LIVERPOOL BAY DECOMMISSIONING PHASE 1

POINT OF AYR GAS PLANT
Point of Ayr Terminal (General)

Noise and Vibration Management Plan

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1.0 INTRODUCTION

1.1 Purpose of this Document

This document comprises the Noise and Vibration Management Plan for Point of Ayr ("the Project") as required by planning (re. FUL/000246/23) and the associated agreement entered under section 106 of the Town & Country Planning Act (TCPA) 1990 (as amended) on the 1st May 2024.

The scope of this Noise and Vibration Management Plan (NVMP) includes the assessment of anticipated noise and vibration levels during the Demolition Phase, comparing them to pre-existing ambient conditions at nearby sensitive receptors. It considers factors such as local geography, terrain, elevation, and the duration of demolition activities to ensure compliance with environmental standards and minimise disruption to the surrounding community.

This document will be submitted to Flintshire County Council (FCC) to discharge planning condition 23 of the TCPA agreement, as detailed below:

> *"23. No development within any one phase shall commence until submission of a noise and vibration management plan for that phase has been agreed with Local Planning Authority. Submission of this plan shall be at least 28 days prior to intended commencement. This management plan will also include details of proposed noise/vibration monitoring which may be required. The development shall be carried out in accordance with the approved details.*
> *REASON: In the interests of residential amenity. To comply with Policy EN6 and PC2 of the Flintshire Local Development Plan"*

1.2 Stage Overview

The Company's Liverpool Bay Carbon Capture Storage Transport & Storage Project (LBA CCS T/S Project) is being developed in parallel with and as a key part of the HyNet Northwest full-chain hydrogen and CCS industrial decarbonisation project (the HyNet Project), which aims to transform the region into the world's first low carbon industrial cluster by 2030.

The LBA CCS T/S Project Project has been divided into two Phases for the purpose of discharging TCPA planning conditions. The Phases of work comprise of and are described as the following:

- Demolition (including Temporary Construction Facilities - TCFs)
- Construction

This document is related to the Demolition Phase only, which includes the demolition scope at the Point of Ayr (PoA) facility (including works involved with the removal of P908 dune valve), as well as scope associated with the new LBA CCS FACILITY.

Under this Phase, the PoA facilities will be subject to a partial decommissioning to allow the conversion of the systems from a hydrocarbon to CCS service. The partial decommissioning of PoA systems shall be performed upon a controlled and sequential shutdown of the existing systems and the works involved with the removal of P908 dune valve include its replacement with a 20" pipeline spool.

The Demolition Phase works have been proposed to commence in July 2025 and are due to complete by November 2026. The works are summarised below:

- Task 1: Demolition works (September 2025 – November 2026);
- Task 2: Civil Works (July 2025 – July 2026);
- Task 3: TCF Works (July 2025 – November 2025);

- Task 4: Dune Valve Removal and Spool Replacement (July 2025 – September 2025).

The works are planned in a transient manner in the area to minimise localised noise and vibration impacts during the Demolition Phase. The proposed full Demolition Phase work extents, including indicative location for each phase, is presented in Section 3.0.

This NVMP covers the decommissioning Demolition Phase of works, and subsequent revisions will include the Construction Phase of works. A planning layout is presented below in Figure 1.1.

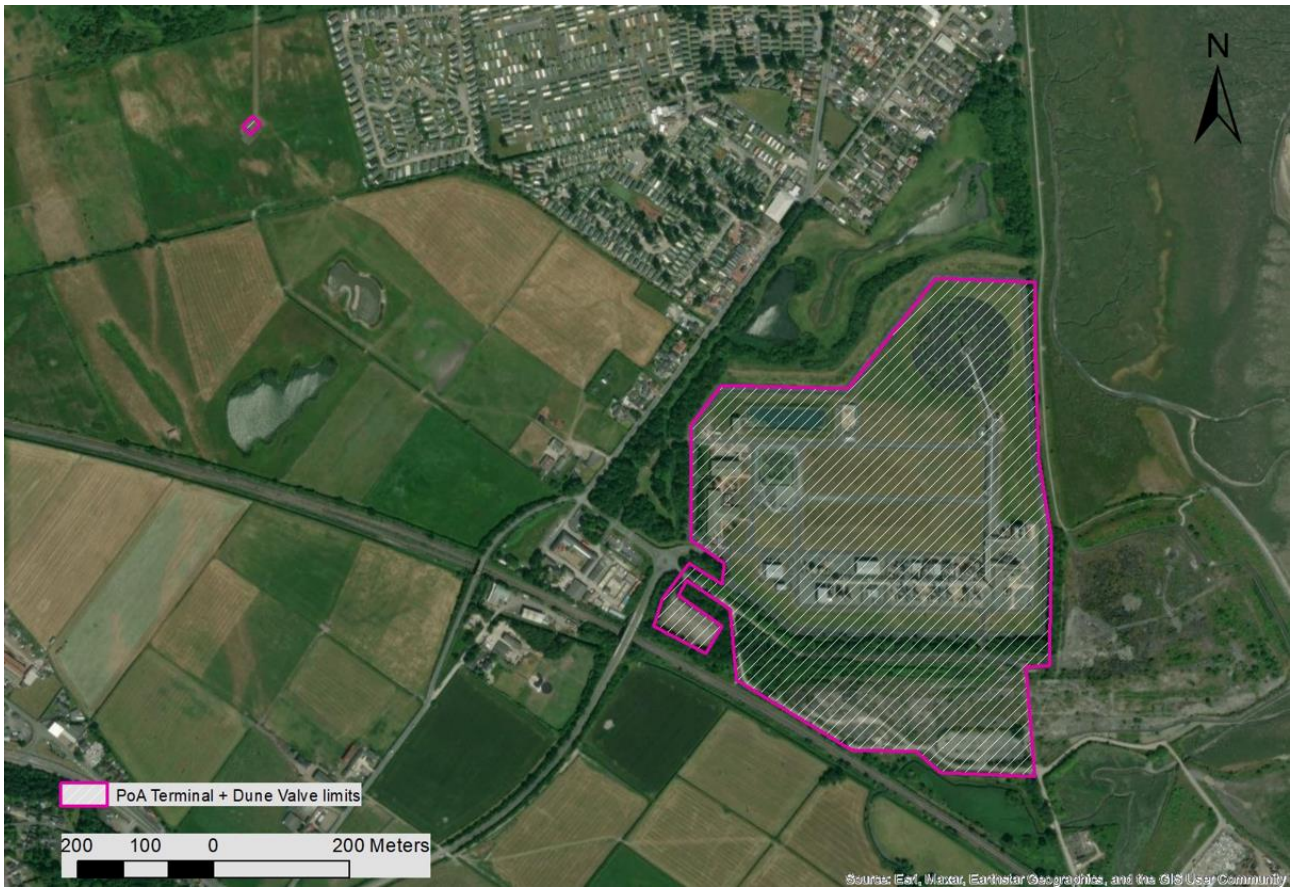

Figure 1.1 Demoliton Phase Boundary Limit

1.3 Objectives

This NVMP details the procedures by which noise and vibration will be managed in relation to the proposed Demolition Phase works at the PoA Terminal, inclusive of the following aspects:

- A detailed evaluation of the site and surrounding area, including identification of the closest sensitive receptors;
- Establishment of the baseline noise environment at nearby noise sensitive receptors;
- Indicative description of the Demolition Phase works to be undertaken, including plant requirements and demolition phasing;
- Review of relevant legislation and guidance;
- Prediction and assessment of noise and vibration impacts;
- Recommended mitigation to be included on the site to conform to Best Practicable Means (BPM);
- Consideration of compliance noise and vibration monitoring throughout the project; and

- Complaint management procedure.

1.4 Stakeholder Engagement

Consultation with FCC was sought before the preparation of this NVMP, in September 2024.

An email was sent to the Pollution Control Team at Flintshire County Council (F.A.O. Mr. Martyn Kirby, Pollution Control Officer) regarding the proposed methodology for the preparation of the NVMP. In his response, Mr. Kirby confirmed that the council is satisfied with the use of baseline noise levels contained in Chapter 15 of the Environmental Statement (ES). Therefore, the proposed methodology will remain unchanged.

However, he noted the following guidance specific to Flintshire County: "*General construction work, including demolition, should be undertaken between 08:00 – 18:00 (Monday – Friday) and 08:00 – 13:00 (Saturday), with no works permitted on Sundays or bank holidays. Any construction activities outside of these hours would require a Control of Pollution Act 1974 Section 61 Prior Consent application. Any granted consent may be subject to specific conditions to manage noise and vibration impacts*".

2.0 DEFINITIONS AND ABBREVIATIONS

2.1 Definitions

Term	Definition
Company	The party that initiates the project and ultimately pays for its design and construction i.e. ENI UK Ltd will generally specify technical requirements. The term "COMPANY" also includes agents or consultants authorized to act for, and on behalf of, COMPANY.
Contract	An acceptance of legal relations between two or more parties for the transfer of goods or services for value.
Contractor	A person or organization that undertakes responsibility for the execution of a contract, i.e. Saipem S.p.A.
Subcontractor	Any person to whom performance of any part of the Works, including engineering works or supply of any Equipment, is subcontracted directly or indirectly by the Contractor and including Approved Subcontractors and legal successors or permitted assigns.
Supplier	The party (Manufacturer or Vendor) that manufactures or supplies equipment or services to perform the duties specified by the Company or Contractor
Shall	A mandatory provision
Should	An advisory provision

2.2 Abbreviations

BPM	Best Practice Measures
CCS	Carbon Capture Storage
CO_2	Carbon Dioxide
FCC	Flintshire County Council
LBA	Liverpool Bay
NVMP	Noise and Vibration Management Plan
PoA	Point of Ayr
REAC	Register of Environmental Actions and Commitments
TCPA	Town and Country Planning Act
TCF	Temporary Construction Facilities
T/S	Transport and Storage

2.3 Definitions

2.3.1 Noise Terminology

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. $2x\ 10^{-5}$ Pascal.
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. For design purposes, the octave bands between 63 Hz to 8 kHz are generally used. The most commonly used frequency bands are octave

	bands, in which the mid frequency of each band is twice that of the band below it.
Airborne sound	Sound in the air is generated by a material vibrating which in turn causes air molecules to vibrate and create a sound wave. For example, sound produced by a loudspeaker in a room can be classified as “airborne” sound.
Time Weighting	Sound level meters use various averaging times for the measurement of RMS sound pressure level. The most commonly used are fast (0.125 s averaging time), slow (1 s averaging time) and impulse (0.035 s averaging time). Variables that are measures with time weightings are expressed as L_{AFmax} etc.
$L_{Aeq, T}$	This is defined as the notional steady sound level over a stated period of time (T), would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.
L_{Amax}	This is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment.
L_{10} and L_{90}	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time, and the L_{90} is the level exceeded for 90% of the time.
	Sound Pressure Level.
L_p	Pre-existing ambient noise means the level of ambient noise, expressed
Pre-existing ambient noise	as a level of L_{Aeq} determined with respect to the relevant time period and the relevant L_{Aeq} averaging time, prevailing one metre in front of relevant windows or doors in a façade of a dwelling, immediately before the placing of a contract for the construction.
Free-field level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building facade.

2.3.2 Vibration Terminology

Amplitude	The maximum displacement or distance moved by a point on a vibrating body or wave measured from its equilibrium position.
dB	The scale on which sound pressure level is expressed. 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 ($2x10^{-5}$ Pa).
dB(A)	Describing the level as being A weighted.
mm/s	Milimeters per second – used to measure velocity.
mm/s^2	Milimeters per second squared – used to measure acceleration.
PPV	Peak Particle Velocity, mm/s.

3.0 REFERENCES

3.1 Project Documents

[Ref 1]	TCPA – March 2023	T.4 Environmental Statement
[Ref 2]	TCPA – March 2023	T.5.1 Outline Construction Environmental Management Plan
[Ref 3]	TCPA – March 2023	T.5.3 Register of Environmental Actions and Commitments
[Ref 4]	102700HFPA09755	TCF & POA Demolition CEMP

3.2 Company Documents

[Ref 5]	Eni UK HSE IMS B1-SYS-03 R01	Identification of Environmental Aspects
[Ref 6]	OPI HSE 008 ENI SPA	Analysis of the environmental aspects and of the impacts/risks for the environment and the organization
[Ref 7]	OPI HSE 022 ENI SPA NR R01	Management of Environmental Aspects in Development Processes
[Ref 8]	OPI HSE 012 E&P	Noise & Vibration Management
[Ref 9]	OPI SG HSE 027 E&P R01	Contract Health, Safety and Environmental Requirements for Services, Engineering, EPC, EPIC, EPF, Goods
[Ref 10]	OPI SG HSE 001 UPS R03	HSE Risk Management and Reporting
[Ref 11]	AMTE-TG-013	Biodiversity and Ecosystem services impact assessment and management

3.3 Contractor Documents

[Ref 12]	PL-SPA-HSE-001-E	Saipem S.p.A. HSE Policy
[Ref 13]	MSGGR-GROUP-HSE-001-E	HSE Management System Guideline
[Ref 14]	CR_GR-GROUP-HSE-009-E	Monitoring and reporting
[Ref 15]	CR_GR-GROUP-HSE-012-E	Criteria for identification of significant and social aspects
[Ref 16]	CR_GR-GROUP-HSE-013-E	Operational control of environmental aspects
[Ref 17]	STD_GR-GROUP-HSE-002	HSE Competence, Training and Awareness
[Ref 18]	STD_GR-GROUP-HSE-004-E	HSE Monitoring and Improvement

3.4 International Codes and Standards

[Ref 19]	ISO 45001	Occupational health and safety management systems, Requirements with Guidance for Use
[Ref 20]	ISO 14001	Environmental Management Systems - Requirements with Guidance for Use

4.0 REGULATORY FRAMEWORK

This section provides a literature review of legislation and guidance relevant to the project. As per the legislation and guidance included below, the Contractor is expected to carry out the works without unreasonable noise levels and they should not exceed the exposure limits recommended in Table 4.1 below.

Table 4.1 Exposure Limits for Construction Noise

Period	Averaging Period	Noise Limit, $L_{Aeq, T}$ dB *
Daytime (08:00:18:00) and Saturdays (08:00-13:00)	10 hours (5 hours Saturdays)	65
Evenings and weekends	1 hour	55
Night-time (23:00-07:00)	1 hour	55

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

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

This Standard also documents a database of information comprising previously measured sound pressure levels at given distances for a variety of different construction plant undertaking various common activities.
The standard provides example criteria for the assessment of the significance of noise effects. Such criteria are concerned with fixed noise limits and changes in ambient noise levels. With respect to fixed noise limits BS5228 discusses those included within Advisory Leaflet 72: 1976: Noise Control on Building Sites. These limits are presented according to the nature of the surrounding environment. Thresholds are used to consider impact and determine the eligibility for noise insulation and temporary re-housing.

The following is an extract from BS5228. This details the criteria to be used in addition to the above significance criteria, for the determination of eligibility for significant noise mitigation measures.

Table 4.2 BS5228, Commentary on E4 'Example of Thresholds Used to Determine the Eligibility for Noise Insulation and Temporary Rehousing' (extract)

If the contractor has applied best practicable means (see Section 8.2) to the provision of mitigation, i.e. all reasonable measures have been taken to reduce the noise levels, but levels are still such that widespread community disturbance or interference with activities or sleep is likely to occur, there are two further provisions that can be made. This is relevant if the construction impacts are likely to continue for a significant period of time either continuously or sporadically (see additional information below). These are as follows.

a) Noise insulation (NI). This is the provision of secondary glazing to the windows of affected habitable rooms. Additional ventilation provision might also be necessary to allow the windows to be kept closed whilst maintaining the appropriate number of air changes in the room. Secondary glazing increases attenuation and this can provide a significant improvement to the internal noise environment.

b) Temporary or permanent re-housing (TRH). Where construction noise levels are such that noise insulation will not provide sufficient attenuation to prevent disturbance or interference with activities or sleep, then the occupants can be temporarily re-housed away from the construction site. However, if the nature of the construction activities means that re-housing would be necessary for a significant extent of time, e.g. in excess of six months, then there might be advantages in offering permanent re-housing, i.e. the property would be purchased by the developer and the occupants would purchase another property elsewhere. The property would then remain vacant or be used by site personnel for the duration of the works, after which it can be re-sold.

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

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

- the noise insulation trigger levels presented in Table 4.3 (of this report) for the corresponding times of day;
- a noise level 5dB or more above the existing pre-construction ambient noise level for the corresponding times of day;

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

The recommended trigger levels as identified in BS5228 are presented in Table 4.3.

Table 4.3 Noise Levels Applicable to Eligibility for Noise Insulation

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

Time	Relevant Time Period	Averaging time, *T*	Noise trigger level dB $L_{Aeq,\,T}$ [1)]
Sunday & Public Holidays	07:00 – 21:00	1 h	65
	21:00 – 07:00	1 h	55

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

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

In order to determine the significance of the potential noise effect at dwellings, firstly, the baseline climate is quantified for the appropriate assessment period (daytime, evening/weekends or night) and rounded to the nearest 5 dB. This is then compared to the measured or predicted site noise level (in isolation). If the site noise level exceeds the appropriate category value, as listed in Table 4.4 below, then a potential significance is indicated.

Table 4.4 Threshold of Significant Effect at Dwellings (BS 5228 Table E.1)

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

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

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

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

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

Notes:

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

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

[Note 3] Applied to residential receptors only.

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

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

4.2.1 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 4.5.

Table 4.5 Guidance on Effects of Vibration Levels (Table B.1 – BS5228-2: 2009)

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.

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

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

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

Table 4.6 Damage Criteria

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.

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

Table 4.7 Transient Vibration Guide Values for Cosmetic Damage

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.

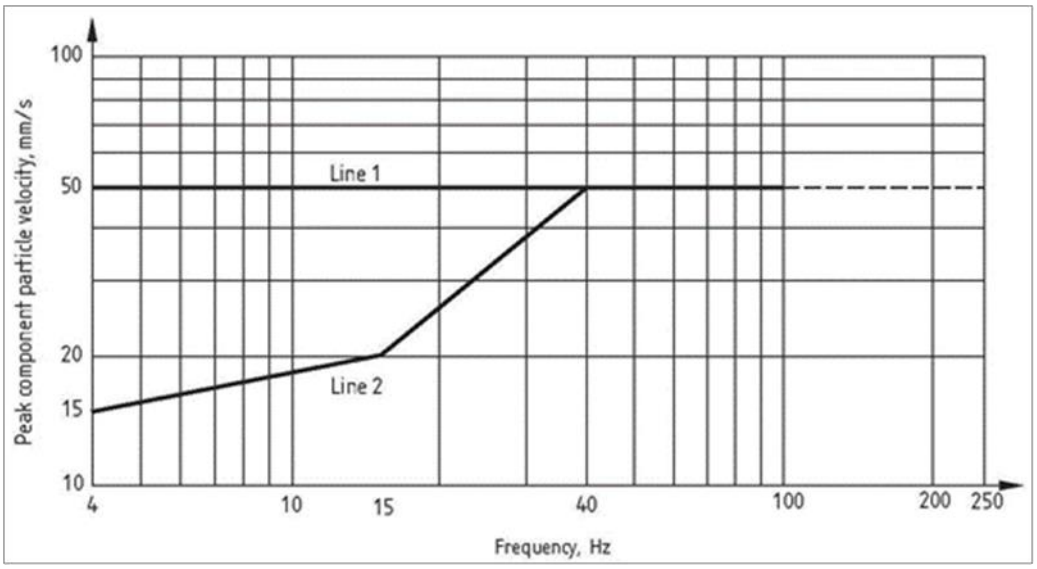

Figure 4.1 Transient Vibration Guide Values for Cosmetic Damage (BS 7385-2: 1993, page 6)

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

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

5.0 PROJECT DETAILS

5.1 Site Location

The PoA section of the HyNet North West Hydrogen Pipeline is located near Talacre, Flintshire, North Wales, in proximity to the PoA Gas Terminal. The site lies on the northern coastline of Flintshire, near the Dee Estuary, approximately 5 km northwest of Prestatyn and 10 km west of the England-Wales border.

The existing site primarily consists of industrial infrastructure associated with the former gas terminal, which is due to be modified and repurposed to support the transport and storage of carbon dioxide (CO_2) as part of the HyNet CCS project. The modifications at PoA will involve the removal of redundant equipment, the installation of new infrastructure, and the cessation of flaring operations to transition the site from processing natural gas to handling CO_2.

The figure below provides an overview of the PoA site and the nearest noise-sensitive receptors that may be impacted by Demolition Phase activities.

Figure 5.1 Aerial site plan including sensitive receptors

5.2 Construction Methodology

Indicative information has been provided regarding the Demolition Phase activities associated with the proposed development. The activities pertinent to noise and vibration are summarised below.

Demolition Works

The demolition phase will involve the removal of structures undertaken as a single program by the appointed contractor. The primary demolition method will be mechanical, using a vacuum excavator fitted with a shear attachment, as well as 13t to 49t excavators equipped with breaker, muncher, and grab attachments. Articulated Dump Trucks (ADTs), wagons and cranes will be utilised to remove the excessive material from the site.

On-site crushing and screening will be conducted to efficiently manage materials. Due to the presence of dust-generating materials such as concrete, mortar, and sandstone, dust suppression measures, such as water spraying, will be implemented. A soft strip of fixtures and fittings inside buildings will be carried out first using handheld tools and small machinery, with access via floor levels, Mobile Elevated Work Platforms (MEWPs), or scaffolding. Waste segregation will be strictly enforced, ensuring recyclable materials are placed in designated skips for appropriate disposal.

Civil Works

The civil works phase will focus on the refurbishment of existing structures. This will include earthworks, utility infrastructure installation, and sustainable drainage system integration. Excavations will be required, with soil conditions expected to vary due to the site's historical use. Excavators, ADTs, and wagons will be in operation at any given time. Stockpiled materials will be limited to a maximum height, and dust control measures such as damping down will be implemented as needed.

TCF Works

Works associated with the installation and servicing of TCF will involve a range of plant and machinery, including a telescopic handler, one crane, up to two dump trucks, and one to two excavators. Concrete wagons and skip wagons will be used as required, particularly during unit deliveries and skip change-out periods. Material handling and access will be supported by scissor and boom MEWPs. Handheld equipment, such as drills, hammers, grinders, bench saws, Stihl saws, and two hand-held breakers, will be in regular use.

Dune Valve Removal and Spool Replacement

This discrete task will involve the removal of an existing dune valve and replacement of a connecting spool. Works will be carried out using a combination of mobile plant and vehicles, including two 7.5-tonne vehicles, one minibus, two 4x4 trucks, one 13-tonne excavator, and two 30-tonne excavators. The works are expected to be short in duration but may involve intermittent high-impact noise events during excavation and spool handling.

5.3 Plant and Equipment

The following plant and equipment will be used for the decommissioning and demolition works:

- Excavators and breakers;
- Telehandlers;
- Mobile cranes;
- ADT;
- Skip wagons;
- Concrete pumps and mixers;
- Concrete crushing mobile plant;
- Oxy-propane cutting equipment;
- MEWPs – scissor and boom;
- Hand-held breakers and other hand tools (drills, hammers, grinders).

5.4 Working Hours

Where practical, all works will be undertaken during daytime hours from Monday to Friday (08:00 to 18:00) and on Saturdays (08:00 to 13:00). A shoulder hour on either side of these times will be proposed for start-up and close down activities such as but not limited, to arrival and departure of workforce, site briefings, inspections and safety checks, clean-up, maintenance (non-noisy) and refueling.

No Demolition Phase activity will be carried out on Sundays or Bank/ Public Holidays.

5.5 Demolition Phase Programme

Based on the Demolition Phase Programme provided by the Contractor, an indicative schedule for the project has been determined and summarised in Table 5.1 and Table 5.2 overleaf. Although dates of activities may change, the plant lists, working hours (Monday-Friday 08:00 - 18:00; Saturday 08:00 – 13:00) and the simultaneous working of plant will not change. Therefore, the cumulative impacts associated with the undertaking of activities will not change and can be used as a basis for assessing any deviations from the programme below. The coloured boxes presented within the schedule represent indicative periods at which the works are proposed.

Table 5.1 Summary of Schedule of Works

No	Task	Start Month	End Month	Duration	Working Hours
1	Demolition works	Sep-25	Nov-26	15 months	Mon-Fri 08:00 - 18:00; Sat 08:00 – 13:00
2	Civil Works	July-25	Jul-26	13 Months	
3	TCF Works	Jul-25	Nov-25	5 months	
4	Dune Valve Removal and Spool Replacement	Jul-25	Sep-25	3 months	

Table 5.2 Graphical Schedule of Works

No	Task	2025						2026										
		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
1	Demolition works																	
2	Civil works																	
3	TCF Works																	
4	Dune Valve Removal and Spool Replacement																	

6.0 BASELINE NOISE SURVEY

Day, evening and night-time baseline data ($L_{Aeq, T}$) to be considered in this NVMP were obtained from the baseline noise survey included in Chapter 15.6 of the Environmental Statement.

6.1 Baseline Noise Survey

Baseline noise measurements were undertaken at several locations to properly represent the most sensitive receptors. The survey was carried out in March 2022 by WSP and, following consultation with FCC, it is appropriate for the purposes of this NVMP. Baseline noise measurements taken at locations LT17 and LT18 are representative of the current noise environment of the nearest receptors, as shown in Figure 6.1.

6.2 Sensitive Receptors

A number of sensitive receptors have been established in relative proximity to the work site. It should be noted that each receptor could be considered representative of a number of other addresses located in the vicinity.

The assignment of a baseline value to each of the sensitive receptors included in the assessment has been made based on the proximity between the receptor and baseline location. As per Section 15.2 of the Environmental Statement, the study area for the construction period extends 300m from the application site (Figure 6.1). Therefore, only receptors within this range have been considered in this assessment. Receptors Granary Court (R1), Station Road (R2) and Corbett Avenue (R3) were assessed in the Environmental Statement and are representative of the receptors along Station Road and Corbett Avenue. Additionally, receptors Jaycee, Marie Lyn, Sunnyside and The Poplar have been included in this assessment for completeness. Receptors Point of Ayr Holiday Park 1, 2, and 3 have also been included in this assessment for completeness, as these are receptors close to the dune valve removal works (Task 4).

Table 6.1 presents the adopted baseline values used to calculate the total noise (i.e. decommissioning plus ambient) at each of the receptor locations, with the location of the considered receptors being shown graphically in Figure 6.1.

Table 6.1 Baseline noise level representative of the noise sensitive receptors

Noise Sensitive Receptors		**Baseline Noise Levels, $L_{Aeq, T}$ dB**			
Name	**Approx. distance to site (m)**	**Baseline Ref**	**Day**	**Evening**	**Night**
Jaycee	110	LT18	54	47	49
Marie Lyn	295	LT18	54	47	49
Point of Ayr Holiday Park 1	182	LT17	53	42	45
Point of Ayr Holiday Park 2	134	LT17	53	42	45
Point of Ayr Holiday Park 3	175	LT17	53	42	45
R1- Granary Court	150	LT18	54	47	49
R2 - Station Road	120	LT18	54	47	49
R3 - Corbett Avenue	260	LT18	54	47	49
Sunnyside	105	LT18	54	47	49
The Poplars	115	LT18	54	47	49

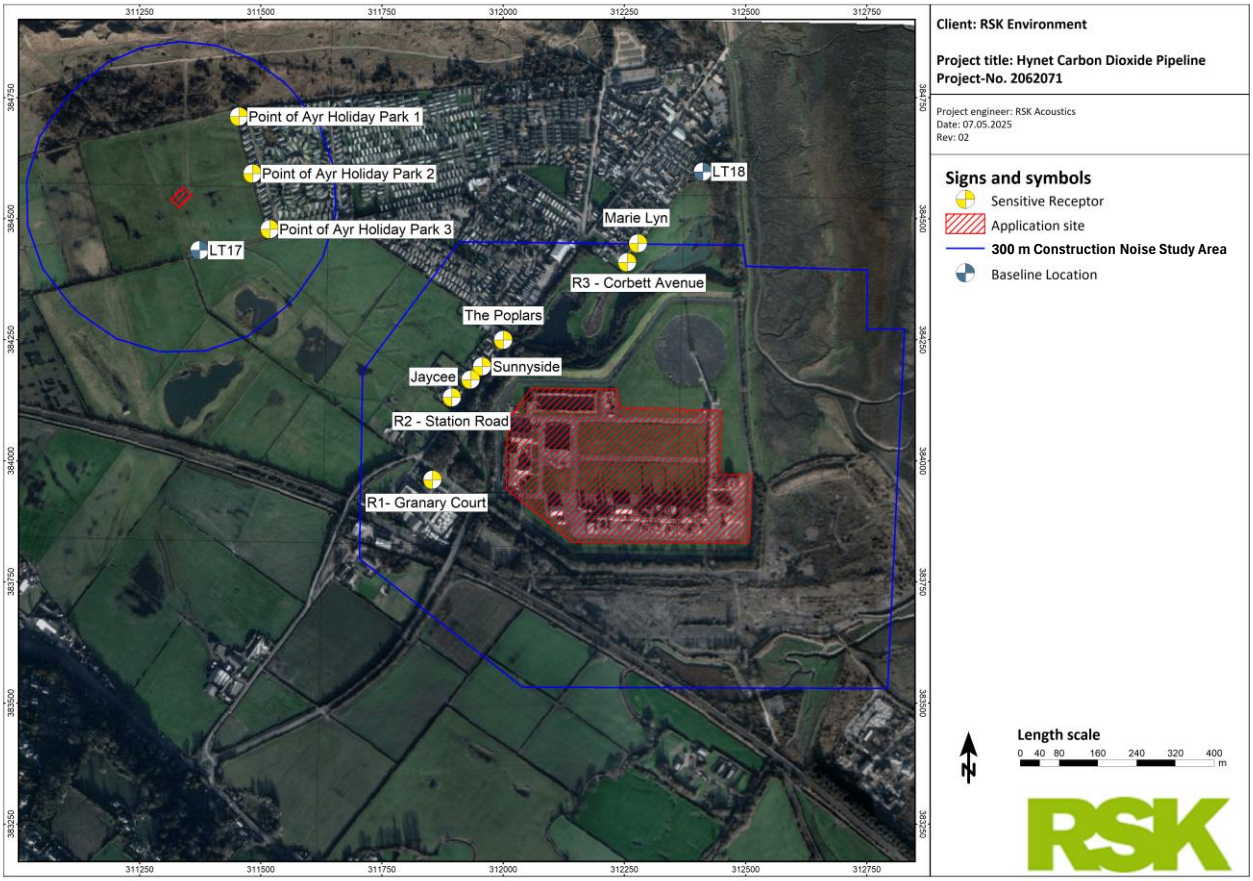

Figure 6.1 Point of Ayr application site, demolition study area, nearest sensitive receptors, and baseline monitoring location. The Task 1, 2, and 3 work extent **is located to the east, while the Task 4** work extent **is situated to the northwest.**

7.0 DEMOLITION PHASE NOISE AND VIBRATION IMPACT ASSESSMENT

7.1 Demolition Phase Noise Predictions and Impact Assessment

Demolition Phase activities generated noise has been predicted at the closest sensitive receptors to the proposed works. Neighbouring receptors are likely to experience similar or lower magnitudes of noise. Predictions have been made using computation noise modelling software, SoundPlan v9.1. The modelling parameters are presented in Table 7.1.

The noise predictions are considered worst case, assuming the works take place close to the receptor in each assessment period. The levels provide an indication of the Demolition Phase noise for a typical working hour period.

Table 7.1 Modelling Parameters

Item	Setting
Algorithm	British Standard 5228:2009+A1:2014
Ground Absorption	Hard, acoustically reflective ground (0.2 coefficient) – roads, pavements and hard standing areas; Acoustically soft (assumed 0.8 coefficient) – grass or vegetated areas.
Met Conditions	10 degrees Celsius 70% humidity Wind from source to receiver
Façade Corrections	Predictions are at 1m from a given facade
Receptor Height	Ground Floor 1.5m above ground.
Source Modelling	Indicative work extents have been provided by the Contractor (see Figure 6.1). Modelling assumes that the plant for a given activity, for a given period of time is located at the closest separation distance to each receptor, thus providing worst case noise levels. In reality, this is unlikely to be the case and the work site will not constantly produce the predicted levels.
Source Data	Plant lists and operating durations provided by the Contractor. Data for plant noise emissions taken from RSKA file data, manufacturer noise data or BS5228 – See **Appendix B.** Where hand tools have been identified as the main plant within any particular activities, it has been assumed that the associated noise level, and typical short duration, would be such that it would not have a significant impact on noise predictions. Plant located at a relative height to ground of 1.5m.
Terrain	The model includes LIDAR terrain data taken from the Emapsite website for the area (2 m resolution elevation points).
Barriers / structures	Other structures and buildings which are likely to impact the propagation of noise from Demolition Phase works have also been included within the model. This includes permanent surrounding residential and commercial buildings. However, it should be noted that the works hoarding has not been incorporated into the model, which would have a noise mitigation effect (especially for the nearest noise sensitive receptors to the site).
Other	Calculations are based on the plant lists and Demolition Phase program provided by the Contractor.

Table 7.2 below presents the predicted noise levels at the nearest receptors due to the Demolition Phase activities at PoA Terminal. The following should be taken into account:

- The noise levels presented in Table 7.2 are inclusive of ambient noise levels, with decommissioning contribution shown in brackets;

- Levels all represented as dB for an LAeq, T and can be taken to represent decommissioning noise during any assessment period; and
- Where noise predictions exceed the considered criteria as included in Table 4.1 (if applicable), values have been highlighted in yellow.

Table 7.2 Predicted Demolition Phase Noise Level plus Ambient Noise for Daytime Hours

Receptor	Floor	Daytime Predicted Noise Levels ($dB_{Aeq,10h}$) (1)				
		Jul '25 – Aug '25 (Taks 1, 3 & 4)	Sep '25 (Taks 1, 2 3 & 4)	Oct '25 – Nov '25 (Taks 1, 2 & 3)	Dec '25 – Jul '26 (Taks 1 & 2)	Aug '26 – Nov '26 (Task 1)
Jaycee	GF	69(69)	69(69)	69(69)	63(62)	63(62)
Marie Lyn	GF	59(57)	59(57)	59(57)	56(51)	56(51)
Point of Ayr Holiday Park 1	GF	60(59)	60(59)	54(45)	53(39)	53(39)
Point of Ayr Holiday Park 2	GF	63(63)	63(63)	54(46)	53(40)	53(40)
Point of Ayr Holiday Park 3	GF	60(60)	60(60)	54(48)	53(42)	53(42)
R1- Granary Court	GF	66(65)	66(65)	66(65)	60(59)	60(59)
R2 - Station Road	GF	68(68)	68(68)	68(68)	62(61)	62(61)
R3 - Corbett Avenue	GF	60(58)	60(58)	59(58)	56(52)	56(52)
Sunnyside		67(67)	67(67)	67(67)	62(61)	62(61)
The Poplars	GF	65(64)	65(64)	65(64)	60(59)	60(59)

Combined noise levels as a result of the addition of the predicted Demolition Phase levels and the pre-demolition noise levels show no exceedances above the considered criteria (i.e. threshold used to determine the eligibility for noise insulation and temporary rehousing, as per Annex E 'Significance of noise effects' Section E4 of BS5228-1:2009+A1 2014) for a continuous 10 in 15 days or 40 days in 6 months period.

As per Table E1 in BS5228-1:2009 + A1:2014 the predicted site noise (decommissioning contribution only) is expected to stay within the lower Category A (65 dBA) for each of the considered sensitive receptors during core hours, as per the ABC method.

It should be noted that these predictions are considered worst case assuming all plant within a given Demolition Phase task are located at the shortest separation distance from the receptor. In reality this is highly unlikely to be the case, therefore noise levels and associated impacts are likely to be marginally lower than those predicted. This is because the noise levels also depend upon the on-time for the machinery, which leads to inclusion of appropriate time correction factors.

Further to this, any site hoardings have not been incorporated into the noise model, which is likely to provide some degree of noise mitigation at the nearest sensitive receptors to the work site.

As a safe approach towards mitigation, it is recommended to ensure that all noise control measures (as detailed in Section 8.0) and Best Practicable Means (BPM) are implemented across the project.

7.2 Demolition Phase Vibration Predictions and Impact Assessment

Some Demolition Phase activities have the potential to generate vibration. This, in theory, could cause cosmetic or structural damage to nearby sensitive structures/buildings. The following vibration criteria and trigger action plan have been prepared to assess and mitigate impacts.

7.2.1 Vibration Assessment

While piling works are not included within the decommissioning scope, other plant, particularly hydraulic breakers used for concrete demolition, are expected to produce discernible levels of vibration. These activities are considered the most significant in terms of potential vibration generation during the Demolition Phase.

Chapter 15.5 of the Environmental Statement defines the vibration study area during the construction period as a 100 m radius from the work site (refer to Figure 7.1 overleaf).

An initial assessment has been undertaken to calculate the likely vibration generated by the site activities, assuming certain activities may have a level of vibration equivalent to breaking activities.

The distance-based risk categorisation is commonly applied in practical engineering scenarios to simplify vibration management. It is not prescriptive from any one standard but rather a synthesis of vibration attenuation principles and real-world observations. The categorisation reflects practical understanding derived from the following:

- BS 7385-2:1993 - Evaluation and measurement for vibration in buildings;
- DIN 4150-3:1999 - Structural vibration – Part 3: Effects of vibration on structures;
- ISO 4866:2010 - Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the measurement of vibrations and evaluation of their effects on structures; and
- BS 5228-2:2009 - Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

Distances assume that the Demolition Phase activities may take place close to the application boundary.

Vibration predictions have indicated that potential breaches of the vibration criteria can occur to residential properties or light weight structures located within 10m from proposed site works. Table 7.3 gives a more detailed breakdown of risk for receptors surrounding the station project.

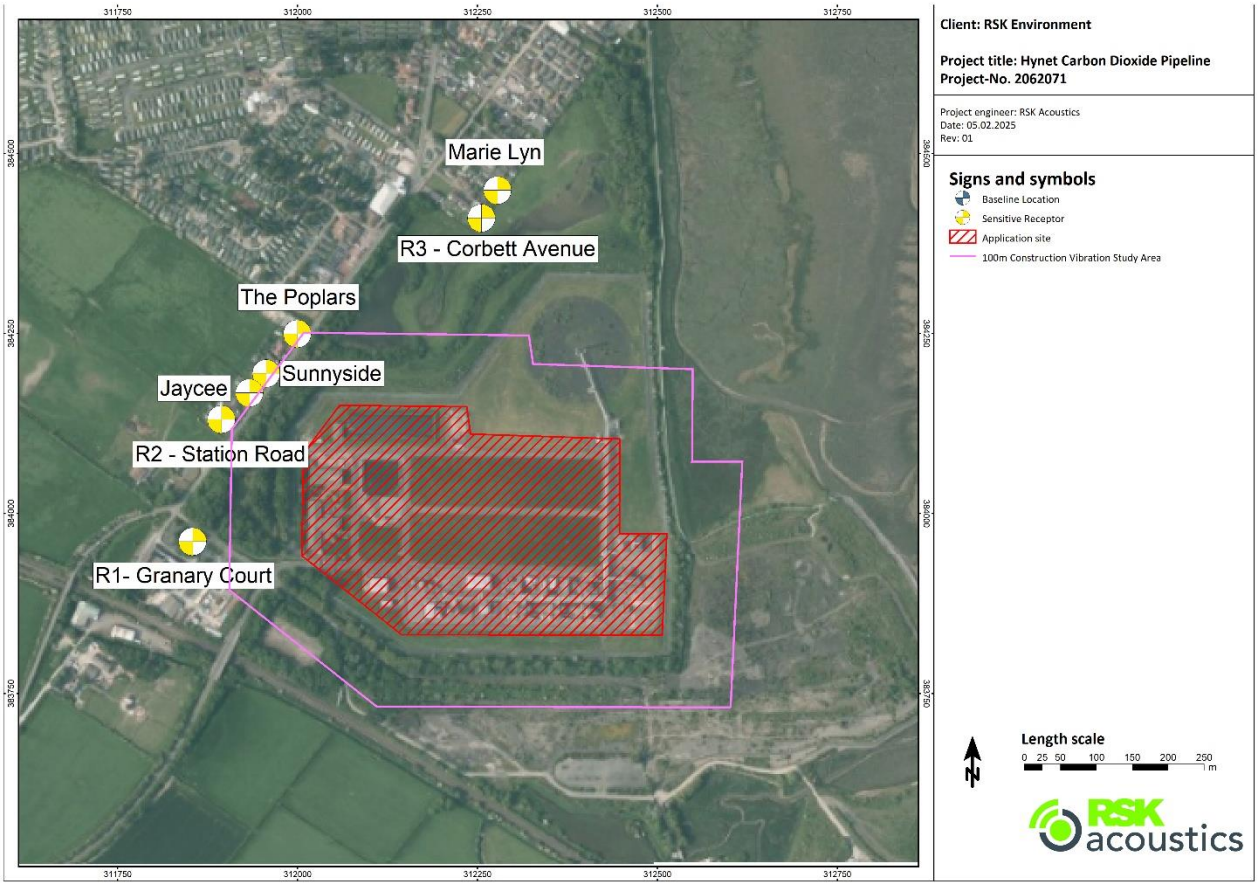

Figure 7.1 Demolition Phase Vibration Area and Sensitive Receptors

Table 7.3 Vibration Risk Assessment

Property	Distance (m)	Significant Risk (within 10m)	Moderate Risk (between 10m and 30m)	Low Risk (>30m)	ES Chapter (Low Risk >100m)
R1 -Granary Court	150	-	-	✓	✓
R2 - Station Road	120	-	-	✓	✓
R3 - Corbett Avenue	260	-	-	✓	✓
Jaycee	110	-	-	✓	✓
Marie Lyn	295	-	-	✓	✓
Sunnyside	105	-	-	✓	✓
The Poplars	115	-	-	✓	✓

Significant risk: Heavy machinery operation, pile driving, or demolition activities pose a significant risk of structural damage and high vibration levels.
Medium risk: Vibrations attenuate with distance but can still cause discomfort to nearby residents or operational disturbances in sensitive environments.
Low risk: Vibration levels are significantly lower and unlikely to cause structural damage or serious discomfort unless in highly sensitive areas.

As mentioned above, the Environmental Statement identifies the vibration study area during the construction period as a 100 m radius around the site, although a low risk is already considered beyond 30 m. As the closest receptor (Sunnyside) is located 105 m away from the work site, there are no vibration impacts arising from breaking activities to the nearby receptors. Vibration levels at this distance are significantly lower and unlikely to cause structural damage or serious discomfort. In addition, receptors Point of Ayr Holiday Park 1, 2, and 3 are located more than 300 m from the breaking works and have therefore not been included in the vibration assessment.

7.2.2 Trigger Action Plan

An indicative action plan has been developed and presented in Table 7.4. Where the following vibration levels are predicted as part of this study the following should be considered.

Table 7.4 Vibration Trigger Action Plan

PPV (mm/s)	Action
< 5mm/s	• Unattended continuous monitoring to be undertaken. • Residents to be informed of works via normal notification letters.
5<PPV<10 mm/s	• The vibration measurements resulting from the continuous monitoring to be analysed by a vibration specialist to potentially explore ways of reducing vibration levels and to assess risk. • Residents will be contacted and given specific updates on duration and extent of works. Photos should be taken of affected properties if deemed feasible.
>10mm/s	Specialist to recommend that works are stopped until further assessments are carried out. Methodology should be revisited and tested again with residents and FCC being informed.
Vulnerable Buildings	Where vulnerable buildings are identified, works to stop if PPV levels are continuously above 3 mm/s.

8.0 NOISE AND VIBRATION CONTROL MEASURES

Measures detailed within the Register of Environmental Actions and Commitments (REAC) to prevent and mitigate noise and vibration impacts are listed below in Table 8.1, and must be complied to during the Demolition Phase activities.

These control measures have been selected as relevant to the scope of works taking place withing the Demolition Phase and shall be implemented at all times, and further environmental management measures have been developed to prevent or, where that is not possible, minimise the environmental impacts associated with the works carried out during the Demolition Phase. All REAC References are complied with in full in the control measures following Table 8.1.

Table 8.1 Noise and Vibration Management Actions and Commitments

Action/Commitment	REAC Reference
The Noise and Vibration Management Plan will detail the noise mitigation measures included in the Detailed Design, the noise and vibration limits to be met and a programme of noise and vibration monitoring which should be followed during the Construction Stage.	T-NV-001
After current design, and before the commencement of the construction period, a Noise and Vibration Management Plan will be produced and agreed with the Local Authority setting out the requirements for noise and vibration mitigation measures.	T-NV-003
The Construction Contractor will nominate a Community Liaison Representative (or equivalent title) who will be a nominated competent site contact for whom the contact details will be shared with local residents and other third parties within close proximity to the construction works and will be displayed clearly within the site compounds.	T-NV-004
Construction works will utilise low noise generating plant and equipment and will adopt methods which minimise noise and vibration, wherever practicable.	T-NV-005
Where required, temporary acoustic barriers will be considered around significant noise producing plant that are in close proximity to sensitive receptors. The locations of these screens will be optimised for acoustic mitigation whilst considering other potential impacts.	T-NV-006
Optimal location(s) of all equipment with the potential to cause a significant effect on noise on site will be agreed with the Local Authorities as part of the Noise and Vibration Management Plan prior to construction to minimise noise disturbance to local sensitive receptors.	T-NV-007
During construction, the Construction Contractor will ensure that the provision of acoustic enclosures around static plant, where practicable, is in place to reduce noise disturbance.	T-NV-008
Construction vehicles will, wherever practicable, be fitted with less intrusive warning alarms, such as broadband vehicle reversing warnings.	T-NV-009

The following sections aim to present the Best Practical Means (BPM) that should be implemented for any Demolition Phase activities proposed. The BPM are in line with the REAC.

8.1 Community Notification

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

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

- Project overview;
- Start and duration of works;
- Proposed working hours;
- Steps being undertaken by the team to control noise and vibration;
- Informing the community about high noise or vibration Demolition Phase activities, particularly for sensitive periods or structures, and providing advance notice of the timing;
- Any work which might be required out of specified working hours;
- A helpline for queries and complaints.

8.2 Best Practicable Means (BPMs)

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

The Contractor shall ensure that the following guidelines will be applied where applicable:

- Whenever possible, noisy plant will be situated away from sensitive receptors;
- Although not included in the current programme of works, if any tasks are proposed for night-time or weekend periods (previously agreed with the EHO), noisy activities will take place during the daytime periods as far as is possible;
- Whenever possible fabrication will be undertaken off site;
- Where reasonably practicable, fixed items of decommissioning plant will be electrically powered in preference to diesel or petrol driven;
- As far as reasonably practicable, the noise from reversing alarms will be controlled or limited. This will be undertaken through following a hierarchy of techniques:
    - The site layout will be designed to minimise reversing;
    - Banksmen will be utilised to avoid so far as reasonably practicable the use of reversing alarms;
    - Reversing alarms will incorporate where reasonably practicable features such as broadband signals or ‘smart alarms’ to reduce the level of noise.
- Where an enclosure is available it should be used;
- Where reasonably practicable, vehicles and mechanical plant associated with the Demolition Phase works will be fitted with effective exhaust silencers and shall be maintained in good working order;
- Machines and vehicles in intermittent use will be shut down or throttled down to a minimum during periods between works;
- Screens such as reflective acoustic cladding and louvered screens are recommended to be placed around power units such as compressors, lighting rigs and generators;
- Mobile screens will be placed around noisy hand-held equipment i.e. breakers, Stihl saws etc.
- Letter drops will be undertaken prior to any noisy works commencing that could affect local residents, this will be undertaken a minimum of two weeks in advance of the works;
- Where possible, all deliveries to support non-core works will be completed within core working hours;
- The movement of delivery materials outside of normal working hours shall be kept to a minimum and handled in a manner that minimises noise (i.e. manual handling rather than mechanical);
- All plant, equipment and noise control measures applied to plant and equipment shall be maintained in good working order and operated such that noise emissions are minimised as far as reasonably practicable;

- Where breaking out activities are necessary the continuous use of percussive or impact breaking equipment/ methods should be minimised;
- All employees shall be provided with an appropriate induction and ongoing briefings regarding the management of environmental issues. This will involve emphasising the need for employees to show consideration to the sensitive receptors, including residential neighbours. They will be briefed on not generating unnecessary noise when on site or when leaving and arriving;
- Two-way radios to be used on site to avoid shouting; and
- All works will comply with all plant/equipment to be used listed within this application.

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

- Site Induction;
- Toolbox talks;
- Start of Shift briefings; and
- Respite periods are provided for intensive works. This should take account of the temporal thresholds for noise insulation and temporary re-housing eligibility (i.e. 10 exceedances in 15 days, 40 exceedances in 6 months).

Additional BPM measures are also to be implemented. BPM measures are only displayed below when not mentioned in the BPM above.

- All compressors and generators shall be ‘sound reduced’ models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use, and all pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. (if possible)
- Noise emitting equipment which is required to run continuously shall be housed in a suitable acoustic enclosure.
- Temporary noise barriers shall be used to reduce noise levels where appropriate and practicable. Barriers shall be located as close to the plant as possible and shall have a mass per unit area of at least 7kg/m^2.
- No deliveries shall arrive at the site before 0700 hours unless agreed with the local authority under exceptional circumstances.
- The engines of all parked vehicles or vehicles waiting to enter any work area shall be switched off within two minutes of arrival.
- Work compounds shall be laid out so that accesses and loading areas are located as far away from sensitive neighbours as practicably possible and so that temporary structures screen noisy areas where practicable.
- Stationary plant such as pumps, compressors and generators, shall be situated as far as possible from residential property and acoustic screens erected if required. Other plant and machinery shall be screened if necessary;
- Plant known to emit noise strongly in one direction shall be, where practicable, orientated so that noise is directed away from noise-sensitive areas;
- A speed limit of 10mph shall be set and enforced on all site traffic; and
- Haul routes shall be maintained in good condition to minimise 'body slap' of vehicles.

Vibration specific measures are recommended to be implemented:

- Reducing the use of percussive or impact-based demolition equipment (e.g., jackhammers, breakers) wherever possible.

- Exploring alternative demolition techniques, such as cutting, crushing, or dismantling, which generate less vibration than impact methods.
- Using vibration-reducing demolition equipment or attachments, such as hydraulic crushers or shears, to minimise vibration transmission.
- Employing modern equipment with built-in vibration-damping features.
- Establishing vibration monitoring systems at sensitive receptors (e.g., residential areas or heritage buildings) during demolition activities to ensure levels remain within acceptable thresholds.
- Planning the sequence of demolition to minimise cumulative vibration. For example, starting with structures or elements that are less prone to transmitting vibrations to nearby receptors or phasing demolition activities to reduce simultaneous vibration sources.
- Positioning demolition equipment and plant as far as possible from sensitive receptors to reduce transmitted vibrations.
- Preparing haul routes and access roads to ensure vehicles moving demolition debris do not generate excessive ground vibrations due to uneven surfaces or "body slap."
- Taking additional precautions, such as increased monitoring, for such structures.

9.0 COMPLAINTS HANDLING

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

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

Where appropriate, the Contractor Project Manager or other equivalent person would undertake an investigation of the complaint. After the investigation, an appropriate course of action and any corrective actions would be undertaken in response to this investigation. Notification of the complaint and actions taken will be provided to the local authority upon request. The actions which are recommended to be taken as soon as possible by the Contractor are as follows:

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

10.0 NOISE AND VIBRATION MONITORING

Given the nature of the works, monitoring could be carried out continuously throughout the works or on an ad-hoc basis in response to justified complaints in line with Section 7 'Complaints Handling'. Conversations with the FCC will be undertaken to determine the most suitable option and any specific requirements.

This section outlines the equipment, monitoring positions, and general methods that should be used for noise and vibration monitoring to ensure compliance.

10.1 Noise Monitoring

10.1.1 Noise Equipment

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

The meter should be capable of recording the following parameters:

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

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

10.1.2 Monitoring Locations

It is proposed that a noise monitoring position will be established at locations considered to be representative of the nearest sensitive receptors to the work site.

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

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

10.1.3 Noise Measurements

Measurements should be undertaken in accordance with BS 7455-1:2003 'Description and measurement of environmental noise. Guide to quantities and procedures'.
Noise measurements should be undertaken under meteorological conditions conducive to environmental noise monitoring. This includes low wind speeds (<5m/s) and dry conditions.

10.2 Vibration Monitoring

Ad-hoc vibration monitoring is proposed to be undertaken if a complaint is raised due to Demolition Phase activities carried out on site. These measurements will be undertaken in accordance with BS 5228-2:2009 + A1:2014 and BS 7385-2:1993 criteria.

For the purposes of building damage, the appropriate metric is termed Peak Particle Velocity (PPV) and will be setup accordingly on the instrumentation. A vibration meter is proposed to be installed in proximity to the noise monitoring location during a representative operation period for the Demolition Phase activity under investigation.

The monitored levels will be compared with the Trigger Action Plan criteria included in Table 7.4 of this NVMP and actions will be considered.

10.3 Assessment

The noise and vibration data obtained from the measurement surveys can be used to estimate the likelihood of impacts in accordance with the assessment thresholds identified in the NVMP.

Where the assessment shows exceedances of thresholds, the relevant remedial steps should be undertaken in accordance with the NVMP and BS5228. The report should document any corrections applied to measured levels and justifications for applying such corrections.

APPENDIX A – PLANT LISTS

Task 1: Demolition Works							
Plant	**Plant Ref**	**L_p (at 10 m) dB(A)**	**No. of Plant Items**	**On-Time %**	**Screening (dB)**	**Total Correction (dB)**	**Total L_p (at 10 m) dB(A)**
Tracked excavator	C6.12	74	1	30	0	-5	69
Tracked excavator	C4.65	71	1	30	0	-5	66
Tracked excavator	C6.7	76	1	30	0	-5	71
Articulated dump truck (tipping fill)	C2.32	74	2	35	0	-2	72
Skip wagon	C8.21	78	2	20	0	-4	74
Mobile telescopic crane	C4.46	67	2	20	0	-4	63
Telescopic handler	C4.55	70	2	35	0	-2	68
Compressor for hand held pneumatic breaker	C5.5	65	1	30	-10	-15	50
Road breaker (hand-held pneumatic)	C5.4	86	2	30	-5	-7	79
Tracked excavator	C4.63	77	1	30	0	-5	72
Hand-held circular saw (petrol-cutting concrete blocks)	C4.72	79	1	40	0	-4	75
Lifting platform	C4.57	67	2	30	0	-5	62
Tracked mobile crane	C3.28	67	1	20	0	-7	60
Tracked crusher	C1.14	82	1	10	0	-10	72
Hand tools	-	-	-	-	-	-	-
						Total	**82**

Task 2: Civil Works							
Plant	**Plant Ref**	**L_p (at 10 m) dB(A)**	**No. of Plant Items**	**On-Time %**	**Screening (dB)**	**Total Correction (dB)**	**Total L_p (at 10 m) dB(A)**
Telescopic handler	C4.55	70	2	30	0	-2	68
Tracked excavator	C6.12	74	1	30	0	-5	69
Concrete pump	C3.26	75	1	15	-5	-13	62
Tracked excavator	C4.65	71	1	30	0	-5	66
Tracked excavator	C6.7	76	1	30	0	-5	71
Tracked excavator	C4.17	71	1	30	0	-5	66
Articulated dump truck (tipping fill)	C2.32	74	2	35	0	-2	72
Skip wagon	C8.21	78	3	20	0	-2	76
Tracked crusher	C1.14	82	1	10	0	-10	72
						Total	**80**

Task 3: TFC Works							
Plant	**Plant Ref**	**L_p (at 10 m) dB(A)**	**No. of Plant Items**	**On-Time %**	**Screening (dB)**	**Total Correction (dB)**	**Total L_p (at 10 m) dB(A)**
Telescopic handler	C4.55	70	1	30	0	-2	68
Wheeled loader (loading lorry)	C6.33	82	2	40	0	-1	81
Tracked excavator	C6.7	76	2	30	0	-5	71
Skip wagon	C8.21	78	2	20	0	-2	76
Tracked mobile crane	C3.28	67	1	20	0	-7	60
Concrete mixer truck	C4.27	79	1	30	0	-5	74
Articulated dump truck (tipping fill)	C2.32	74	2	35	0	-2	72
Hand-held circular saw (petrol-cutting concrete blocks)	C4.72	79	1	40	0	-4	75
Hand-held hydraulic breaker	C1.7	93	1	30	0	-5	88
Compressor for hand held pneumatic breaker	C5.5	65	1	30	-10	-15	50
Lifting platform	C4.57	67	1	30	0	-5	62
Hand tools	-	-	-	-	-	-	-
						Total	**89**

Task 4: Dune Valve Removal and Spool Replacement							
Plant	**Plant Ref**	**L_p (at 10 m) dB(A)**	**No. of Plant Items**	**On-Time %**	**Screening (dB)**	**Total Correction (dB)**	**Total L_p (at 10 m) dB(A)**
Tracked excavator	C6.12	74	1	30	0	-5	69
Tracked excavator	C6.7	76	1	30	0	-5	71
7.5t Vehicle	C2.34	80	2	20	0	-4	76
Trucks	C6.25	86	4	40	0	2	88
						Total	**88**