TECHNICAL REPORT

POPE'S HILL LARGE SCALE RESIDENTIAL DEVELOPMENT
NOISE IMPACT ASSESSMENT
CORK

For:

Coakley O'Neill Town Planning Ltd.
The NSC Campus
Mahon
Cork

Report Prepared By:
Brian S. Johnson MIOA

Our Reference:
26/0665R01

Date:
7 July 2026

Tel: +353 21 242 8704
Web: www.clvconsulting.ie
Email: info@clvconsulting.ie
Postal Address: The NSC Campus, Mahon, Cork, Ireland.

CONTENTS PAGE

1.0 INTRODUCTION

Coakley O'Neill Town Planning Ltd have lodged a planning permission application in respect of a large-scale residential development proposed to be located on Pope's Hill on the north side of Cork.

The proposed development is to consist of the following elements:

- the demolition of a terrace of 4 no. existing dwellings, 3 no. of which are derelict, and ancillary sheds and their replacement with 1 no. single-storey 3-bed detached bungalow (116 sqm.) accessed via a modified private driveway;
- the construction of 103 no. dwellings (10,980.6 sqm.) of between 2 - 4 storeys in height, 50 no. townhouses and 53 no. duplex apartments;
- the inclusion of a ground floor crèche (217.4 sqm.) with rear garden and front set down area; and
- the provision of 104 no. car parking spaces, 128 no. cycle spaces, internal roads and pathways, including internal traffic calming measures and pedestrian crossings; the provision of private, communal and public open space, including all balconies and terraces; hard and soft landscaping and boundary treatments; retaining walls; bin stores; revisions to the existing access; a. pedestrian connection with Glentrasna Park to the north; and all associated site development, landscaping and boundary treatment, and drainage works, including SuDS.

Following the planning application submission, a further information request was received from Cork City Council which stated the following in respect of noise emissions from the proposed development:

> The Developer shall submit to the planning authority a noise report prepared by a noise specialist consultant. The report should address, but not be limited to, the following: Identification of surrounding sensitive noise receptors. Prediction of noise levels sources associated with the development and their expected noise level output during the construction and operational phases of the proposed development. What noise mitigation measures would be put in place? What are likely effects on nearby noise receptors? The applicant needs to clarify if there is mechanical equipment (extractor fans, air-con, heat pumps, etc.) that will generate noise.

In order to respond to this FI request, CLV was engaged to carry out a noise impact assessment for the proposed development.

The purpose of this assessment was to consider the potential for the proposed residential development to impact on identified noise sensitive receptors in the vicinity during both the construction and operational stages and either confirm acceptability or recommend necessary noise mitigation measures as required.

The following document details the results of this assessment.

2.0 PROPOSED DEVELOPMENT LOCATION & LAYOUT

As stated in the Introduction section, the proposed development is a large-scale residential development proposed to be located on an existing greenfield land area (along with four existing residential properties that will be demolished) on Pope's Hill in The Glen area on the north side of Cork.

The proposed development site is bordered to the north and west by residential developments, to the east by industrial buildings and to the south by sports fields and car parking areas. There is also what appears to be a derelict dwelling located near the northeast corner of the site. It has therefore been considered with the residential dwellings to the north in this instance as a worst case approach.

See Figure 1 below.

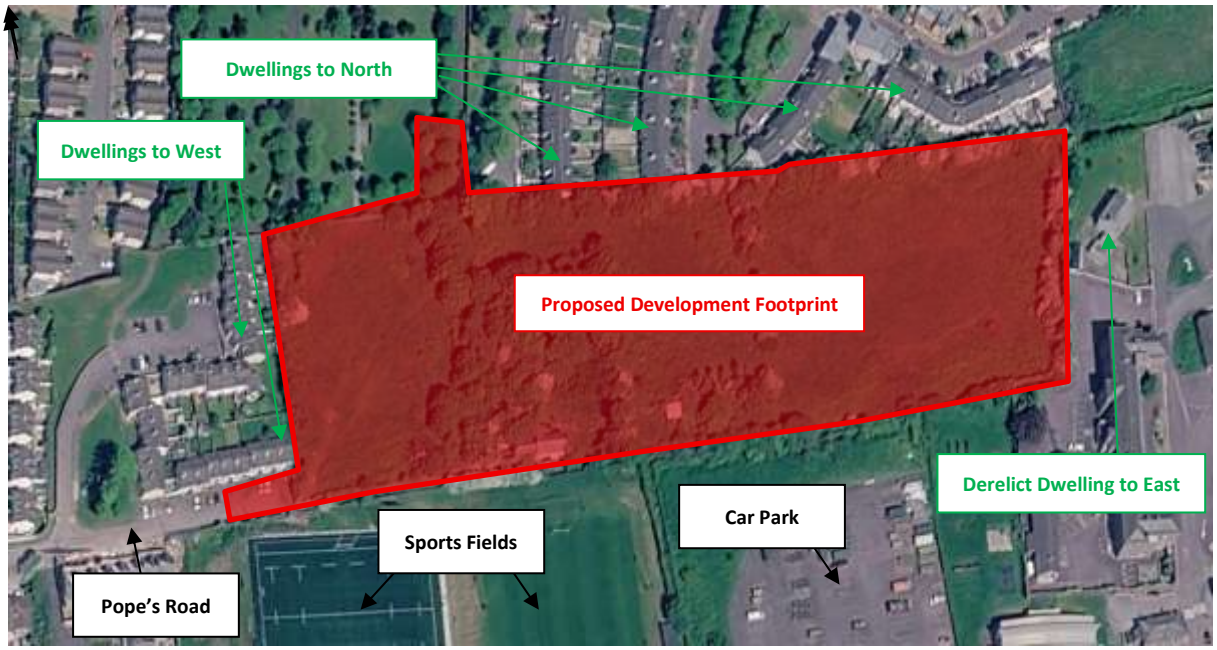

Figure 1 Proposed Development Location & Nearest Noise Sensitive Receptors

A general layout of the proposed development is provided in Figure 2 below.

Figure 2 Proposed Development Layout

3.0 RECEIVING ENVIRONMENT

An environmental noise monitoring survey was conducted in order to quantify the ambient external noise environment in the vicinity of the proposed development site. The survey was conducted in general accordance with *ISO 1996-2: 2017: Acoustics - Description, measurement and assessment of environmental noise.*

Specific details are set out in the following sections.

3.1 Measurement Locations

Although the proposed development site is fairly large, its noise sensitive receptors are limited in concentration to the western and northern boundaries. The nearest noise sensitive receptors are the residential dwellings located in these areas.

Given this situation, two measurement locations were deemed to be appropriate in order to obtain a robust range of the ambient noise levels in the vicinity of the noise sensitive receptors in this instance.

These locations are summarised as follows and shown in Figure 3 below:

NML 1: in the vicinity of the development boundary with the dwellings to the north.

NML 2: in the vicinity of the development boundary with the dwellings to the west.

Figure 3 Site Layout Showing Approximate Position of Measurement Locations

3.2 Survey Period

Ambient noise monitoring was conducted over a continuous 24-hour period from 10:00hrs on 9 July to 10:00hrs on 10 July 2026. Although the survey was unattended, audio measurements were recorded so that noise sources could be identified during post processing of the data.

The weather conditions measured at Cork Airport during the survey are detailed in Figure 4 below.

Date	Rainfall (mm)	Max Temp (°C)	Min Temp (°C)	Grass Min Temp (°C)	Mean Wind Speed (knots)
09/07/2026	tr	23.7	14.1	9.3	6.3

Date	Rainfall (mm)	Max Temp (°C)	Min Temp (°C)	Grass Min Temp (°C)	Mean Wind Speed (knots)
10/07/2026	tr	25.8	14.8	9.8	6.3

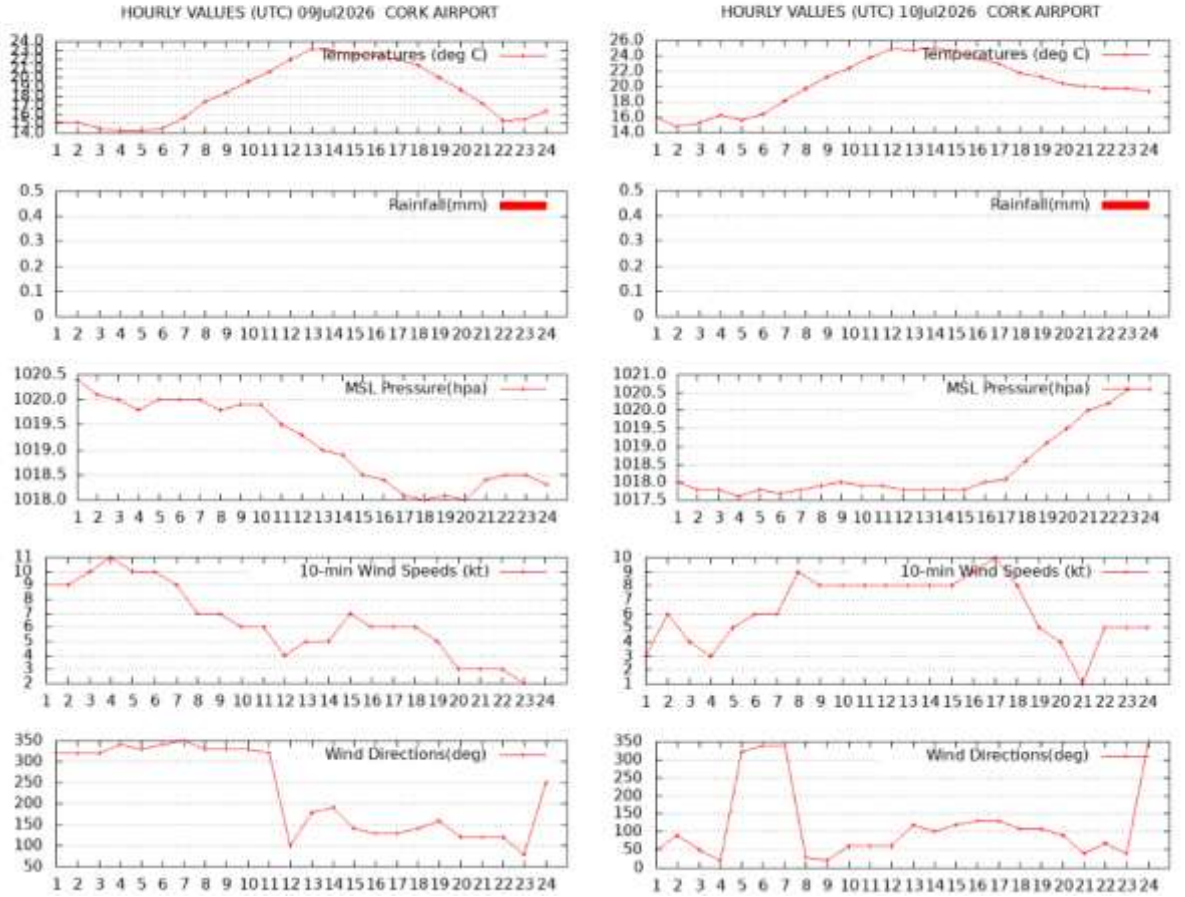

Figure 4 Weather Conditions Observed at Cork Airport during the Survey Monitoring Period

3.3 Personnel & Instrumentation

Brian S. Johnson (CLV) conducted the noise monitoring survey measurements. He is an internationally experienced acoustic consultant who has been working in the fields of architectural / building acoustics and noise control since 1994. He has been based in America, Europe, Asia and Australia and is a member of the Institute of Acoustics (IOA). Brian also has extensive knowledge in the field of environmental acoustics and holds a Certificate of Competence in Environmental Noise Measurements from the IOA.

The measurements were conducted using NTI Audio Type XL2 & XL3 Sound Level Meters (Serial #A2A-11070-EO & #A3A-01453-FO). The microphones were fitted with 90mm windshields and the measurement apparatuses were check calibrated both before and after the survey using a Casella CAL 200 Acoustic Calibrator (Serial #18882). The microphones were positioned approximately 1.4m above the ground at both measurement locations.

The calibration certificates for the sound level meters and calibrator are provided in Appendices B & C respectively of this document.

3.4 Procedure

Noise levels were measured continuously for the full extent of the 24-hour monitoring period at both locations. The sound level meters were set to average over periods that were 15 minutes in duration and to record audio continuously. The results were saved to the instrument memory for later download and analysis.

The sound level meter was calibrated both before and after the measurement survey and no significant drift was noted.

3.5 Measurement Parameters

The statistical noise monitoring results are presented in terms of the following five parameters:

L_{Aeq} is the equivalent continuous sound level. It is a type of average used to describe a fluctuating noise in terms of a single noise level over the sample period and is typically used as a descriptor for the ambient noise level.

L_{Amax} is the instantaneous maximum sound level measured during the sample period.

L_{Amin} is the instantaneous minimum sound level measured during the sample period.

L_{A10} is the sound level that is exceeded for 10% of the sample period.

L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to $2x10^{-5}$ Pa.

Noise characteristics in this report are also considered in respect of the following two aspects:

Tonal Noise: Sounds which cover a range of only a few Hz which contain a clearly audible tone, i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.

Impulsive Noise: A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background (pressurised air release, gunshot etc.).

3.6 Measurement Results

The full tabulated survey results over the entirety of the survey monitoring period for all quantities at both monitoring locations are provided in Appendix A. The measured L_{Aeq} & L_{A90} ambient noise level averages and average ranges for the full daytime (07:00 to 23:00hrs) and night time (23:00 to 07:00hrs) periods are summarised in Table 1 on the following page.

Location	Daytime Period				Night Time Period			
	Ambient Noise Level		Background Noise Level		Ambient Noise Level		Background Noise Level	
	Noise Level Range (dB $L_{Aeq,15min}$)	Average Noise Level (dB $L_{Aeq,16hr}$)	Background Noise Level Range (dB $L_{A90,15min}$)	Average Background Noise Level (dB $L_{A90,16hr}$)	Noise Level Range (dB $L_{Aeq,15min}$)	Average Noise Level (dB $L_{Aeq,8hr}$)	Background Noise Level Range (dB $L_{A90,15min}$)	Average Background Noise Level (dB $L_{A90,8hr}$)
NML 1 (West)	32 - 51	41	27 - 42	36	26 - 45	36	22 - 39	31
NML 2 (North)	33 - 54	42	26 - 40	35	26 - 45	38	24 - 38	31

Table 1 Summary of Daytime & Night Time Period Noise Level Ranges & Averages (dB $L_{Aeq,T}$ & dB L_{A90})

4.0 ASSESSMENT STRATEGY OVERVIEW

In order to assess the potential for noise impacts from the proposed development, the following prediction methodology was adopted in this instance:

- ✓ Noise measurements were conducted in order to quantify the ambient noise level environment in the vicinity of the nearest noise sensitive receptors (refer to Section 3.0).
- ✓ The measured ambient noise levels were used to establish maximum construction noise emission criteria limits (refer to Section 5.1) along with establishing operational noise emission criteria limits from best practice published guidance (refer to Section 5.2).
- ✓ Construction noise emission levels were calculated in accordance with *BS 8233* at each of the nearest noise sensitive receptors based on sound power / pressure levels for expected equipment / processes and estimated utilisation periods along with standard appropriate corrections for attenuation with distance, screening from buildings / perimeter site hoarding and the presence of nearby reflecting surfaces (refer to Section 6.1).
- ✓ Operational noise emission levels were calculated at each of the nearest noise sensitive receptors (in accordance with *BS 8233*) based on all identified operational noise source levels along with standard appropriate corrections for attenuation with distance, screening from buildings and the presence of nearby reflecting surfaces (refer to Section 6.2).
- ✓ The cumulative results of these operational calculations were then used to assess the potential for a noise impact based on a comparison with the criteria limits at the nearest noise sensitive receptors (refer to Section 6.2).

All noise prediction calculations were conducted in general accordance with *ISO 9613-2:2024 Acoustics - Attenuation of sound during propagation outdoors Part 2: Engineering method for the prediction of sound pressure levels outdoors*

5.0 NOISE EMISSION CRITERIA

5.1 Construction Phase

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and may consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the British Standard *BS 5228 - 1: 2009+A1: 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Part 1: Noise*.

The approach adopted in this instance calls for the designation of a noise sensitive location into a specific category (A, B or C) based on exiting ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded, indicates a significant noise impact is associated with the construction activities.

Table 2 below sets out the values which, when exceeded, indicate a significant effect at the facades of residential receptors as recommended by *BS 5228 - 1*. Please note that these are cumulative levels, i.e. the sum of both ambient and construction noise levels.

Assessment Category & Threshold Value Period (L_{Aeq})	Threshold Value, Decibels (dB)		
	Category A [A]	Category B [B]	Category C [C]
Night-Time (23:00 to 07:00hrs)	45	50	55
Evenings & Weekends [D]	55	60	65
Daytime (07:00 - 19:00) & Saturdays (07:00 - 13:00)	65	70	75

Table 2 Example Threshold of Significant Effect at Dwellings

A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

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

C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.

D) 19:00 - 23:00 weekdays, 13:00 - 23:00 Saturdays and 07:00 - 23:00 Sundays.

For the appropriate period (e.g. daytime), the ambient noise level is determined and rounded to the nearest 5dB. In this instance, the measured daytime ambient noise levels in the vicinity of the proposed development were measured in the range of 32 - 54dB L_{Aeq} during daytime periods (refer to Section 3.6). All of the residential dwellings in the vicinity of the proposed development will therefore be considered as Category A receptors.

The maximum criteria limits summarised in Table 3 below will therefore be applied at the facades of all the nearest noise sensitive receptors in respect of construction noise emissions from the proposed development.

Noise Sensitive Receptor	Threshold Value, Decibels (dB $L_{Aeq,T}$)		
	Daytime Periods (07:00 - 19:00) & Saturdays (07:00 - 13:00)	Evening Periods 19:00 - 23:00 Weekdays 13:00 - 23:00 Saturdays & 07:00 - 23:00 Sundays	Night Periods (23:00 to 07:00hrs)
All Residential Buildings	65	55	45

Table 3 Established Threshold / Maximum Construction Noise Criteria Limits for Proposed Development

If the total noise level (i.e. construction noise plus existing ambient noise level) exceeds the appropriate category value (e.g. 65dB $L_{Aeq,T}$ during daytime periods), then a relative noise impact is deemed to have occurred.

Note also that the levels listed in Table 3 are $L_{Aeq,T}$ noise levels (defined in Section 3.5) which are typically averaged over hourly periods.

5.2 Operational Phase

There is no Irish Standard containing guidance that is applicable to residential developments in this instance. In the absence of such standards, best practice dictates that the potential noise impact of the proposed development is assessed against appropriate best practice British and / or International Standards.

In this instance, appropriate guidance is contained within *BS 8233 (2014): Guidance on Sound Insulation and Noise Reduction for Buildings*. This British Standard sets out recommended noise limits for indoor ambient noise levels in residential buildings as detailed in Table 4 below.

Activity	Room Type	Design Criterion $L_{Aeq,T}$ (dB)	
		Daytime (07:00 - 23:00hrs)	Night Time (23:00 - 07:00hrs)
Resting / Sleeping Conditions	Living Rooms	35dB $L_{Aeq,16hr}$	-
	Bedrooms	35dB $L_{Aeq,16hr}$	30dB $L_{Aeq,8hr}$

Table 4 Recommended Indoor Ambient Noise Levels for Residential Buildings from *BS 8233 (2014)*

For the purposes of this assessment, it is necessary to derive external limits based on the internal criteria listed in the table above. This is done by factoring in a degree of noise reduction afforded by an open window, which was considered as being 15dB.

Applying the 15dB factor to the values from the *BS 8233* table, the following criteria would apply at the façades of all the nearby residential buildings:

- ***Daytime (07:00 to 23:00 hours)*** ***50dB $L_{Aeq,16hr}$***
- ***Night-time (23:00 to 07:00 hours)*** ***45dB $L_{Aeq,8hr}$***

In order to assist with the interpretation of the noise associated with changes in noise level, Table 5 below offers guidance as to the likely impact associated with any particular relative change.

Change in Sound Level (dB L_{Aeq})	Subjective Perception	Impact
< 3	Inaudible	Imperceptible
3 - 5	Perceptible	Slight
6 - 10	Up to a doubling of loudness	Moderate
11 - 15	Over a doubling of loudness	Significant
> 15		Profound

Table 5 Likely Impact Associated with Change in Noise Level

6.0 NOISE IMPACT ASSESSMENT

6.1 Construction Phase

During the construction phase, a variety of plant items will be in use such as lifting equipment, dumper trucks and general construction plant items. Each of these items will generate significant levels of noise and will need to have noise emissions predictions carried out in respect of same.

The nearest noise sensitive receptors to the proposed development are only a few metres away from the nearest proposed development buildings at two locations (63 Pope's Road to the west and 15 Glentrasna Crescent to the north). There will be significant exceedances of the recommended thresholds when these buildings are under construction. However, construction activities for the rest of the development will almost all be located a minimum distance of 20m away from the nearest noise sensitive receptors to both the north and west and, for most of the time, plant and equipment will be at a much greater distance than that. Consequently, it will therefore have a lesser impact.

The following assumptions have also been made in the preparation of these construction noise prediction calculations:

- utilisation of all equipment of 66% of the 12-hour working day (i.e. 8 hours)
- the site will be surrounded by a 2.4m high solid hoarding
- construction activities are only occurring at a distance of 20m away from each noise sensitive receptor.

Table 6 below indicates typical noise levels that would be expected from the proposed construction site during the various phases of the construction project and their predicted level at each of the nearest noise sensitive receptors.

Phase	Plant Item (BS 5228 Ref)	At 10m (dB)[1]	Predicted Noise Level (dB L_{Aeq})	
			Residential Receptors to the North	Residential Receptors to the West
Excavation / Site Preparation	Tracked Excavator (C2.22)	72	68	68
	Dumper (C3.100)	74		
	Wheeled Loaded Lorry (D3.1)	75		
Demolition	Pulveriser on Tracked Excavator (C1.5)	72	65	64
	Tracked Crusher (C1.14)	82		
	Pulveriser on Tracked Crusher (C1.4)	84		
Foundation Laying	Compressor (C6.19)	72	66	66
	Poker Vibrator (C6.40)	73		
	Cement Mixers (C6.6)	71		
General Construction	Compressor (C7.70)	70	69	69
	Diesel Hoist (C7.97)	73		
	Pneumatic Circular Saw (C.79)	75		
	Generator (C7.51)	72		
	Dumper (C3.100)	74		
Roadworks	Surfacing	73	63	69

Table 6 Predicted Noise Emission Levels at Nearest Noise Sensitive Receptors During Construction Phases

The values presented in Table 6 represent the worst case condition when construction plant / activities will be operational at the nearest development dwelling to the NSRs without provision of noise control measures / mitigation factors (other than perimeter hoarding).

The dwellings directly adjoining the boundary to the north and west will experience construction sound emissions levels above 65dB L_{Aeq} during all construction phases. The magnitude of these levels at these NSRs is due to the proximity of both the proposed development buildings and the adjacent NSRs to their shared site boundary. Although this will be for a short duration when construction works are being carried out near the NSRs located along the proposed development common boundary, the mitigation measures for construction works outlined in Section 7.1 should still be provided.

[1] Sound data from *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration on construction and open sites*.

Note that noise impacts from construction activities carried out in close vicinity to noise sensitive receptors will always be expected to cause noise impacts. The necessity for these activities to be managed / coordinated with local residents (in conjunction with the other best practice noise reduction measures detailed in Section 7.1) therefore becomes critical for minimising these impacts.

There is also expected to be an additional moderate degree of noise impact on the dwellings to the west along Pope's Road to the west due to the construction traffic ingress and egress. This construction traffic will be managed as detailed in the Outline Construction Traffic Management Plan provided by Punch Consulting Engineers.

6.2 Operational Phase

There are four principal sources of noise that are expected to arise during the operational phase of the proposed development in this instance. These sources are as follows:

- Building Services Plant
- Creche External Play Area
- Vehicular Traffic on New Development Roads
- Additional Vehicular Traffic on Public Roads

Each one of these potential sources of noise is considered in turn in the following sections.

Building Services Plant

As part of the design of the proposed development, there will be a limited number of electrical / mechanical plant operating to service it; most of it will be capable of generating noise to some degree.

Although the MEP design is not sufficiently developed at this stage, it is understood that the noise producing element of the development building services strategy for all the proposed development buildings (including the creche) will be exhaust air heat pumps (EAHPs) which will locate externally in rear garden areas. There will also be some small toilet / kitchen exhaust fans in each dwelling and the creche but these will all located internally and are expected to have negligible external noise emissions.

In order to provide a meaningful basis of assessment for the EAHPs, it was considered that they would be similar to the Mitsubishi Ecodan R290 unit which has a manufacturer listed sound power level of 58dB(A).

Taking into consideration this noise level for each of these units along with appropriate corrections for distance, screening and the presence of nearby reflecting surfaces and assuming that 75% of these units in the vicinity are operating simultaneously, the resultant noise levels at the nearest noise sensitive receptors have been calculated and are predicted to be as follows:

Noise Sensitive Receptor	**Noise Level**
➢ Residential Receptors to North	30 dB $L_{Aeq,T}$
➢ Residential Receptors to West	20 dB $L_{Aeq,T}$

All the predicted noise emission levels above are below both the daytime and night time criteria at all nearby noise sensitive receptors.

In respect of tonal noise emission elements, heat pumps typically are not tonal and the predicted noise emissions of these units are predicted to be both below all ambient noise levels and the average background noise level in the vicinity and would therefore not be significant enough to manifest anyway.

No impulsive elements are expected from heat pump operation.

No further mitigation measures would therefore be required in respect of building services noise emissions from the proposed development (apart from either ensuring heat pumps selections are similar to the Mitsubishi Ecodan R290 units or that they have a manufacturer listed sound power levels of not more than 58dB(A)).

Creche External Play Area

The proposed development creche will be located at the southwest corner of the proposed development boundary. It will have an external play area located along the northern facade of the building and enclosed with 2m high solid perimeter fencing.

It is labelled as the 'Creche Garden' in Figure 5 below.

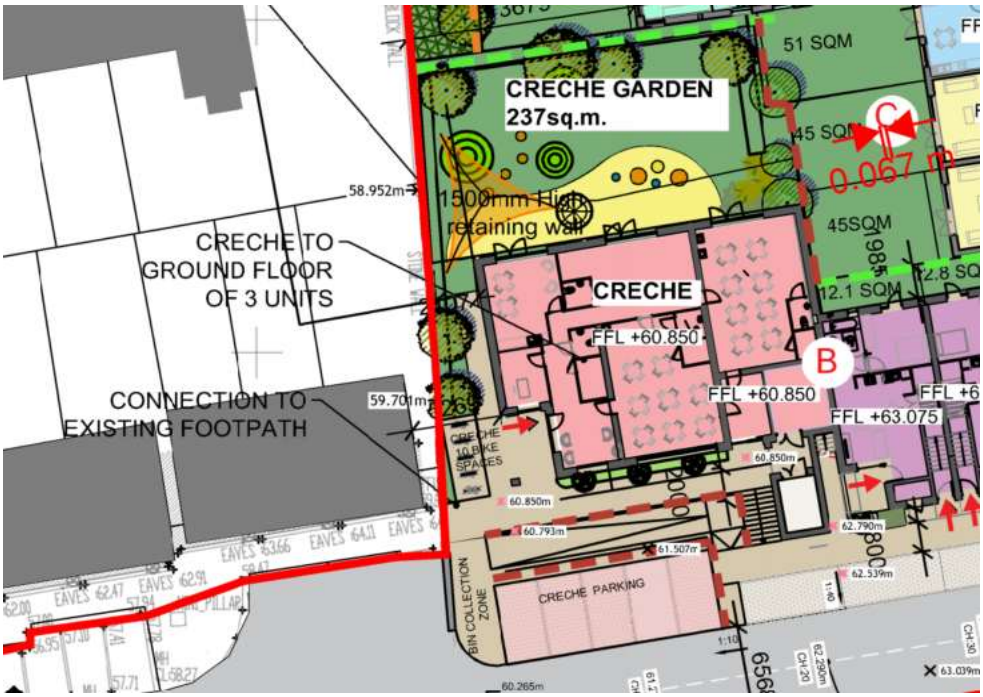

Figure 5 Proposed Development Creche Internal Play Area Location

The creche play area will likely have periods of relatively significant noise emissions due to children playing / laughing. However, it is understood that a management approach will be adopted where the external play area is only occupied for 25% of the time during a given daytime period (typically in both a morning and afternoon hourly period approach).

Assuming a source level of 86dB L_{Aeq} along with appropriate corrections for time, distance, screening and the presence of nearby reflecting surfaces, the resultant noise levels at the nearest noise sensitive receptors have been calculated and are predicted to be as follows:

Noise Sensitive Receptor	Noise Level
➢ Residential Receptors to North	17 dB $L_{Aeq,T}$
➢ Residential Receptors to West	48 dB $L_{Aeq,T}$

All these predicted noise emission levels are within the daytime criteria at all nearby noise sensitive receptors.

No significant tonal elements are expected from creche external play area noise emissions and any impulsive noise due to shouting or yelling is to be mitigated through a management approach effected by play area monitors.

No further mitigation measures would therefore be required in respect of external noise emissions from the proposed creche internal play area.

Vehicular Traffic on New Internal Roads

The proposed development includes one primary entrance road that enters the site at its southwest corner and feeds into the internal road network within. The noise impact of the road network on the nearest noise sensitive receptors is addressed in the following paragraphs.

The noise level associated with an event of short duration, such as a vehicle drive-by, may be expressed in terms of its Sound Exposure Level[2] (SEL). The SEL can be used to calculate the contribution of an event or series of events to the overall noise level in a given period. The appropriate formula is given as follows:

$$L_{Aeq,T} = SEL + 10\log_{10}(N) - 10\log_{10}(T) \quad dB$$

where: $L_{Aeq,T}$ is the equivalent continuous sound level over the time period T (s);

SEL is the "A-weighted" Sound Exposure Level of the event under consideration (dB);

N is the number of events over the course of time period T.

The mean value of a Sound Exposure Level for a car movement, at low to moderate speeds, is of the order of 65dB(A) at a distance of 5m from the edge of the road. This figure is based on a series of measurements conducted under controlled conditions.

Traffic flow information were provided by Punch Consulting Engineers in this instance. In order to assess a worst case situation, the total number of traffic movements during the daytime period were considered for assessment in this instance. Reference to the Traffic & Transport Assessment Report confirms that approximately 435 residential traffic movements are expected with an additional 50 for the creche.

Using the method outlined above with the estimated traffic flows, the average noise levels have been predicted at the noise sensitive receptors accordingly as follows:

[2] Defined as being the "A-weighted" equivalent continuous sound level which, when maintained for one second, contains the same quantity of sound energy as the actual time varying level of one event.

Noise Sensitive Receptor	Noise Level
➢ Residential Receptors to North	38 dB $L_{Aeq,1hr}$
➢ Residential Receptors to West	28 dB $L_{Aeq,1hr}$

The predicted noise emission levels at the nearest residential receptors for both the peak hour periods are in the range of 28 - 38 dB L_{Aeq}. Both of these predicted levels are lower than the established criteria of 50dB $L_{Aeq,16hr}$ for the daytime period.
Traffic movements during night time period especially are expected to be minimal and therefore negligible.

No additional mitigation measures are therefore required in respect of vehicular traffic on the new internal roads.

Additional Vehicular Traffic on Public Roads

The proposed development will introduce some levels of additional traffic onto public roads in the locality of the site. The traffic flow information was also provided by Punch in their Traffic & Transport Assessment Report.

The results of our analysis at the main junctions for the predicted AM & PM peak hour traffic flows based on this information are presented in Table 7 as follows.

Junction	Period	Trips Generated	Background Traffic	Change in Noise Level (dB)
North City Link Rd / Popes Rd	AM	37	1350	**+ 0.1**
	PM	36	1303	**+ 0.1**
North City Link Rd / Assumption Rd	AM	60	1904	**+ 0.1**
	PM	63	1853	**+ 0.1**
Popes Rd / Assumption Rd	AM	65	348	**+ 0.7**
	PM	66	310	**+ 0.8**
Popes Rd / Rathmore Park	AM	65	330	**+ 0.8**
	PM	66	286	**+ 0.9**
Popes Rd / Popes Hill	AM	65	16	**+ 7.0**
	PM	66	16	**+ 7.1**

Table 7 Change in Traffic Noise Emission Level at Nearby Road Junctions

The differences between predicted traffic flows with and without the site are such that the resulting increase in noise levels will be < 1dB on most of the surrounding road networks. Reference to Table 7 confirms that the impact of this relative increase would be considered imperceptible and therefore negligible.

The only potential noise impact that is likely to occur is on the dwellings located along Popes Road near the entrance to the proposed development. These dwellings will experience an ambient noise increase of the order of the order of 7dB(A). Reference to Table 5 confirms that the impact of this relative increase would be considered moderate.

Although there are no practical methods for mitigation traffic flow noise emissions for these dwellings, it should be considered that the predicted average noise emission level from the proposed development traffic (using the formula in the preceding section) at the nearest dwellings to the west during the daytime period is only predicted to be 38dB $L_{Aeq,16hr}$. A level of this order would be complaint with the daytime criterion of 50dB $L_{Aeq,16hr}$.

No mitigation measures are therefore recommended in respect of additional vehicular traffic on public roads.

Cumulative Operational Noise Levels

The total level of combined noise emissions from the proposed development noise sources can be determined by summing together all their individual contributions. The total levels of each are summarised and totalled in Tables 8 & 9 below.

Noise Source	Daytime Period Noise Level Emissions (dB $L_{Aeq,16hr}$)	
	Residential Receptors to the North	Residential Receptors to the West
Building Services Plant	30	20
Creche Outdoor Play Area	17	48
Vehicular Traffic on New Internal Roads	38	28
Additional Vehicular Traffic	Negligible	38
Cumulative Noise Level	**39**	**49**

Table 8 Proposed Development Cumulative Noise Levels Summary (Daytime Period)

Noise Source	Night Time Period Noise Level Emissions (dB $L_{Aeq,8hr}$)	
	Residential Receptors to the North	Residential Receptors to the West
Building Services Plant	30	20
Creche Outdoor Play Area	N/A	
Vehicular Traffic on New Internal Roads	Negligible	
Additional Vehicular Traffic	Negligible	
Cumulative Noise Level	**30**	**20**

Table 9 Proposed Development Cumulative Noise Levels Summary (Night Time Period)

These cumulative noise levels are compared with the established project noise emission criteria for both daytime and night time periods in Tables 10 & 11 below.

Location	Predicted Daytime Period Noise Level	Noise Emission Criteria	Compliant?
Residential Receptors to the North	38 dB $L_{Aeq,T}$	**50 dB $L_{Aeq,16hr}$**	✓
Residential Receptors to the West	49 dB $L_{Aeq,T}$		✓

Table 10 Proposed Development Cumulative Noise Emission Level Comparison with Criteria (Daytime)

Location	Predicted Night Time Period Noise Level	Noise Emission Criteria	Compliant?
Residential Receptors to the North	30 dB $L_{Aeq,T}$	**45 dB $L_{Aeq,8hr}$**	✓
Residential Receptors to the West	20 dB $L_{Aeq,T}$		✓

Table 11 Proposed Development Cumulative Noise Emission Level Comparison with Criteria (Night Time)

As confirmed in Tables 10 & 11, the expected levels of noise emissions from the proposed development are within the established criteria at all adjacent noise sensitive receptors during all time periods.

The predicted cumulative noise levels for the proposed development have also been compared with the measured ambient noise levels measured in their vicinity in 12 & 13 below.

Location	Period	Predicted Noise Level	Measured Ambient Noise Level Range	Noise Level Above or Below Ambient?
Residential Receptors to the North	Daytime	38 dB $L_{Aeq,16hr}$	33 - 54 dB L_{Aeq}	Consistent With
Residential Receptors to the West		49 dB $L_{Aeq,16hr}$	32 - 51 dB L_{Aeq}	Consistent With

Table 12 Noise Emission Level Comparison with Daytime Period Ambient Noise Levels

Location	Period	Predicted Noise Level	Measured Ambient Noise Level Range	Noise Level Above or Below Ambient?
Residential Receptors to the North	Night Time	30 dB $L_{Aeq,8hr}$	26 - 45 dB L_{Aeq}	Consistent With or Below
Residential Receptors to the West		20 dB $L_{Aeq,8hr}$	26 - 45 dB L_{Aeq}	Below

Table 13 Noise Emission Level Comparison with Night Time Period Ambient Noise Levels

As can be seen in the preceding tables, most of the predicted noise emission levels from the proposed development are consistent with or below the existing ambient noise levels at the nearest noise sensitive receptors in the vicinity.

It should also be highlighted that each of the noise level conditions that were assessed would be considered worst case in each instance.

There are therefore no significant operational noise impacts that are expected from the proposed development on any of the identified adjacent noise sensitive receptors.

7.0 MITIGATION MEASURES

The following measures are recommended to minimise the potential for disturbance due to noise emissions from the proposed development. Proper application of these measures should reduce noise emissions less than those predicted in this report.

Construction Phase

The assessment of the proposed development has identified construction stage noise emissions will be above typical limit values at most NSRs during periods when activities are being carried out during proposed development boundaries. The following measures are therefore recommended to minimise the potential for disturbance due to noise emissions from the proposed development.

- Establishing channels of communication between the contractor / developer, Local Authority and residents.
- Appointment of a site representative responsible for matters relating to noise.
- Provision of 2.4m high perimeter hoarding around the site boundary.
- Selection of plant with low inherent potential for generation of noise.
- Erection of barriers as necessary around items such as generators or compressors.
- Placement of noisy plant as far away from sensitive receptors as permitted by site constraints.
- Avoiding unnecessary revving of engines and switch off idling engines / equipment when not in use.
- Restricting construction activities to daytime periods only.
- Use of acoustic enclosure for high noise impact activities, such as breaking;
- Turning off / powering down plant when not in use;
- Turning off HGVs when not in use;
- Reduction in drop heights of incoming materials;
- Appointing project liaison officer to communicate with locals regarding noise works, their duration and organising construction phase noise monitoring;
- Strict controls on construction hours to prevent noise works occurring early morning or into the evening period; and,
- Inclusion of response procedure within the CEMP to noise complaints and breaches.

The Contactor should ensure these measures required to control noise emissions will be in place and all workers on the Site are kept aware of them through on-site toolbox talks.

In advance of construction phase commencement, the appointed contractor will also submit a CEMP to the Council for approval. Reference should be made to *BS 5228* which provides detailed guidance on the control of noise from demolition and construction activities.

It is also recommended that when construction activities are carried out in the vicinity of the residential dwellings near each common boundary, that they be managed / coordinated with local residents in order to minimise potential noise impact as far as practicable.

Proper application of these measures should reduce noise emissions less than those predicted in this report:

Operational Phase

Building Services Plant

The predicted noise levels from proposed development building services plant are within the adopted criteria for both the daytime and night-time periods. The only mitigation consideration that would be deemed as being required in this instance is as follows:

- ✓ Ensuring heat pumps selections are similar to the Mitsubishi Ecodan R290 units or that they have a manufacturer listed sound power level of not more than 58dB(A).

Creche External Play Area

The predicted noise levels from proposed development creche are within the adopted criteria for the daytime period. The mitigation measures that are being provided in this instance are as follows:

- ✓ Provision of a 2m high solid perimeter fence around the play area boundary; and
- ✓ Provision of the proposed time management mitigation measures.

Vehicular Traffic on New Internal Roads

The noise impact assessment has demonstrated that ameliorative measures are not required in respect of vehicular traffic on the new proposed development internal roads.

Additional Vehicular Traffic on Public Roads

The noise impact assessment has demonstrated that ameliorative measures are not required in respect of additional vehicular traffic on public roads.

8.0 SUMMARY OF NOISE IMPACT

This section summarises the likely residual noise impact associated with the proposed development, taking into account the ameliorative measures described in Section 7.0.

8.1 Construction Phase

As stated in Section 6.1, construction activities are typically expected to impart varying degree of noise impacts on sensitive receptors when carried out in close proximities with receptors such as those that are immediately adjacent to the proposed development.

In this instance, it is worth noting that these noise impacts will only occur when construction works are being carried out on the development buildings located in close proximity to these receptors. Once the dwellings in these areas are constructed, construction phase noise emission levels will decrease significantly due to shielding from the other constructed buildings and increased distances to these receptors. However, it is still recommended that when construction activities are carried out in their vicinity that they be managed / coordinated with local residents in order to minimise potential noise impact as far as practicable.

Limiting the hours of noisy operations and implementation of appropriate noise control measures detailed in this report will also serve to minimise noise impact as far as practicable in this instance.

8.2 Operational Phase

Building Services Plant

The predicted noise levels associated with building services are within the 45 / 50dB $L_{Aeq,T}$ night time / daytime criteria at all nearby residential receptors.

Creche External Play Area

The predicted noise levels associated with the proposed development creche external play area are within the 45dB $L_{Aeq,T}$ daytime criteria at all nearby residential receptors.

Vehicular Traffic on New Internal Roads

The predicted noise levels associated with vehicular traffic on the new internal roads within the development are within the 45 / 50dB $L_{Aeq,T}$ night time / daytime criteria at all nearby residential receptors.

Additional Vehicular Traffic on Public Roads

The predicted noise levels associated with additional vehicular traffic on public roads are negligible.

9.0 RESPONSE TO CORK CITY COUNCIL FI REQUEST

The preceding sections of this report were provided in relation to the request for the noise report that addresses the following items. Note that we have provided a brief summary for each.

Identification of Surrounding Noise Sensitive Receptors - the residential dwellings adjoining the northern and western boundaries of the proposed development.

Prediction of Noise Level Sources - a summary of the predicted noise level emissions for the proposed development is summarised as follows:

Noise Sensitive Receptor	Construction Phase		Operational Phase	
	Daytime	Night Time	Daytime	Night Time
Dwellings to North	≤ 69 dB $L_{Aeq,1hr}$	N/A	38 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$
Dwellings to West	≤ 69 dB $L_{Aeq,1hr}$	N/A	49 dB $L_{Aeq,16hr}$	20 dB $L_{Aeq,8hr}$

Note that the predicted construction noise levels are for the condition where the nearest proposed development dwelling is being constructed to each receptor and should therefore be treated as a worst case maximum level. Noise levels during the majority of the construction phase will therefore be significantly less than those listed.

In addition, the following queries were asked directly:

What noise mitigation measures would be put in place?

The mitigation measures that are being put in place in this instance are summarised as follows:

Construction Phase: - refer to Section for a full list.

Operational Phase: - ensuring heat pumps selections have sound power levels of ≤ 58dB(A);

- providing a 2m high perimeter fence around the creche play area; and
- provision of time management measures for the creche play area.

The applicant needs to clarify if there is mechanical equipment (extractor fans, air-con, heat pumps, etc) that will generate noise?

The only mechanical equipment of any significant in this instance are the heat pumps that will be provided in each of the dwelling rear garden areas and also for the creche. These units are to be selected to have sound power levels of ≤ 58dB(A) which will ensure compliance with established *BS 8233* criteria and also be below the existing ambient noise level environment in the vicinity.

There will also be some small toilet / kitchen exhaust fans in each dwelling and the creche but these will all located internally and are expected to have negligible external noise emissions.

APPENDIX A

FULL TABULATED NOISE MONITORING SURVEY RESULTS

NML 1

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
09/07/2026	10:15	10:30	**50.6**	70.6	36.8	48.2	38.9
09/07/2026	10:30	10:45	**49.0**	65.8	37.9	50.1	41.9
09/07/2026	10:45	11:00	**43.7**	59.6	35.5	46.9	38.1
09/07/2026	11:00	11:15	**43.9**	70.9	34.7	41.8	37.8
09/07/2026	11:15	11:30	**42.2**	59.8	36.2	44.5	38.9
09/07/2026	11:30	11:45	**39.9**	51.6	35.3	41.5	37.9
09/07/2026	11:45	12:00	**41.7**	58.7	34.6	43.1	37.3
09/07/2026	12:00	12:15	**39.2**	54.7	34.7	40.4	37.0
09/07/2026	12:15	12:30	**38.4**	52.4	33.5	39.9	35.8
09/07/2026	12:30	12:45	**39.9**	61.3	34.2	40.4	36.6
09/07/2026	12:45	13:00	**42.1**	57.5	33.8	43.9	36.4
09/07/2026	13:00	13:15	**38.1**	48.8	33.1	40.3	35.1
09/07/2026	13:15	13:30	**37.2**	54.6	32.5	39.5	34.1
09/07/2026	13:30	13:45	**41.6**	60.8	32.6	44.2	35.1
09/07/2026	13:45	14:00	**37.9**	55.8	30.5	39.9	32.6
09/07/2026	14:00	14:15	**36.2**	47.0	33.0	37.6	34.5
09/07/2026	14:15	14:30	**39.4**	54.5	33.7	40.4	35.7
09/07/2026	14:30	14:45	**37.4**	53.5	33.3	39.0	35.3
09/07/2026	14:45	15:00	**39.4**	56.5	33.5	42.2	36.0
09/07/2026	15:00	15:15	**38.2**	54.6	33.5	40.1	35.6
09/07/2026	15:15	15:30	**39.6**	63.8	31.7	39.0	34.7
09/07/2026	15:30	15:45	**37.8**	55.1	31.0	38.4	33.7
09/07/2026	15:45	16:00	**35.4**	53.7	30.9	37.2	32.7
09/07/2026	16:00	16:15	**37.3**	50.8	31.8	40.3	34.1
09/07/2026	16:15	16:30	**36.0**	49.0	31.8	37.6	33.5
09/07/2026	16:30	16:45	**37.6**	59.5	31.7	39.4	34.1
09/07/2026	16:45	17:00	**37.3**	54.6	31.5	39.2	33.8
09/07/2026	17:00	17:15	**39.3**	54.0	32.1	42.3	34.2
09/07/2026	17:15	17:30	**37.6**	57.4	31.8	40.2	33.9
09/07/2026	17:30	17:45	**37.2**	62.1	31.1	38.6	33.5

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
09/07/2026	17:45	18:00	**36.0**	51.9	31.7	37.4	33.4
09/07/2026	18:00	18:15	**36.0**	52.9	30.5	38.2	32.9
09/07/2026	18:15	18:30	**36.0**	49.8	30.4	38.0	32.8
09/07/2026	18:30	18:45	**37.9**	55.2	29.8	40.5	32.8
09/07/2026	18:45	19:00	**34.0**	51.8	29.2	35.6	31.5
09/07/2026	19:00	19:15	**36.7**	53.4	29.8	38.7	32.1
09/07/2026	19:15	19:30	**37.5**	58.6	29.6	39.2	32.0
09/07/2026	19:30	19:45	**37.2**	55.9	29.5	40.3	31.9
09/07/2026	19:45	20:00	**37.0**	54.1	29.9	40.1	32.4
09/07/2026	20:00	20:15	**38.2**	58.0	28.6	40.9	32.0
09/07/2026	20:15	20:30	**35.0**	57.6	28.9	36.5	31.2
09/07/2026	20:30	20:45	**35.3**	53.2	28.9	38.2	31.2
09/07/2026	20:45	21:00	**35.0**	50.2	29.3	37.6	31.6
09/07/2026	21:00	21:15	**38.2**	61.5	29.6	39.0	32.5
09/07/2026	21:15	21:30	**39.0**	56.4	29.3	42.2	32.9
09/07/2026	21:30	21:45	**37.7**	55.2	28.5	41.2	31.4
09/07/2026	21:45	22:00	**34.1**	47.9	28.0	36.2	30.8
09/07/2026	22:00	22:15	**36.5**	49.9	28.1	40.7	31.1
09/07/2026	22:15	22:30	**34.1**	49.0	27.5	36.8	30.3
09/07/2026	22:30	22:45	**31.9**	48.0	25.7	33.9	28.7
09/07/2026	22:45	23:00	**33.3**	59.0	23.8	34.8	26.9
09/07/2026	23:00	23:15	**32.4**	46.7	22.9	33.6	25.8
09/07/2026	23:15	23:30	**28.6**	46.1	23.0	30.2	25.1
09/07/2026	23:30	23:45	**30.3**	43.6	23.3	32.8	25.6
09/07/2026	23:45	00:00	**26.8**	53.6	22.4	27.9	24.0
10/07/2026	00:00	00:15	**28.0**	41.2	22.5	30.2	25.0
10/07/2026	00:15	00:30	**29.8**	42.8	22.3	32.3	25.5
10/07/2026	00:30	00:45	**29.6**	45.5	24.1	31.7	26.6
10/07/2026	00:45	01:00	**29.9**	41.0	24.0	32.5	26.0
10/07/2026	01:00	01:15	**27.9**	42.5	20.9	30.4	23.5
10/07/2026	01:15	01:30	**30.0**	41.4	22.8	32.6	26.0
10/07/2026	01:30	01:45	**29.0**	43.0	21.4	31.3	24.9
10/07/2026	01:45	02:00	**28.4**	40.5	22.2	30.7	24.7
10/07/2026	02:00	02:15	**28.3**	39.3	21.8	30.6	24.6
10/07/2026	02:15	02:30	**30.5**	48.3	21.1	32.8	23.5
10/07/2026	02:30	02:45	**26.3**	37.6	20.0	29.1	22.3
10/07/2026	02:45	03:00	**27.0**	39.4	20.9	29.6	23.1
10/07/2026	03:00	03:15	**28.1**	37.4	20.4	31.1	22.3
10/07/2026	03:15	03:30	**27.0**	37.4	19.3	30.0	21.8
10/07/2026	03:30	03:45	**26.7**	37.3	20.5	29.3	23.0

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
10/07/2026	03:45	04:00	**28.5**	46.2	21.2	31.3	23.7
10/07/2026	04:00	04:15	**31.1**	45.0	22.1	34.0	26.1
10/07/2026	04:15	04:30	**30.2**	48.7	20.6	31.6	24.3
10/07/2026	04:30	04:45	**30.2**	38.0	22.4	32.9	26.2
10/07/2026	04:45	05:00	**32.4**	42.3	23.5	34.9	27.8
10/07/2026	05:00	05:15	**31.7**	40.6	25.3	34.1	28.5
10/07/2026	05:15	05:30	**35.6**	55.2	26.3	37.7	31.0
10/07/2026	05:30	05:45	**39.5**	59.2	30.2	41.8	33.5
10/07/2026	05:45	06:00	**40.6**	54.2	32.3	43.0	35.7
10/07/2026	06:00	06:15	**40.5**	55.4	32.5	43.0	36.2
10/07/2026	06:15	06:30	**41.0**	58.9	34.8	42.7	37.0
10/07/2026	06:30	06:45	**45.3**	62.4	35.7	48.3	38.2
10/07/2026	06:45	07:00	**43.7**	63.9	35.2	45.7	38.9
10/07/2026	07:00	07:15	**41.5**	56.9	37.5	42.9	39.3
10/07/2026	07:15	07:30	**42.6**	59.7	37.4	43.6	39.3
10/07/2026	07:30	07:45	**43.4**	59.0	37.2	45.9	39.3
10/07/2026	07:45	08:00	**42.1**	55.8	38.0	44.0	39.6
10/07/2026	08:00	08:15	**44.3**	59.2	36.1	45.0	38.2
10/07/2026	08:15	08:30	**41.8**	57.4	36.2	43.7	38.4
10/07/2026	08:30	08:45	**40.7**	51.8	35.6	42.6	37.7
10/07/2026	08:45	09:00	**43.3**	62.7	37.1	45.7	39.5
10/07/2026	09:00	09:15	**43.0**	56.3	36.9	44.7	40.0
10/07/2026	09:15	09:30	**45.3**	69.1	36.7	46.3	40.1
10/07/2026	09:30	09:45	**42.5**	54.4	36.3	46.3	38.7
10/07/2026	09:45	10:00	**41.5**	53.9	36.4	43.3	38.8
10/07/2026	10:00	10:15	**43.8**	61.8	36.3	44.9	38.5

FULL TABULATED NOISE MONITORING SURVEY RESULTS

NML 2

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
09/07/2026	10:00	10:15	**53.5**	73.7	36.6	55.2	39.7
09/07/2026	10:15	10:30	**41.9**	57.5	34.0	44.4	36.9
09/07/2026	10:30	10:45	**39.1**	57.5	34.0	40.5	36.1
09/07/2026	10:45	11:00	**39.4**	55.1	34.9	39.6	36.3
09/07/2026	11:00	11:15	**42.4**	61.3	34.8	43.5	36.3
09/07/2026	11:15	11:30	**42.1**	63.9	34.6	42.2	36.2
09/07/2026	11:30	11:45	**39.6**	62.7	33.6	39.8	35.4
09/07/2026	11:45	12:00	**40.0**	62.7	32.5	38.7	34.8
09/07/2026	12:00	12:15	**36.3**	48.9	32.7	38.1	34.3
09/07/2026	12:15	12:30	**36.8**	52.3	32.5	38.3	34.2
09/07/2026	12:30	12:45	**40.8**	57.8	32.8	42.5	34.9
09/07/2026	12:45	13:00	**41.3**	58.6	32.5	43.1	33.8
09/07/2026	13:00	13:15	**36.2**	56.3	31.4	38.2	33.0
09/07/2026	13:15	13:30	**34.5**	57.0	31.0	35.4	32.3
09/07/2026	13:30	13:45	**34.5**	53.2	31.8	35.4	33.0
09/07/2026	13:45	14:00	**35.9**	57.1	32.1	36.2	33.6
09/07/2026	14:00	14:15	**39.4**	57.1	31.9	38.4	33.7
09/07/2026	14:15	14:30	**36.2**	54.8	32.2	36.9	33.9
09/07/2026	14:30	14:45	**37.6**	56.0	32.7	39.5	34.4
09/07/2026	14:45	15:00	**42.2**	58.5	33.7	44.3	36.5
09/07/2026	15:00	15:15	**40.3**	55.9	32.5	42.6	34.6
09/07/2026	15:15	15:30	**37.2**	49.5	32.1	39.5	34.3
09/07/2026	15:30	15:45	**42.9**	59.0	33.1	44.7	35.3
09/07/2026	15:45	16:00	**40.6**	62.7	32.5	42.5	35.2
09/07/2026	16:00	16:15	**40.3**	57.1	32.7	42.4	34.7
09/07/2026	16:15	16:30	**37.9**	55.7	31.8	40.2	33.9
09/07/2026	16:30	16:45	**40.0**	57.0	32.6	42.4	34.4
09/07/2026	16:45	17:00	**37.7**	48.8	32.1	39.9	34.3
09/07/2026	17:00	17:15	**37.7**	58.2	31.0	38.2	33.1
09/07/2026	17:15	17:30	**41.4**	61.5	31.2	41.3	33.7
09/07/2026	17:30	17:45	**42.1**	64.3	31.9	42.4	34.3
09/07/2026	17:45	18:00	**37.5**	56.6	31.6	39.1	33.5
09/07/2026	18:00	18:15	**40.5**	58.0	31.3	43.0	33.4

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
09/07/2026	18:15	18:30	**39.8**	61.9	31.2	41.0	33.7
09/07/2026	18:30	18:45	**37.1**	54.5	31.2	37.7	33.1
09/07/2026	18:45	19:00	**38.6**	60.2	30.9	40.0	33.1
09/07/2026	19:00	19:15	**37.6**	55.2	31.2	39.6	33.3
09/07/2026	19:15	19:30	**38.2**	57.5	31.2	40.3	33.4
09/07/2026	19:30	19:45	**39.9**	56.5	32.2	42.0	35.3
09/07/2026	19:45	20:00	**39.7**	59.1	31.7	42.0	34.5
09/07/2026	20:00	20:15	**41.6**	62.8	31.2	43.6	34.3
09/07/2026	20:15	20:30	**38.7**	58.2	31.0	40.9	33.0
09/07/2026	20:30	20:45	**45.2**	67.5	29.7	44.0	32.0
09/07/2026	20:45	21:00	**47.0**	61.5	29.7	52.0	32.7
09/07/2026	21:00	21:15	**45.2**	61.6	29.1	48.3	32.7
09/07/2026	21:15	21:30	**39.3**	63.1	28.8	41.9	31.5
09/07/2026	21:30	21:45	**47.6**	64.8	28.8	51.9	31.1
09/07/2026	21:45	22:00	**43.8**	62.2	27.5	45.2	30.5
09/07/2026	22:00	22:15	**40.9**	62.8	25.5	40.4	27.9
09/07/2026	22:15	22:30	**36.9**	58.9	26.1	33.8	27.6
09/07/2026	22:30	22:45	**39.0**	65.3	24.3	38.1	25.8
09/07/2026	22:45	23:00	**33.1**	56.1	24.5	31.2	25.5
09/07/2026	23:00	23:15	**31.4**	51.4	24.2	33.5	25.6
09/07/2026	23:15	23:30	**27.5**	42.6	24.4	28.6	25.9
09/07/2026	23:30	23:45	**27.3**	47.2	24.4	28.4	25.5
09/07/2026	23:45	00:00	**32.3**	55.1	24.2	29.7	25.6
10/07/2026	00:00	00:15	**28.7**	39.7	25.6	30.3	26.7
10/07/2026	00:15	00:30	**28.7**	37.9	25.0	30.4	26.6
10/07/2026	00:30	00:45	**30.2**	55.1	23.4	30.4	25.5
10/07/2026	00:45	01:00	**28.4**	55.3	23.5	29.8	25.0
10/07/2026	01:00	01:15	**27.6**	42.8	23.3	29.1	24.9
10/07/2026	01:15	01:30	**28.5**	53.5	23.4	28.8	25.5
10/07/2026	01:30	01:45	**27.2**	34.8	24.1	28.7	25.4
10/07/2026	01:45	02:00	**28.1**	41.2	24.0	29.8	25.4
10/07/2026	02:00	02:15	**25.5**	31.7	23.3	26.7	24.3
10/07/2026	02:15	02:30	**26.5**	44.4	23.3	28.2	24.4
10/07/2026	02:30	02:45	**26.3**	46.1	22.0	27.9	23.9
10/07/2026	02:45	03:00	**25.8**	32.4	22.6	27.5	23.7
10/07/2026	03:00	03:15	**26.0**	47.4	22.7	27.5	23.8
10/07/2026	03:15	03:30	**27.0**	34.9	22.7	29.0	24.5
10/07/2026	03:30	03:45	**28.6**	44.9	23.9	29.9	25.7
10/07/2026	03:45	04:00	**29.4**	46.3	23.2	30.9	25.3
10/07/2026	04:00	04:15	**28.0**	44.5	22.6	30.3	24.7

Date	Time Period		Measured Sound Pressure Levels (dB)				
	Start	Finish	$L_{Aeq,15min}$	L_{AFmax}	L_{AFmin}	L_{AF10}	L_{AF90}
10/07/2026	04:15	04:30	**29.4**	41.8	24.9	31.1	26.8
10/07/2026	04:30	04:45	**31.2**	50.4	24.8	31.8	27.4
10/07/2026	04:45	05:00	**31.3**	42.1	26.5	33.2	28.8
10/07/2026	05:00	05:15	**42.7**	59.8	28.2	44.2	30.6
10/07/2026	05:15	05:30	**42.5**	60.4	30.5	44.5	33.2
10/07/2026	05:30	05:45	**40.9**	61.8	31.9	42.1	34.4
10/07/2026	05:45	06:00	**41.5**	60.5	33.2	42.6	35.2
10/07/2026	06:00	06:15	**43.9**	64.4	33.6	46.9	36.0
10/07/2026	06:15	06:30	**44.9**	60.6	35.0	48.4	36.9
10/07/2026	06:30	06:45	**41.3**	59.0	35.7	42.2	37.9
10/07/2026	06:45	07:00	**45.3**	65.2	36.6	43.3	38.3
10/07/2026	07:00	07:15	**42.7**	62.7	36.6	42.8	38.1
10/07/2026	07:15	07:30	**41.0**	54.4	36.9	42.4	38.2
10/07/2026	07:30	07:45	**46.5**	63.2	35.4	47.6	37.6
10/07/2026	07:45	08:00	**44.7**	68.9	35.6	46.0	36.9
10/07/2026	08:00	08:15	**42.0**	58.9	33.9	44.5	36.5
10/07/2026	08:15	08:30	**41.2**	58.8	34.8	42.6	36.8
10/07/2026	08:30	08:45	**42.5**	60.0	35.2	44.8	36.9
10/07/2026	08:45	09:00	**42.6**	59.0	35.0	45.1	37.5
10/07/2026	09:00	09:15	**41.8**	61.6	34.6	43.4	36.8
10/07/2026	09:15	09:30	**39.7**	58.3	33.8	40.3	36.3
10/07/2026	09:30	09:45	**39.4**	57.2	33.8	40.9	35.9
10/07/2026	09:45	10:00	**41.4**	56.7	34.4	43.8	36.7

APPENDIX B

SOUND LEVEL METER CALIBRATION CERTIFICATES

NTi AUDIO

Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

This model of sound level meter submitted for periodic testing successfully completed the applicable pattern-evaluation tests given in IEC 61672-2. The pattern approval certificate is available at www.nti-audio.com/XL2

Sound Level Meter

Manufacturer	NTi Audio		
Type	XL2-TA	S/N	A2A-11070-E0
Firmware	V4.93		
Microphone Model	M2230		
Preamplifier	MA220	S/N	7417
Microphone Capsule	MC230A	S/N	A14422
Performance class	Class 1		
Customer Inventory Nr.			

Customer

CLV Consulting Ltd
The NSC Campus
Mahon, T12 XY2N CORK

Date 25 September 2025

Certificate DE-25-378

Results **PASSED**
(for detailed report see next pages)

Operator

NTi Audio GmbH
Frielingsdorfweg 4
45239 Essen
info@nti-audio.de
+49 (0)201 6470 1901

Dipl.-Ing. Benedikt Dohmen

NTi Audio GmbH • Frielingsdorfweg 4 • 45239 Essen
Deutschland • info@nti-audio.de

NTi AUDIO

Manufacturer Calibration Certificate

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3. All tests are traceable in accordance with ISO/IEC 17025.

No pattern approval is available for this sound level meter configuration.

Sound Level Meter

Manufacturer	NTi Audio		
Type	XL3	S/N	A3A-01453-F0
Firmware	V1.42		
Microphone Model	M2340		
Preamplifier	MA230	S/N	1913
Microphone Capsule	MC230A	S/N	A30130
Performance class			
Customer Inventory Nr.			

Customer

CLV Consulting Ltd
The NSC Campus
Mahon
Cork
T12 XY2N

Date 03 January 2025

Certificate UK-25-000

Results **PASSED**
(for detailed report see next pages)

Operator David Young

NTi Audio UK Ltd • Office 33C Julians Road • Stevenage
Hertfordshire, SG1 3ES, UK • uk@nti-audio.com

APPENDIX C

ACOUSTIC CALIBRATOR CALIBRATION CERTIFICATE

NTi AUDIO

Manufacturer Calibration Certificate

The following instrument has been tested and calibrated to the manufacturer specifications.
The calibration is traceable in accordance with ISO/IEC 17025 covering all instrument functions.

- Device Type: **Class 1 Sound Calibrator CAL200**
- Serial Number: **18882**
- Customer: **CLV Consulting**
  Cork T12 XY2N
  The NSC Campus, Mahon
  Ireland
- Date of Calibration: **25 September 2025**
- Certificate Number: **45928-18882-CAL200**
- Results: **PASSED**
  (for detailed report see next page)

Tested by: Dipl.-Ing. B. Dohmen

Signature:

Stamp: NTi AUDIO NTi Audio GmbH Frielingsdorfweg 4 45239 Essen info@nti-audio.de +49 (0)201 6470 1900

NTi Audio GmbH • Frielingsdorfweg 4 • 45239 Essen • Tel: +49 (0)201 6470 1900
www.nti-audio.de • info@nti-audio.de