6. Noise and Vibration

6.1 Introduction

6.1.1 This chapter of the Environmental Statement assesses the likely significant effects of the Proposed Development with respect to noise and vibration upon human receptors. The chapter should be read in conjunction with **Chapter 3: The Project and its Alternatives.**

6.1.2 This chapter describes the methodology used, provides an overview of the baseline noise conditions outside the Trawsfynydd site, presents the datasets used to inform the assessment, and determines whether there will be any significant noise effects. Mitigation measures are discussed as appropriate.

6.1.3 The noise emission sources assessed have included mobile and static plant to be used for the works on-site. The sensitive receptors are residential dwellings close to the Proposed Development.

6.1.4 Following the issue of the Scoping Chapter for Noise and Vibration[1], there have been changes to the proposed scope of the noise and vibration assessment due to further consideration of other elements. Specifically, noise from road traffic on the public highway has been scoped out from detailed assessment. This is discussed in **Appendix 6C**.

6.2 Relevant planning policy, legislation, and technical guidance

6.2.1 **Appendix 6A** identifies the relevant national and local policy, legislation and guidance that has informed the scope of the assessment relevant to noise and vibration.

6.3 Limitations of this assessment

6.3.1 The assessment of noise uses assumptions with respect to plant and equipment based upon activities described in the Project Description within **Chapter 3: The Project and its Alternatives**. The plant and equipment inventory (i.e. the number and type of plant and equipment items) and methods of deployment are based on experience of similar works and are considered a reasonable worst case for assessment purposes. **Appendix 6B** provides an indicative list of plant items.

[1] Magnox Ltd, (2022). Trawsfynydd Site Ponds Complex Demolition & Disposal Project Environmental Impact Assessment Scoping Report. Magnox Ltd, Blaenau Ffestiniog.

6.4 Study Area

6.4.1 The Study Area extends to 1km from the Proposed Development. This is a precautionary distance beyond which noise and vibration effects of the Proposed Development are judged to be negligible based on professional experience.

6.5 Baseline conditions

Current baseline

6.5.1 A survey was conducted near to the Trawsfynydd Site, at Ty Gwyn Farm, between 18 June 2019 and 25 June 2019. The Sound Level Meter was located in a free-field position at the closest location on publicly accessible land, approximately 85m from the southern façade of the residence. The meter was approximately 500m north-east of the Trawsfynydd site boundary and 270m to the west of the A470.

6.5.2 Weather conditions throughout the survey varied, however the wind speed did not exceed 5ms^{-1}. Periods that were affected by rain were excluded from the dataset used to inform the assessment.

6.5.3 Monitoring was conducted in line with the methodology outlined in *BS 7445-1:2003*[2]*: Description and measurements of environmental noise*. This details standardised guidance for the measurement of environmental noise. The pertinent details of BS 7445-1:2003[2] adopted in this assessment are as follows:

- *'Instrumentation to measure equivalent continuous A-weighted sound pressure level conforming to Type 1 as given in BS EN 61672-1:2013*[3]*';*
- *'All equipment shall be calibrated, and the calibration shall follow manufacturer's instructions'.*[4]*; and*
- *'Minimise the influence of reflections by, wherever possible, undertaking measurements at least 3.5m from any reflective surface other than the ground. Preferred measurement height is 1.2m to 1.5m above the ground'*.

6.5.4 A subjective assessment of the acoustic environment was undertaken during deployment and collection of the Sound Level Meter. Generally, it was noted to be a quiet location, typical of a rural environment. Noise from A470 road traffic dominated, and it was noted that free flowing traffic conditions (although non-continuous) occurred during both the deployment and collection of the meter. On deployment, faint steady-state industrial noise was audible from the Trawsfynydd site. During deployment and on collection, faint buzzing from nearby overhead pylons was audible. Natural sounds (such as birdsong and livestock) contributed to the overall acoustic environment.

[2] British Standards Institution (2003). *BS 7445-1:2003 Description and measurement of environmental noise Guide to quantities and procedures*. BSI; London, UK.
[3] British Standards Institution (2013). *BS 61672-1:2013 Electroacoustics. -Sound level meters. Specifications*. BSI; London, UK.
[4] All WSP sound monitoring equipment is calibrated at an accredited laboratory at a minimum interval of 24 months. To maintain confidence in recorded sound levels, sound level meters were field calibrated prior to and after use with the recommended manufacturer's calibrator. No significant drift (i.e. greater than 0.1dB) in calibration was recorded.

6.5.5 The survey data are considered representative of the baseline acoustic environment.

6.5.6 **Table 6-1** presents the results of the baseline noise monitoring for the periods defined in BS 5228[5].

Table 6-1 Baseline noise monitoring results at Ty Gwyn Farm

Assessment Period		$L_{Aeq,T}$ *(dB)	$L_{A90,T}$ **(dB)
Day	Monday – Friday (07:00 to 19:00 hrs)	48	35
	Saturday (07:00 to 13:00 hrs)	43	35
Evening & Weekends	Monday – Friday (19:00 to 23:00 hrs)	45	33
	Saturday (13:00 to 23:00 hrs)	50	36
	Sunday (07:00 to 23:00 hrs)	50	40
Night-time	Monday – Friday (23:00 to 07:00 hrs)	40	32
	Saturday (23:00 to 07:00 hrs)	44	34
	Sunday (23:00 to 07:00 hrs)	48	32
***$L_{Aeq,T}$**	Logarithmic average of the sound level, equivalent to the sound level of a steady sound having the same energy as a fluctuating sound over the same period T. Ambient and residual sound levels are described with this index. $L_{Aeq,T}$ is considered the best general-purpose index for environmental sound, as it is the index which generally best represents how sound levels are perceived.		
****LA90, T**	The $L_{A90,T}$ statistical sound index represents the sound level exceeded by 90% of the measurements during the period, T,. The $L_{A90,T}$ is used to indicate quieter times during the measurement period. It is commonly referred to as the background sound level and describes the quietest 10% of a measurement period.		

6.5.7 Many of the baseline results presented in **Table 6-1** correspond to Category A from the ABC method from BS 5228[5] (see **Table 6-5**). Therefore, the Proposed Development is considered to be situated in an area where low ambient noise levels dominate. This is consistent with the rural setting. Data presented in **Table 6-1** suggests that there were occasional high levels of night-time ambient noise. However, on review of contemporaneous audio files recorded by the meter, the high levels were likely influenced by the presence of livestock nearby.

6.5.8 Therefore, the Category A (**Table 6-5**) threshold values are considered to be the appropriate classification for these periods. As Category A is the most stringent

[5] British Standards Institution (BSI) (2008). *BS 5228-1 Code of practice for noise and vibration control on construction and open sites – Part 1*. BSI; London, UK.

criterion, applying this classification to all identified receptors is considered to be suitably conservative.

6.6 Future baseline

6.6.1 The Trawsfynydd site is located in a rural setting and, in general, it is anticipated that there would not be a significant shift in baseline conditions by the time that the Proposed Development works commence due to other developments or normal growth in road traffic flows. No other significant noise-generating works are planned at the Trawsfynydd site during the ponds demolition etc. works. Thus, the baseline at Ty Gwyn Farm (or at any of the other receptors considered) should not significantly change from that reported in **Table 6-1**.

6.6.2 The Proposed Development itself will not create noise at any receptor after the Works Phase is complete.

6.7 Consultation and engagement

6.7.1 Following receipt of the Scoping Opinion (**Section 6.9**), a meeting was held with Environmental Health Professionals at Gwynedd Council on 6th September 2023.

6.7.2 The meeting concluded with an agreed assessment approach, with the following items considered:

- A Precautionary Calculation of Road Traffic Noise (CRTN[6]) 'Basic Noise Level' assessment for receptors adjacent to A470 should be undertaken;
- The noise assessment should be undertaken in accordance with BS 5228 part 1[5];
- No operational noise is expected, and therefore can be scoped out of assessment;
- A blanket 'Category A' threshold (see **Table 6-5**) for all construction (demolition) noise receptors should be applied;
- Only non-noise emitting works, such as safety briefings, would be permitted to take place before Gwynedd Council preferred working hours (i.e. before 08:00); and
- Section 61 (Control of Pollution Act 1974[7]) pre-works agreements would be required for occurrences of noisy works outside of preferred working hours (e.g. concrete pours).

6.7.3 It was also noted by Gwynedd Council that the baseline characterisation was attained over a weeklong period prior to the coronavirus pandemic, was reasonably recent, and would therefore not be expected to be unrepresentative.

[6] Department of Transport, (1988). *Calculation of Road Traffic Noise*. HMSO, London.

[7] *Control of Pollution Act (1974)*. [Online] Available at: https://www.legislation.gov.uk/ukpga/1974/40/section/61 [Accessed 10 April 2024].

6.8 Scope of the assessment

Overview

6.8.1 The main scope of this chapter relates to assessments required to determine the potential likely significant effects due to noise and vibration from the Proposed Development upon human receptors.

6.9 Scoping Report

6.9.1 The Applicant submitted a Scoping Request on 15th September 2022, a final response from Flintshire County Council on behalf of Snowdonia National Park Authority (SNPA), with their formal Scoping Opinion, was issued on the 23rd March 2023.

6.9.2 The Scoping Report proposed scoping out vibration effects:

- Construction vibration, as the distance between source and receptors greatly exceeds the maximum distance that would lead to significant levels at the receptor locations;
- Vibration from road vehicles on the public highway. The primary mechanism for the creation of vehicle induced vibration is vehicles transiting over variations in the road surface. Design Manual for Roads and Bridges (DMRB) LA 111[8] guidance states (road):
  "vibration is scoped out of the assessment methodology as a maintained road surface will be free of irregularities … and under general maintenance, so operational vibration will not have the potential to lead to significant adverse effects."

In addition, the impacts due to vehicle induced vibration are not anticipated due to the low number of Heavy Goods Vehicles (HGV) movements (which at peak equates to two-way total flows of 26 HGV) associated with the Proposed Development. Further detail is provided within **Chapter 3: The Project and its Alternatives**.

6.9.3 The SNPA Scoping Opinion agreed with these points but stated that discussions should be entered with Gwynedd Council Public Protection Service to determine the scope of a noise and vibration assessment in accordance with that of Construction Noise Assessment BS 5228[5] ABC Method. Engagement was undertaken with Environmental Health Officers at Gwynedd Council on 6th September 2023 and the methodology was agreed (see **Section 6.7**).

6.10 Potential receptors

6.10.1 The identification of potential noise sensitive receptors (hereafter "receptors") has been based on relevant guidance, and the professional judgement of qualified technical specialists, who have undertaken a desk-based study and overseen baseline noise monitoring of the Trawsfynydd site.

[8] Standards for Highways, (2020). *Design Manual for Roads and Bridges LA 111 – Noise and vibration*. [online] Available at: https://www.standardsforhighways.co.uk/dmrb/search/cc8cfcf7-c235-4052-8d32-d5398796b364 [Accessed 10 April 2024].

6.10.2 The following considerations have been taken into account when identifying potential receptors:

- the extent to which the receptor will be affected by changes that are expected to result from the Proposed Development;
- the sensitivity of the receptors to the changes that are likely to occur;
- the likely magnitude, duration, and other characteristics of the effects;
- the importance or value of the receptor at a local, regional, and national level; and
- relevant best practice and guidance where specialist methodologies have been developed, as detailed below.

6.10.3 The Trawsfynydd site lies within a rural setting. The nearest sensitive human receptor locations are remote cottages and farmhouses. The receptors referenced in **Table 6-2** are considered to be the most exposed to the works or ancillary activity related to the Proposed Development. Therefore, minimising impacts at these receptors will also ensure that minimal impact from noise is experienced at residential receptors further afield.

Table 6-2 Potential receptors

Receptor	Type of receptor	Location with respect to the Proposed Development
Ty Gwyn Farm	Residential	Approximately 0.5km north-east of Application site boundary
Caersaeson	Residential	Approximately 1km north-west of Application site boundary
Cae Einion Alun	Residential	Approximately 1km north-west of Application site boundary
Unnamed residential property at OS grid location SH701380 across Llyn Trawsfynydd and adjacent to A470	Residential	Approximately 1km south-east of Application site boundary

6.11 Effects for Assessment

6.11.1 The effects of noise from the Proposed Development which have the potential to be significant and that have been assessed are summarised in **Table 6-3**, which considers the sources of noise scoped into the assessment and provide details of the effect.

Table 6-3 Effects for Assessment

Activity	Effect	Receptor
Decommissioning activity (e.g. vehicle movements on site, demolition, infilling, and capping of the ponds complex)	Generation of demolition and construction noise during activities such as demolition of structures, crushing and size reduction of concrete and masonry materials, use of concrete mixers, use of vehicles etc.	Residential properties presented in **Table 6-2**.

6.11.2 Noise from road vehicles on the public highway is considered not to be significant using applicable guidance however a screening assessment has been included in **Appendix 6C**.

6.11.3 All vibration impacts have been scoped out as discussed **Section 6.9** of this chapter.

6.12 Mitigating Factors

6.12.1 As part of the design process, a number of factors will act to reduce the potential for noise impacts. **Table 6-4** outlines how these factors may influence the actual noise levels.

Table 6-4 Summary of the mitigating factors

Receptor	Changes and effects	Influence
Existing receptors	Increase in ambient noise levels due to Proposed Development.	Temporary shelters and enclosed areas may be employed for demolishing some of the contaminated structures. This will provide an acoustic benefit and reduce noise propagation via barrier effects. Any such acoustic screening effects have not been included in the off-site noise predictions.
Existing receptors	Increase in ambient noise levels due to Proposed Development.	Any acoustic screening effect of the Resin Solidification Plant building and other large on-site buildings was not included in the off-site noise predictions but would be expected to reduce noise at receptors where the works are screened or partially screened by the buildings.

6.13 Assessment methodology

General approach

6.13.1 The assessment of construction and demolition noise effects has been undertaken in accordance with the ABC method provided in Annex E Section E.3.2 of

BS 5228-1[5]. This is a comparative assessment method which compares predicted construction noise levels with a "*threshold of significance*" determined based on the representative baseline sound levels.

6.13.2 Criteria, provided in the ABC method of assessing noise impacts to dwellings, for determining threshold categories to be used in the assessment, are provided in **Table 6-5**.

Table 6-5 BS 5228-1:2009+A1:2014[5] – Table E.1: Example threshold of potential significant effect at dwellings

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
Evenings and weekends [D])	55	60	65
Daytime (07:00−19:00) and Saturdays (07:00−13:00)	65	70	75
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. 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 $L_{Aeq, T}$ noise level for the period increases by more than 3 dB due to site noise. NOTE 3 Applied to residential receptors only. A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values. B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values. C) Category C: threshold values to use when 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.			

6.13.3 Noise levels associated with the proposed development have been predicted based on likely plant requirements (see **Appendix 6B**). Predictions take account of the number of plant items, the anticipated on-time of each plant item, propagation distance, ground effects (propagation over acoustically soft or hard ground). The likely plant item assumptions have been made using professional judgement and with reference to other developments of a similar nature.

6.13.4 Representative baseline sound levels have been used to determine thresholds of significance, in accordance with the ABC method[5], by comparison of the baseline sound levels, rounded to the nearest 5 dB, with threshold criteria for different days and times of day defined as categories A, B and C. Receptors falling within Category A experience lower baseline sound levels, and receptors falling within

Category C experience higher baseline sound levels. For example, for a receptor where there are lower ambient sound levels during weekday daytimes, where the representative weekday daytime ambient sound level rounded to the nearest 5 dB is less than 65 dB $L_{Aeq,12h}$, then this receptor would be considered as Category A during weekday daytimes, and the significance threshold would be 65 dB $L_{Aeq,12h}$. In this case, if the predicted construction noise level from the site works were to exceed 65 dB $L_{Aeq,12h}$ then this could indicate a potentially significant effect.

6.13.5 As outlined earlier in this chapter, baseline data indicate that baseline sound levels in the vicinity of the nearest receptor are low, and that the corresponding BS 5228[5] threshold category is Category A in all time periods. The other, more distant receptors considered are also assumed to be in Category A, being similarly rural locations.

6.13.6 To determine the significance of any potentially significant effects identified, a number of factors must be taken into account. BS 5228[5] states that "*The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect*".

6.13.7 Where a potentially significant impact has been identified, the character of the impact is defined by assessing the absolute level of construction noise. Absolute levels of construction noise have been assessed with reference to the criteria for ambient noise levels in BS 8233[9].

Significance evaluation methodology

6.13.8 The precise determination of sensitivity of receptor relies on professional judgement. **Table 6-6** details the categories of receptor sensitivity. These have been produced on the basis of experience of assessing similar facilities, and professional judgement.

Table 6-6 Receptor Sensitivity

Sensitivity	Examples
High	Hospital operating theatres, recording studios, specialised processing/manufacturing facilities.
Medium	Dwellings, schools, hotels.
Low	Offices, public amenity areas.
Very Low	Industrial and commercial premises.

6.13.9 **Table 6-7** provides the outline criteria that have been used to determine the impact magnitudes for construction noise, based on the ABC method for determining the significance of impacts provided in Annex E Section E.3.2. of BS 5228[5]. Following the baseline surveys, ambient sound levels were found to be below the lowest threshold categories in almost all cases. The outline criteria provided in **Table 6-7** are project specific, accounting for baseline conditions at the nearest receptors. As set out in **paragraph 6.13.6**, the determination of

[9] British Standards Institution (2014). *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*. BSI; London, UK.

significance requires consideration of the number of receptors affected and the character and duration of the impact.

Table 6-7 Magnitude of impact – demolition and construction activity noise

Magnitude	Description
High	Levels (development noise) at least 10dB greater than the threshold of significance, and likely to be very disruptive.
Medium	Levels (development noise) between 1 to 9dB above threshold of significance, and likely to cause disruption.
Low	Levels (development noise) between 9dB below and equal to threshold of significance.
Negligible	Levels (development noise) lower than 10dB below threshold of significance.

6.13.10 The evaluation of significance differs depending on the sensitivity of the assessed receptor(s). National noise policy and standards documents generally focus on the effects of noise on residential receptors in isolation, whilst there is a requirement within Welsh national noise policy and TAN11[10] (see **Appendix 6A**) to evaluate the effects on a community basis, such as within a neighbourhood. The evaluation of significance within a community is therefore a combination of advice derived from standards and policy, in addition to considerations of context and receptor sensitivity.

6.13.11 Following determination of the impact magnitude as explained above, the determination of the significance of effect will be undertaken using the matrix presented in **Table 6-8** and professional judgement.

[10] Planning Guidance (Wales) Technical Advice Note (Wales) 11, Noise (1997). [Online] Available at: https://www.gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf [Accessed 10 April 2024].

Table 6-8 Significance of effects matrix

		Magnitude of change			
		High	**Medium**	**Low**	**Negligible**
Sensitivity/importance/value	**High**	Major (Significant)	Major (Significant)	Moderate (Potentially significant)	Minor (Not significant)
	Medium	Major (Significant)	Moderate (Potentially significant)	Minor (Not significant)	Negligible (Not significant)
	Low	Moderate (Potentially significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)
	Very Low	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

6.13.12 As well as the significance criteria given in **Table 6-5** and **Table 6-8**, significant adverse effects due to Proposed Development activity noise could occur where moderate or major relatively large impacts are predicted to occur for prolonged periods of time, this is not predicted to be the case for this Proposed Development.

6.13.13 Detailed plant and equipment inventories and activity schedules that may be required for delivery of the works required for the Proposed Development were not available at the time of undertaking the relevant assessment and reporting in this Environmental Statement. Therefore, professional judgment has been applied, where necessary, to identify key plant and equipment requirements (see **Appendix 6B**) and relate these to the activities which are relevant to the delivery of the Proposed Development. The following activities have been identified:

- i: soft-strip;
- ii: main demolition - strengthening works, monoliths, possible erection of tented enclosure and demolition of ponds complex; and
- iii: capping of the slab and drainage installation.

It is probable that, for operational reasons, there may be some overlap of the soft-strip with the main demolition works such that these activities occur concurrently.

6.13.14 Noise levels at the nearest receptors have been predicted based upon reasonable worst-case assumptions with respect to the plant and equipment items, the quantity of such items required and the applicable sound powers. The total sound power of plant and equipment required for the main activities is presented below in **Table 6-9**. In terms of acoustic propagation, 100% soft ground has been assumed (to reflect the actual conditions) with no corrections for screening.

Table 6-9 Sound power levels derived from BS 5228-1[5]

Activities	Total sound power level dB(A)
i :Soft-strip (Months 1-4)	117
ii: Main demolition - Strengthening works, monoliths, erection of tented enclosure and demolition of ponds complex (Months 5-18):	125
iii Capping Slab and drainage installation (Months 19-24)	117

6.13.15 Based on the total sound powers per activity presented in **Table 6-9**, predicted noise levels at the nearest receptors are presented in **Table 6-10**. Note that in the event that in one part of the ponds complex "soft strip" (Activity i) is concurrent with main demolition in another part (Activity ii), the combined noise level would be in line with that provided by Activity ii (main demolition), because of the logarithmic addition of noise.

Table 6-10 Predicted activity noise levels at receptors (site noise only)

Receptor	Freefield sound pressure level dB(A)		
	Activity i	Activity ii	Activity iii
Ty Gwyn Farm	48	56	49
Caersaeson	41	48	42
Cae Einion Alun	41	49	42
Unnamed residential property at OS grid location SH701380	41	49	41

Table 6-11 Predicted total (activity plus ambient) noise levels at receptors

Receptor	Time Period	Freefield sound pressure level dB(A)		
		Activity i	Activity ii	Activity iii
Ty Gwyn Farm	Weekdays	**51**	**57**	**52**
	Saturday	**49**	**56**	**50**
Caersaeson*	Weekdays	**49**	**51**	**49**
	Saturday	**45**	**49**	**46**
Cae Einion Alun*	Weekdays	**49**	**52**	**49**
	Saturday	**45**	**50**	**46**
Unnamed residential property at OS grid location SH701380*	Weekdays	**49**	**52**	**49**
	Saturday	**45**	**50**	**45**

* Levels assume baseline as measured at Ty Gwyn and are therefore applied at all receptors.

6.13.16 The sound power levels above are based upon indicative plant list and operation assumptions outlined in **Appendix 6B**.

6.13.17 As discussed with Gwynedd Council, noise emitting works will not commence before 08:00, but non-noise emitting administrative and setup works are allowed to be conducted before this time.

6.13.18 The results in **Table 6-11** indicate that the maximum predicted noise level is at the Ty Gwyn Farm receptor. The predicted where noise levels at this location range between 48 to 56 dB $L_{Aeq,T}$ (49 to 57dB total). Predicted noise levels at all other receptor locations are between 41 to 49 (45 dB to 52 dB total) dB $L_{Aeq,T}$.

6.13.19 Based on the indicative calculations presented in **Table 6-11**, during the proposed working hours of Monday - Friday daytimes (08:00 to 18:00 hrs) and Saturday mornings (08:00 to 13:00 hrs), the works required for the Proposed Development would not result in an exceedance of the Category A threshold of significance, i.e. 65 dB $L_{Aeq,T}$, presented in BS 5228-1[5] at any of the receptors. Although the threshold of significance is not exceeded, the predicted noise levels are generally above existing ambient noise levels and would likely be audible.

6.13.20 Applying Table 6-7 impact magnitude criteria, noise impacts to Ty Gwyn farm are predicted to result in impacts of at most low magnitude during all activities. Based on Table 6-8, impacts of **Low** magnitude to receptors of **Medium** sensitivity result in effects of **Minor** significance and are **Not Significant**.

6.13.21 Noise impacts to the other receptors are predicted to result in impacts of at most negligible magnitude during all activities. Impacts of **Negligible** magnitude to receptors of **Medium** sensitivity result in effects of **Negligible** significance and are **Not Significant**.

6.13.22 There is potential that some limited night-time works could be required, for example manual surface finishing following the concrete pours for the cap. However, the noise emissions associated with any night-time works are considered likely to be lower than those presented above, due to relatively minimal plant requirements. Due to the reduced plant requirements, any night-time works required would be unlikely to result in any significant effects due to noise. Should any night-time works be required, a separate application under Section 61 of the Control of Pollution Act 1974[7] would be made addressing the potential for noise impacts and setting out any mitigation measures required to avoid significant effects.

6.14 Assessment of cumulative effects

6.14.1 Cumulative effects are considered in **Chapter 1: Introduction**. There is no significant accumulation of noise from this project in combination with other projects.

6.15 Consideration of optional additional mitigation or compensation

6.15.1 The assessment set out above has concluded that additional mitigation is not required, because even in the absence of mitigation there are not expected to be any significant impacts. However, the following best practice measures are

proposed for the works and implemented as part of the Construction and Demolition Environmental Management Plan:

- During the Works Phase, British Standard 5228[5]: *Noise and vibration control on construction sites and open sites* will be used as guidance for noise control during construction work (and also for demolition work, if still in force at the time). In particular, the following control measures will be applied:
  - All construction plant and equipment shall comply with EU noise emission limits.
  - All vehicles and mechanical plant shall be fitted with effective exhaust silencers.
  - All major compressors, generators etc. shall be 'sound reduced' models.
  - Machines in intermittent use shall be shut down in the intervening periods between working or throttled down to a minimum.
  - Where practicable ancillary plant such as generators, compressors and pumps shall be positioned so as to cause minimum noise disturbance.
  - Regular maintenance of plant and equipment will be undertaken.
  - No plant or machinery will be left running unnecessarily.
  - Reversing alarms shall be limited to "Broadband Reversing Alarm" or "White Noise Reversing Alarm".
  - Acoustic screening may be appropriate depending on actual noise levels at the nearest receptors – the use of such screening would be subject to a decision to be made at the time.

6.16 Conclusions of significance evaluation

6.16.1 The predicted noise effects from the Proposed Development are of Minor or Negligible significance and are considered **Not Significant** and therefore no further mitigation is required.

6.16.2 A summary of the results of the assessment is provided in **Table 6-12**.

Table 6-12 Summary of significance of effects

Receptor	Receptor sensitivity	Effect duration	Magnitude of impact	Significance
Ty Gwyn Farm	Medium	Temporary	Low	Minor (**Not Significant**)
Caersaeson	Medium	Temporary	Negligible	Negligible (**Not Significant**)
Cae Einion Alun	Medium	Temporary	Negligible	Negligible (**Not Significant**)
Unnamed residential property at OS grid location SH701380	Medium	Temporary	Negligible	Negligible (**Not Significant**)

6.17 Implementation of environmental measures

6.17.1 Compliance with environmental measures will be achieved by the works complying with the measures given in the **Construction and Demolition Environmental Management Plan** submitted with the planning application.

Appendix 6A
Relevant planning policy, legislation, and technical guidance

Relevant planning policy, legislation and technical guidance

This Appendix identifies the relevant national and local policy, legislation and guidance that has informed the scope of the assessment relevant to noise and vibration.

Planning policy

A summary of the relevant planning policies is given in **Table A-1**.

Table A-1 Planning policy relevant to noise and vibration

Policy reference	Policy relevance
National planning policies	
Technical Advice Note (TAN) 11: Noise[1] (1997)	Provides advice on noise and vibration, in particular discussing construction noise and recognising British Standard (BS) 5228[2] as primary guidance for addressing construction noise and vibration. In the context of this assessment the definition "construction noise" also includes demolition and other decommissioning activity.
Noise and Soundscape Action Plan 2018 – 2023[3] (2018)	Introduces the concept of soundscapes and reinforces that BS 52282is the suitable guidance for control of construction noise and vibration.
Local planning policies	
Eryri Local Development Plan 2016 – 2031 Written Statement[4] (2016)	Strategic Policy A states, to help deliver sustainable development in Snowdonia, the following should be taken into account: *'… iii. Safeguarding and improvement of the health, safety and economic and social well-being of local communities.'* Development Policy 1 specifically refers to amenity and noise: *'To conserve and enhance the 'Special Qualities' and purposes of the National Park, development will only be permitted where all the following apply: …. ix. The traffic implications of the development do not result in volumes or types of traffic which will create highway or safety problems on the local*

[1] Welsh Government (1997). *Planning Guidance (Wales), Technical Advice Note (Wales) 11, Noise*. [Online] Available at: https://gov.wales/sites/default/files/publications/2018-09/tan11-noise.pdf [Accessed 10 April 2024].
[2] British Standards Institution (BSI) (2008). *BS 5228-1 Code of practice for noise and vibration control on construction and open sites – Part 1*. BSI; London, UK.
[3] Welsh Government (2018). *Noise and soundscape action plan 2018-2023*. [Online] Available at: https://gov.wales/sites/default/files/publications/2019-04/noise-and-soundscape-action-plan.pdf [Accessed 10 April 2024].
[4] Snowdonia National Park Authority (n.d.). *Eryri Local Development Plan 2016 – 2031*. [Online] Available at: https://planning.snowdonia.gov.wales/policy/local-development-plan/ [Accessed 10 April 2024].

	road network, or significantly harm the landscape or amenity of local people. … xi. The development will not have an unacceptable adverse impact, through increased resource use, discharges or emissions, on public health … xii. The development is compatible with, and does not cause significant harm, to the environment, neighbouring residential amenity or the amenity of the Park by way of noise, dust, vibration, odour, light pollution, hazardous materials or waste production.' As such, if the assessment demonstrates that there will be no unacceptable adverse impacts due to noise arising from the Proposed Development, then the Proposed Development will accord with the requirements of Strategic Policy A and Development Policy 1.

Legislation

The following legislation presented in **Table A-2** is relevant to the assessment of the effects on (human) noise- and vibration-sensitive receptors.

Table A-2 Legislation relevant to noise and vibration

Legislation reference	Relevance
Control of Pollution Act (1974)[5]	The Control of Pollution Act makes provision for the agreement of noise levels and methods of working with Local Authorities such that working in accordance with the agreement is a defence against any prosecution under the act. The act established the concept of best practice as a defence against prosecution under the act. The act also enables the preparation of approved codes of practice for various sources. A subsequent statutory instrument identified BS 52282 as being the approved code of practice for noise on construction sites and open space under the act.
Environmental Protection Act (1990)[6]	The Act further establishes the best practice defence. It also establishes that noise from premises and also individual vehicles on the public highways can be a statutory nuisance if they are a nuisance or prejudicial to health. However, the Act clarifies that noise from mixed road traffic on the public highway is not a statutory nuisance (i.e. where the road noise is from a mixture of private and commercial vehicles, and where the road noise level is not dominated by vehicles associated with a single site or operation).

[5] *Control of Pollution Act 1974*. [Online] Available at: https://www.legislation.gov.uk/ukpga/1974/40/pdfs/ukpga_19740040_en.pdf [Accessed 10 April 2024].
[6] *Environmental Protection Act 1990*. [Online] Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 10 April 2024].

Technical guidance

The standards and guidance presented in **Table A-3** will be referred to when undertaking the assessment.

Table A-3 Guidance documents relevant to noise and vibration

Guidance	Relevance
BS 5228-1:2009+A1:20142 (2014)	Standard for construction noise magnitude of impact and threshold of sensitivity. Criteria, provided in the ABC method of assessing noise impacts to dwellings, for determining threshold categories to be used in the assessment, are provided in **Table A-4**.
BS 5228-2:2009+A1:2014[7] (2014)	Standard for construction vibration magnitude of impact and threshold of sensitivity.
International Organization for Standardization (ISO) 9613-2:1996[8] (1996)	The standard details the prediction methodology implemented in the noise modelling software.
NANR116: Open/Closed Window Research – Sound Insulation through Ventilated Domestic Windows (2007)[9]	This document contains the results of research carried out to determine sound reduction due to windows in different states of opening and will be referred to when considering likely internal sound levels due to a particular external sound level.
BS 8233:2014[10] (2014)	Standard which sets out ambient noise level targets within buildings.
Design Manual For Roads and Bridges Noise and Vibration (LA111)[11]	Guidance for assessing impact of road traffic noise and vibration.

[7] British Standards Institution (2014). *BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration*. BSI; London, UK.
[8] International Organization for Standardization (1996). *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*. ISO; Geneva, Switzerland.
[9] The Building Performance Centre, Napier University (2007). *NANR116: Open/Closed Window Research – Sound Insulation through Ventilated Domestic Windows*. [Online] Available at: https://www.napier.ac.uk/~/media/worktribe/output-239387/no010768134frppdf.pdf [Accessed 10 April 2024].
[10] British Standards Institution (2014). *BS 8233:2014 Guidance on sound insulation and noise reduction for buildings*. BSI; London, UK.
[11] Standards for Highways, (2020). *Design Manual for Roads and Bridges Noise and Vibration: LA 111 Noise and vibration*.[Online] Available at: https://www.standardsforhighways.co.uk/tses/attachments/cc8cfcf7-c235-4052-8d32-d5398796b364?inline=true [Accessed 10 April 2024].

BS5228[7] Annex E provides methods for determining the onset of significance from construction noise. The method used in this assessment is the ABC method (BS5228[7] Annex E table E1). Criteria for determining threshold categories to be used in the assessment provided in the ABC method are provided in **Table A-4**.

Table A-4 BS 5228-1:2009+A1:2014[2] – Table E.1: Example threshold of potential significant effect at dwellings

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

NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ 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 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 $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.
NOTE 3 Applied to residential receptors only.

[A)] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
[B)] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
[C)] Category C: threshold values to use when 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.

Appendix 6B
Indicative plant list

This Appendix provides an indicative plant list and noise calculations for the works phase of the Proposed Development. The following plant list assumptions have been used to determine representative sound power levels for the various phases of the project:

Activity i - Soft-strip:

- Wheeled excavator
- Telehandler
- Forklift truck
- Skid-steer loader with sweeper and bucket attachments
- Diesel generators
- Diesel air compressors
- Task lighting
- Lifting equipment including chain blocks, slings and shackles, four-wheel bogeys, skates (not considered to be noisy)
- Fuel storage containers (not considered to be noisy)
- Road sweepers
- Stihl Saws (assumes 2 saws operating for 1 hour simultaneously per day, internal or external)
- Various hand tools including disc cutters, angle grinder, drills etc
- (Worst case assumes 4No disc cutters or angle grinders, 2No drills, 2No SDS beakers and 4No impact wrenches, all operating simultaneously for periods of 1 hour in any day, internally or externally).

Activity ii - Strengthening works, monoliths, erection of tented enclosure (incl. foundations) and demolition of ponds complex :

- Eight tracked/wheeled excavators various sizes with details for key large excavators added below (with various attachments (Multi jaws/processor, selector grabs, pulverisers, breakers and buckets),

- (Worst case assumes 3x 25 tonne excavators with breaker attachment, operating simultaneously for 8 hours per day, days 5 days per week. All machines operating externally)
- Rubble conveyors
- Articulated haulers (dump trucks)
- Wire concrete saw
- Telehandlers
- Forklift trucks
- Skid-steer loaders with sweeper and bucket attachments
- Dust suppression equipment (misters)
- Vibrator rollers
- Wheeled loaders/loading shovels
- 32t tipper trucks
- Diesel generators
- Diesel Air Compressors
- Task lighting
- High-capacity mobile crushers units
- Assumes 2 Crushers with 2 No. 15 tonne excavators in support
- Operating in four separate campaigns, 5 hours per day for five days each campaign (i.e. a total a 20No. five hour days) simultaneous with peak operation of 25t excavators fitted with breakers.
- Located in site compound at the north end of the application site.
- Mobile settlement and dosing units (not considered to be noisy)
- Concrete batching plant
- Lifting equipment including chain blocks, slings and shackles, four-wheel bogeys, skates (not considered to be noisy)
- Mobile cranes
- Scissor lift
- 3” concrete vibrators (Pokers)
- M24 Lorry mounted Concrete Pump
- Concrete delivery trucks
- (Vibrators (3No.), concrete pump and concrete delivery trucks all operating simultaneously for each pour of concrete – assumes on-time of

10 mins in every 30 mins for 8 hours during peak, i.e. 16 deliveries in one day.

- Water pumps
- Mobile crane
- Fuel storage containers (not considered to be noisy)
- Road sweepers
- Various hand tools including disc cutters, angle grinder, drills, breakers etc

Activity iii: Capping Slab and drainage installation:

- Tracked/wheeled excavators with various attachments (breakers and buckets)
- 2 x 15 tonne excavators fitted with breakers and buckets, operating 5 hours per day, 5 days per week for three months, breaking out and excavating saw cut surface for drainage channel installation.
- Articulated haulers (dump trucks)
- Telehandlers
- Forklift trucks
- Skid-steer loaders with sweeper and bucket attachments
- Diesel generators
- Task lighting
- Mobile settlement and dosing units
- Lifting equipment including chain blocks, slings and shackles, four-wheel bogeys, skates (not considered to be noisy)
- Fuel storage containers (not considered to be noisy)
- Road sweepers
- Various hand tools including disc cutters, angle grinder, drills, breakers
- Vibrating screed
- M24 Lorry mounted Concrete Pump
- Concrete delivery trucks
- Poker vibrator x3
- Vibrators (3No.), vibrating screed, concrete pump and concrete delivery trucks all potentially operating simultaneously during each pour of concrete

- On-time 10 mins in every 30 mins for 10 hours during peak, i.e. 20 deliveries in one 10-hour day.
- Power float
- Diesel Air Compressors
- Water pumps
- Concrete batching plant
- Stihl Saws
- Floor saw
- Bar bending machine (not considered to be noisy)

Tables B-1 to **B-3** below provide noise calculations for indicative plant assumed to be used throughout the project work phases as provided in **Chapter 3: The Project and its Alternatives**.

Table B-1 Indicative plant items for use in Activity i of the Proposed Development

Plant type (BS 5228[1])	BS 5228 [1] Ref.	L_{Aeq} at 10m (dB)	Soft Ground	Resultant $L_{Aeq,T}$ at 10m	% on-time	On-time correction dB	Number of plant items	Number correction dB	Sound pressure level at 10m dB(A)	Sound Power Level dB(A)
Tracked/wheeled excavator (28t) with various attachments (breakers and buckets)	C.04 #64	75	100 % Soft	75	75	-1	1	0	74	102
Telehandlers x1	C.02 #35	71	100 % Soft	71	75	-1	1	0	70	98
Forklift trucks x1	C.04 #55	70	100 % Soft	70	75	-1	1	0	69	97
Skid-steer loaders with sweeper and bucket attachments x1	C.06 #34	76	100 % Soft	76	75	-1	1	0	75	103
Diesel generators	C.06 #39	65	100 % Soft	65	100	0	6	8	73	101

[1] British Standards Institution (BSI) (2008). *BS 5228-1 Code of practice for noise and vibration control on construction and open sites – Part 1*. London, UK.

Diesel air compressors x 3	C.03 #19	75	100 % Soft	75	25	-6	3	5	74	102
Task lighting	C.04 #85	66	100 % Soft	66	100	0	4	6	72	100
Water pumps	C.04 #88	68	100 % Soft	68	30	-5	5	7	70	98
Road sweepers x1	C.04 #90	76	100 % Soft	76	30	-5	1	0	71	99
Stihl Saws x 2	C.04 #93	80	100 % Soft	80	20	-7	4	6	79	107
Various hand tools including disc cutters, angle grinder, drills, breakers etc.	C.01 #7	93	100 % Soft	93	12.5	-9	2	3	87	115
								Total	89	117

Table B-2 Indicative plant items for use in Activity ii of the Proposed Development

Plant type (BS 5228[1])	BS 5228[1] Ref.	L_{Aeq} at 10m (dB)	Soft Ground	Resultant $L_{Aeq,T}$ at 10m	% on-time	On-time correction dB	Number of plant items	Number correction dB	Sound pressure level at 10m dB(A)	Sound Power Level dB(A)
Tracked/wheeled excavator (28t) with various attachments (breakers and buckets)	C.01 #12	82	100 % Soft	82	100	0	3	5	87	115
Tracked/wheeled excavator (28t) with various attachments (breakers and buckets)	C.02 #5	76	100 % Soft	76	75	-1	2	3	78	106
Rubble conveyors x2	C.10 #20	77	100 % Soft	77	25	-6	2	3	74	102
Articulated haulers (dump trucks) x3	C.01 #11	80	100 % Soft	80	75	-1	3	5	84	112
Wire concrete saw	C.04 #73	84	100 % Soft	84	10	-10	1	0	74	102
Telehandlers x2	C.02 #35	71	100 % Soft	71	50	-3	2	3	71	99
Forklift trucks x2	C.04 #55	70	100 % Soft	70	50	-3	2	3	70	98

Skid-steer loaders with sweeper and bucket attachments x2	C.06 #34	76	100 % Soft	76	50	-3	2	3	76	104
Vibrator rollers x2	C.02 #42	78	100 % Soft	78	50	-3	2	3	78	106
Wheeled loaders/loading shovels x2	C.06 #34	76	100 % Soft	76	75	-1	2	3	78	106
32t tipper trucks x2	C.10 #10	85	100 % Soft	85	50	-3	2	3	85	113
Diesel generators	C.06 #39	65	100 % Soft	65	100	0	6	8	73	101
Diesel Air Compressors x 4	C.03 #19	75	100 % Soft	75	25	-6	4	6	75	103
Task lighting	C.04 #85	66	100 % Soft	66	25	-6	6	8	68	96
Concrete batching plant x1	M.01 #1	78	100 % Soft	78	50	-3	1	0	75	103
Mobile cranes x 2	C.04 #46	67	100 % Soft	67	20	-7	1	0	60	88
Scissor lift x2	C.04 #59	78	100 % Soft	78	10	-10	2	3	71	99

3" concrete vibrators (Poker) x 3	C.04 #33	78	100 % Soft	78	10	-10	2	3	71	99
M24 Lorry mounted Concrete Pump x1	C.04 #24	67	100 % Soft	67	20	-7	3	5	65	93
Concrete delivery trucks x3	C.04 #20	80	100 % Soft	80	20	-7	3	5	78	106
Water pumps x6	C.02 #45	65	100 % Soft	65	100	0	6	8	73	101
Road sweepers x2	C.04 #90	76	100 % Soft	76	10	-10	2	3	69	97
Various hand tools including disc cutters, angle grinder, drills, breakers etc	C.04 #93	80	100 % Soft	80	20	-7	2	3	76	104
Various hand tools including disc cutters, angle grinder, drills, breakers etc	C.01 #7	93	100 % Soft	93	10	-10	15	12	95	123
High-capacity mobile crushers units	C.01 #14	82	100 % Soft	82	68	-2	2	3	83	111
								Total	97	125

Table B-3 Indicative plant items for use in Activity iii of the Proposed Development

Plant type (BS 5228[1])	BS 5228[1] Ref.	L_{Aeq} at 10m (dB)	Soft Ground	Resultant $L_{Aeq,T}$ at 10m	% on-time	On-time correction dB	Number of plant items	Number correction dB	Sound pressure level at 10m dB(A)	Sound Power Level dB(A)
Tracked/wheeled excavator (28t) with various attachments (breakers and buckets)	C.04 #64	75	100 % Soft	75	75	-1	1	0	74	102
Tracked/wheeled excavator (6t) with various attachments (breakers and buckets)	C.04 #67	74	100 % Soft	74	75	-1	1	0	73	101
Tracked/wheeled excavator (3t) with various attachments (breakers and buckets)	C.04 #68	65	100 % Soft	65	75	-1	1	0	64	92
Articulated haulers (dump trucks) x2	C.01 #11	80	100 % Soft	80	50	-3	2	3	80	108
Telehandlers x1	C.02 #35	71	100 % Soft	71	50	-3	1	0	68	96
Forklift trucks x1	C.04 #55	70	100 % Soft	70	50	-3	1	0	67	95
Skid-steer loaders with sweeper and bucket attachments x1	C.06 #34	76	100 % Soft	76	50	-3	1	0	73	101

Diesel generators	C.06 #39	65	100 % Soft	65	100	0	6	8	73	101
Task lighting	C.04 #85	66	100 % Soft	66	25	-6	6	8	68	96
Road sweepers x2	C.04 #90	76	100 % Soft	76	10	-10	2	3	69	97
Various hand tools including disc cutters, angle grinder, drills, breakers etc	C.04 #93	80	100 % Soft	80	10	-10	15	12	82	110
Poker vibrator x 3	C.04 #33	78	100 % Soft	78	33	-5	3	5	78	106
Vibrating screed x1	C.04 #35	63	100 % Soft	63	25	-6	1	0	57	85
Power float x3	M.01 #2	83.7	100 % Soft	83.7	25	-6	3	5	82	110
M24 Lorry mounted Concrete Pump x1	C.04 #24	67	100 % Soft	67	50	-3	1	0	64	92
Concrete delivery trucks x3	C.04 #20	80	100 % Soft	80	50	-3	3	5	82	110
Diesel Air Compressors x 3	C.03 #19	75	100 % Soft	75	10	-10	3	5	70	98

Water pumps	C.02 #45	65	100 % Soft	65	100	0	6	8	73	101
Concrete batching plant x1	M.01 #1	78	100 % Soft	78	50	-3	1	0	75	103
Stihl Saws x 2	C.05 #36	87	100 % Soft	87	0.233333	-26	2	3	64	92
								Total	89	117

Appendix 6C
Traffic Noise Assessment

This Appendix provides an overview of the screening assessment carried out to determine whether detailed assessment was required for traffic noise.

The Scoping Report[1] chapter for Noise and Vibration proposed that traffic noise would be scoped into this Environmental Statement due to the potential for noise effects from road traffic associated with the Proposed Development.

The Traffic and Transport assessment for Environmental Impact Assessment (EIA) scoping was based upon "Guidelines for the Environmental Assessment of Road Traffic (GEART)"[2] criteria. The relevant Scoping Chapter advised that GEART[2] provides two rules that are used to establish where an environmental assessment of traffic effects on road linkages should be carried out:

- Rule 1 – where traffic flows are predicted to increase by more than 30% or where the number of HGVs is predicted to increase by more than 30%.
- Rule 2 – where traffic flows in sensitive areas are predicted to increase by 10% or more. These include locations with vulnerable road users such as schools, nursing homes and locations with high pedestrian activity.

For this Proposed Development, estimated traffic numbers result in predicted increases of 3% or less in total traffic on all relevant road links, with predicted maximum increases in HGV numbers on any link being below 30%.

Thus, for Traffic and Transport it was concluded at scoping stage that there was no potential for significant effects from traffic due to the Proposed Development. Therefore, the scoping out of traffic effects could be carried through into **Chapter 6: Noise and Vibration** of this Environmental Statement.

Nevertheless, a screening assessment has been undertaken (**Table C-1**). **Figures 3B1** and **3B2** of **Chapter 3: The Project and its Alternatives** were used to determine the Project traffic flows (worst-case 2-way total flows of 26 HGV and 38 cars/vans were used in the calculation). This approach is considered to be conservative as the 18-hour flows that usually form the basis of the calculation will be less impacted by the project traffic than the 12-hour as assessed.

The 0 to 0.1dB change in is a negligible magnitude of effect on all road links. Therefore, no further assessment of effects at individual receptors is necessary.

Table C-1 provides noise calculations for traffic movements throughout the project.

[1] Magnox Ltd, (2022). Trawsfynydd Site Ponds Complex Demolition & Disposal Project Environmental Impact Assessment Scoping Report. Magnox Ltd, Blaenau Ffestiniog.
[2] Institute of Environmental Assessment (1993), *Guidelines for the Environmental Assessment of Road Traffic (GEART).* Lincoln, UK.

Table C-1 Calculation of Road Traffic Noise Comparative Basic Noise Level assessment

Link	Baseline traffic (2024)				Baseline (2024) plus Project traffic				Noise Level Change $L_{Aeq, 12hr}$(dB)
	Flow - 12hr Annual Average Weekday Traffic (AAWT)	%HGV	Mean Speed (kph)	Calculated Noise Level $L_{Aeq, 12hr}$ (dB)	Flow 12hr AAWT	%HGV	Mean Speed (kph)	Calculated Noise Level $L_{Aeq, 12hr}$ (dB)	
A496 (Rhyd-y-sarn)	3,353*	6.1	88	68.4	3,417*	6.8	88	68.4	0.0
A487 (north-west of A487/A470 junction)	5,000	6.0	88	81.8	5,064	6.4	88	82.0	+0.1
A470 (south of the Trawsfynydd site access)	6,360	4.1	88	82.5	6,424	4.5	88	82.6	+0.1
***Low flow correction applied**									