designed shape by means of timber or metal formwork panels. Once fully cured, the formwork is removed to leave a hardened, reinforced concrete foundation.</p> <p>The resources that will be used for concrete are concrete pumps, boom placer, Transit mixer, off-site batching plant, vibrator for compacting concrete, and manpower.</p>	<p>Hand Tools; Concrete Pumps; Lorry; Boom Placer; Ready-mix Concrete Lorry; Batching Plants; Concrete Vibrator; Hand Tools.</p>

Table E 1 Construction Methodology



Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Mobile telescopic crane	C4.47	50t	61	50	2	0	0	61
Mobile telescopic crane	C4.41	100t	71	50	2	0	0	71
Excavator-mounted breaker	C1.9	-	90	50	2	0	0	90
Tracked Excavator	C2.19	25t	77	50	3	0	2	79
Hand -held Circular Saw	C4.73	1.5kW -7.6kg	81	15	5	-5	-6	75
Compressor (diesel)	Literature review	600CFM	79	10	5	-10	-13	66
Hand-held pneumatic breaker	C1.6	-	83	15	5	-5	-6	77
8-wheel tipper	C11.19	26t	83	70	4	0	4	87
Hand Tools	-	-	-	-	-	-	-	-
Total								92

Table E 2 Task 1: Demolition Works

Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Chain saw	Manufacturer's data	Husqvarna	82	20	2	0	-4	78
Tracked Excavator (21 t)	C2.2	71t	77	35	4	0	1	78
Excavator-mounted breaker	C1.9	-	90	20	2	0	-4	86
Dumper	C4.4	9t	76	50	4	0	3	79
Dumper	C4.5	9t	63	10	4	0	-4	59
Vibratory plate (petrol)	C2.41	kg	80	50	10	-5	2	82
Vibratory Roller	C2.40	3t	73	50	4	0	3	76



Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Water Pump	C2.46	4"	62	100	8	-10	-1	61
Bulldozer	C4.90	70kW	76	15	2	0	-5	71
8-wheel tipper	C5.15	24t	83	70	4	0	4	87
Hand Tools	-	-	-	-	-	-	-	-
Total								91

Table E 3 Task 2: Earthworks

Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Mobile telescopic crane	C4.47	50t	61	30	2	0	-2	59
Mobile telescopic crane	C4.41	100t	71	30	2	0	-2	69
Tracked Excavator (21 t)	C2.2	71t	77	30	2	0	-2	75
Dumper	C4.4	9t	76	50	4	0	3	79
Dumper	C4.5	9t	63	10	4	0	-4	59
Concrete mixer truck (discharging) and concrete pump (pumping)	C4.28	26t (capacity)	75	30	2	0	-2	73
Vibrating poker	C4.33	-	78	30	6	-5	-2	76
Telescopic handler	C4.54	4t	79	15	4	0	-2	77
Vibratory plate (petrol)	C2.41	kg	80	50	10	-5	2	82
Vibratory Roller	C2.40	3t	73	50	4	0	3	76
Water Pump	C2.46	4"	62	100	8	-10	-1	61
Bulldozer	C4.90	70kW	76	20	2	0	-4	72
8-wheel tipper	C5.15	24t	83	50	4	0	3	86



Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Hand Tools	-	-	-	-	-	-	-	-
Total								89

Table E 4 Task 3: Civil Enabling Works

Plant	Noise Data			On time (%)	No. of Plant Items	Screening/ dB	Total Correction/ dB	Total Lp at 10 m dB(A)
	Plant Ref	Type	Lp (at 10 m) dB(A)					
Concrete mixer truck (discharging) and concrete pump (pumping)	C4.28	26t (capacity)	75	25	3	0	-1	74
Vibrating poker	C4.33	-	78	50	6	-5	0	78
Concrete-placer boom	C4.31	22m boom	75	20	2	0	-4	71
Batching plant	D5.10	27m3/hr	78	50	2	0	0	78
8-wheel tipper	C5.15	24t	83	40	4	0	2	85
Hand Tools	-	-	-	-	-	-	-	-
Total								87

Table E 5 Task 4: Concreting Works



Appendix F – Traffic Noise Assessment (Input Data and Results)

Road Name	Speed	Established Baseline		18-Hour Construction Phase			18-Hour Operational Phase		
		2022 AAWT	2022 HGV	LGV	HGV	Total	LGV	HGV	Total
A48 Pentyla-Baglan Road	46	19564	761	230	0	230	-744	-94	-838
B4286 Heilbronn Way	46	18729	503	47	0	47	-152	0	-152
Car Park Access (North)	20	16	0	0	0	0	0	0	0
A48 Heilbronn Way (North)	65	18514	761	277	0	277	-896	-94	-990
Car Park Access (South)	20	1259	386	0	0	0	0	0	0
A48 Heilbronn Way (East)	65	10899	439	37	0	37	-121	0	-121
Water Street	46	15713	637	0	0	0	0	0	0
A4241 (North 1)	80	5982	252	314	0	314	-1017	-94	-1111
Industrial Unit Access (East)	20	478	80	0	0	0	0	0	0
Industrial Unit Access (West)	20	22	0	0	0	0	0	0	0
Harbourside Road	25	691	0	0	0	0	0	0	0
A4241 (North 2)	80	5843	273	314	0	314	-1017	-94	-1111
A4241 (West)	80	8473	337	150	0	150	-485	0	-485
North Bank Road	46	798	123	0	0	0	0	0	0
A4241 Harbour Way (West)	80	13373	509	464	0	464	-1502	-94	-1596
Oakwood Road	46	830	21	0	0	0	0	0	0
Llewellyn's Road	46	1034	96	0	0	0	0	0	0
A4241 Harbour Way (North)	80	12650	530	464	0	464	-1502	-94	-1596
West Gate Site Access	46	3347	284	0	0	0	0	0	0
Access Road 1	20	54	11	0	0	0	0	0	0



Road Name	Speed	Established Baseline		18-Hour Construction Phase			18-Hour Operational Phase		
		2022 AAWT	2022 HGV	LGV	HGV	Total	LGV	HGV	Total
A4241 Harbour Way (South 1)	80	11595	621	464	0	464	-1502	-94	-1596
Access Road 2	20	166	0	0	0	0	0	0	0
Main Gate Site Access	46	4670	364	775	131	906	-2507	-190	-2697
A4241 Harbour Way (South 2)	80	9972	653	311	131	441	-1005	-96	-1101
Access Road 3	46	214	96	0	0	0	0	0	0
A48 Margam Road (Norh)	80	7953	332	29	44	72	-93	0	-93
A48 Margam Road (South)	80	15767	969	282	87	369	-912	-96	-1008
M4 Southbound Off-slip	90	3808	161	0	21	21	0	0	0
A48 (East)	80	10058	412	38	0	38	-122	0	-122
M4 Southbound On-slip	90	3711	364	122	22	144	-395	-32	-426
M4 Northbound Off-slip	90	4734	412	122	45	167	-395	-65	-460
Heolcae'r-Bont	65	841	112	0	0	0	0	0	0

Table F 1 Traffic Data, provided by SCP Transport



Road Link	Calculated Change in Noise Level
A48 Pentyla-Baglan Road	0.0
B4286 Heilbronn Way	0.0
Car Park Access (North)	0.0
A48 Heilbronn Way (North)	0.0
Car Park Access (South)	0.0
A48 Heilbronn Way (East)	0.0
Water Street	0.0
A4241 (North 1)	0.2
Industrial Unit Access (East)	0.0
Industrial Unit Access (West)	0.0
Harbourside Road	0.0
A4241 (North 2)	0.2
A4241 (West)	0.1
North Bank Road	0.0
A4241 Harbour Way (West)	0.1
Oakwood Road	0.0
Llewellyn's Road	0.0
A4241 Harbour Way (North)	0.1
West Gate Site Access	0.0
Access Road 1	0.0
A4241 Harbour Way (South 1)	0.1
Access Road 2	0.0
Main Gate Site Access	1.0
A4241 Harbour Way (South 2)	0.3
Access Road 3	0.0
A48 Margam Road (North)	0.1
A48 Margam Road (South)	0.2
M4 Southbound Off-slip	0.1
A48 (East)	0.0
M4 Southbound On-slip	0.2

Table F 2 Predicted Change in Noise Levels from Construction Traffic



Road Link	Calculated Change in Noise Level
A48 Pentyla-Baglan Road	-0.3
B4286 Heilbronn Way	0.0
Car Park Access (North)	0.0
A48 Heilbronn Way (North)	-0.3
Car Park Access (South)	0.0
A48 Heilbronn Way (East)	0.0
Water Street	0.0
A4241 (North 1)	-1.0
Industrial Unit Access (East)	0.0
Industrial Unit Access (West)	0.0
Harbourside Road	0.0
A4241 (North 2)	-1.0
A4241 (West)	-0.2
North Bank Road	0.0
A4241 Harbour Way (West)	-0.6
Oakwood Road	0.0
Llewellyn's Road	0.0
A4241 Harbour Way (North)	-0.6
West Gate Site Access	0.0
Access Road 1	0.0
A4241 Harbour Way (South 1)	-0.6
Access Road 2	0.0
Main Gate Site Access	-3.3
A4241 Harbour Way (South 2)	-0.5
Access Road 3	0.0
A48 Margam Road (North)	0.0
A48 Margam Road (South)	-0.3
M4 Southbound Off-slip	0.0
A48 (East)	0.0
M4 Southbound On-slip	-0.5
M4 Northbound Off-slip	-0.5
Heolcae'r-Bont	0.0

Table F 3 Predicted Change in Noise Levels from Operational Traffic



Appendix G – EAF and Consteel Building Façade Enhancement

