9 NOISE AND VIBRATION

9.1 Introduction

This chapter of the EIAR provides a description and assessment of the likely impact of the Proposed Development from noise.

This chapter discusses the existing ambient noise levels at nearby sensitive receptors, the potential impacts of the Proposed Development on the existing ambient noise environment and the mitigation measures that may be employed to reduce or eliminate any potential impact.

9.1.1 Quality Assurance and Competence

This chapter was prepared by Laura Griffin, Environmental Consultant, Enviroguide Consulting. Laura has a Master of Science (Hons) in Climate Change from Maynooth University and a Bachelor of Arts (Hons) in English and Geography from Maynooth University. Laura has 5+ years of professional experience and has worked as an Environmental Consultant with Enviroguide since 2021 and has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Air Quality and Climate, Noise and Vibration, and Materials Assets (Waste and Utilities) Chapters of EIARs.

This chapter has been reviewed and approved by Harry Parker, Technical Director and EIA Lead at Enviroguide. Harry is an environmental consultant with 17 years' experience in consultancy, specialising in EIAs for large-scale residential and commercial developments, working closely with a range of developers, planning consultants and architects within the public and private sector.

9.2 Study Methodology

This assessment will examine the likely impacts of sound pressure levels generated by the Proposed Development located at lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18. Noise calculations will be used to predict and assess the likely impact of onsite equipment at offsite noise sensitive receptors.

For the purpose of the assessment, 'sensitive receptors' terminology used describes any persons, locations or otherwise that may be susceptible to changes as a consequence of the Proposed Development.

The primary noise impacts associated with this Proposed Development are likely to be due to:

- Extraction works, including site clearing and earthworks required to prepare the site for building foundations and installing utility services;
- Development construction works;
- Trucks entering and exiting the site.

With respect to the listed noise impacts, the key objective of the Proposed Development is to manage activities to ensure any significant increase in noise emissions are minimised.

Documents consulted during the preparation of this EIAR chapter are listed in the References section. The acoustics section has been compiled taking cognisance of:

- *Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011);*
- *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise;*
- *BS 8233 Guidance on sound insulation and noise reduction for buildings*;
- *ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures;*
- *ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels;*
- *ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere;*
- *ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation;*
- *Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities;*
- *Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004;*
- Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 2, Dun Laoghaire – Rathdown County Council;
- *Draft Dublin Agglomeration Noise Action Plan 2024-*2028; and
- Dún Laoghaire-Rathdown County Development Plan 2022-2028 • The Professional Guidance on Planning & Noise (ProPG), May 2017.

9.2.1 Desk Study

The noise assessment will review all existing information relating to the site and its environs, which involves a desk-based study of the following:

- Baseline noise monitoring has been undertaken by RSK Ireland Limited (2024). Data collected from these surveys provides a baseline assessment for the site and is used to assess any future noise-related impacts of activities associated with the Proposed Development;
- An evaluation of the site and the surrounding area to assess certain changes that are likely to impact the surrounding environs;
- Identification of sensitive receptors for assessment (see Section 9.6.1.1) ; and
- *BS 5228 2009 +A1 2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites* with respect to the controlling noise and vibration impacts. In this instance, appropriate criteria relating to permissible construction noise levels are taken from Part one of the standard Noise.

9.3 The Existing and Receiving Environment (Baseline Environment)

The site is located 1.9 km to the south-west of the M50 and Carrickmines Retail Park. The site is currently largely greenfield with hedgerows and treelines, with hardstanding, derelict

buildings and a football pitch. The former ‘County Market’, a wooden structure, is located in the northwest corner of the site.

9.3.1 Noise Survey

Environmental noise surveys have been conducted by RSK Ireland Limited (2024) to establish the baseline noise environment. Noise surveys were conducted in accordance with ISO 1996: 2017: Acoustics – Description and measurement and assessment of environmental noise. A full copy of the ProPG: Acoustic Design Statement can be found in Volume 3 – Appendices (Appendix 9-1).

9.3.1.1 *Monitoring Location*

Unattended noise measurements were conducted at Location N1. Attended noise measurements were conducted at locations N2 – N4. The approximate noise measurement location is shown in Figure 9-1.

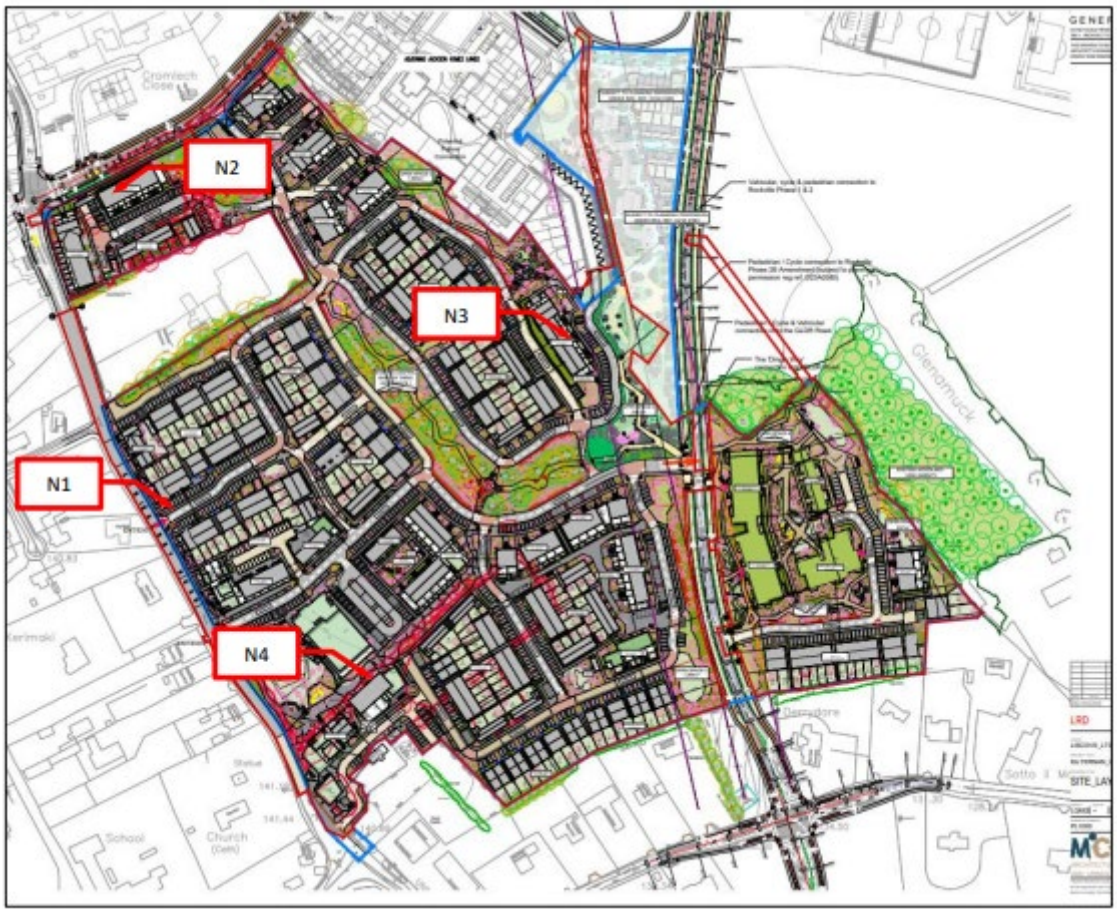

Figure 9-1 Proposed Site Plan Showing Baseline Noise Monitoring Position (RSK Ireland Limited, 2024)

- Location N1: To the southwest of the site with the microphone positioned at a location representative of the proposed development facade that is closest to the R117 Road. This noise survey position comprised of unattended monitoring for an approximate 24-

hr period. Noise data captured at this location is used as reference in order to estimate noise levels at the proposed development façade during both day and nighttime periods;

- Location N2: To the north of the site with the microphone positioned at ground floor level adjacent to the junction with the R117 / Glenamuck Road. This noise survey position comprised of unattended daytime and night-time monitoring over the course of 7-days;
- Location N3: To the east of the site with the microphone positioned at ground floor level near the existing houses. This noise survey position comprised of attended daytime monitoring; and
- Location N4: To the south of the site with the microphone positioned at ground floor level at a location representative of a proposed development façade and proposed amenity space. This noise survey position comprised attended daytime monitoring.

9.3.1.2 *Survey Periods*

Noise measurements were conducted over the source of the following periods:

Table 9-1 Noise Survey Periods

Period	Location	Date	Start Time	Stop Time
Daytime (07:00–23:00hrs)	N1	13th – 14th May 2022	13th May at 15:07	14th May at 15:00
	N2	23rd February – 1st March 2022	23rd February at 13:15	1st March at 10:15
	N3-N4	20th May 2022	20th May at 11:34	20th May at 12:04
Night-time (23:00–07:00hrs)	N1	13th – 14th May 2022	13th May at 23:00	14th May at 07:00
	N2	23rd February – 1st March 2024	23rd February at 23:00	1st March at 07:00

Noise measurement periods and durations were chosen and used with consideration of the proposed site layout and location of nearby noise sources such as existing and proposed new roads. Noise measurements comprised of surveys of varying duration and time periods, in order to gain an understanding of noise levels at a range of locations across the site and in the general area of the site.

9.3.1.3 *Weather*

The weather during the surveys of 13th – 14th and 20th May 2022 and from the 23rd of February to 1st March 2024 is summarised as follows (ref. https://www.met.ie/climate/available-data/daily-data) from the Casement met station.

Table 9-2 Weather Conditions

Date	Period	Temperature (Degrees Celsius)	Precipitation	Wind Speed (m/s)	Wind Direction
13/05/2022	Daytime	10-18	No	8-11	WSW
13-14/05/2022	Night-time	9-10	No	8-9	SW
14/05/2022	Daytime	10-18	No	4-11	W
20/05/2022	Daytime	17-18	No	3-4	SW
23/02/2024	Daytime	2-7	No	4.5-7.5	WSW
23-24/02/2024	Night-time	3-4	No	3-5	W
24/02/2024	Daytime	3-7	No	1-4	W
24-25/02/2024	Night-time	3.5-5.5	No	2-4	E
25/02/2024	Daytime	2-7	22:00-23:00	4-9	N
25-26/02/2024	Night-time	1-4	No	1-4	N
26/02/2024	Daytime	1-9	No	2-7	N
26-27/02/2024	Night-time	4-6	No	5-8	SW
27/02/024	Daytime	5-10	No	3-11	WSW
27-28-/02/2024	Night-time	5-6	No	1-6	SW
28/02/2024	Daytime	6-12	07:00-08:00 15:00-17:00 20:00-22:00	6-10	SW
28-29/02/2024	Night-time	4-7	No	7-9	WSW
29/02/2024	Daytime	2-8	17:00-18:00	3-10	SW
29/02-01/03/2024	Night-time	0-4	03:00-05:00	4-5	SSE
01/03/2024	Daytime	0-4	11:00-15:00	2-9	N

In line with good practice, periods of rain and elevated winds have been omitted from the study by RSK Ireland Limited.

9.3.1.4 *Instrumentation*

The noise measurements were undertaken using the following equipment:

Table 9-3 Survey Equipment

Equipment	Type	Serial No.
Class 1 Sound Level Meter	Rion NL – 52	00710314
Class 1 Sound Level Meter	LXT 831	0006263
Class 1 Sound Level Meter	Fusion	15334

The equipment used has a calibration history that is traceable to a certified calibration institution. The calibration of the sound level meter was field checked prior to commencing measurements and prior to removing the equipment from site upon completion. A calibration drift of -0.1dB was noted upon commencement of the survey and +0.1 upon survey completion. The sound level meter calibration certificates are included in Appendix B of the ProPG: Acoustic Design Statement (Appendix 9-1). The sound level meter conformed to the Class 1 requirements of BS EN 61672-1:2013 'Electroacoustics. Sound level meter, Specifications'. The calibrator used conforms to the requirements of BS EN IEC 60942:2018 'Electroacoustics. Sound calibrators'.

9.3.1.5 *Measurement Parameters*

The noise survey results are presented in decibels (dB), using the following parameters:

- $L_{Aeq,T}$: is the equivalent continuous sound level and is used to describe a fluctuating sound as a single value over the sample period (T);
- $L_{AFmax,T}$:The maximum A-weighted sound pressure level occurring within a specified time period (T). Measured using the "Fast" time weighting;
- $L_{AF10,T}$: Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period (T). It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting; and
- $L_{AF90,T}$: Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval (T). It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level without contribution from intermittent sources.

All sound levels in the ProPG Assessment Report are expressed in terms of decibels (dB) relative to $2x10^{-5}$ Pa. Noise measurements use a reference time period (T) of 15-minutes.

9.3.1.6 *Measurement Results*

9.3.1.6.1 Location N1

Table 9-4 summarises the measured daytime (07:00-23:00) noise levels at Location N1.

Table 9-4 Measured Daytime Noise Levels at Location N1

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	13/05/2022	15:00-16:00	65	84	65	51	Local and distant road traffic dominant
		16:00-17:00	63	78	67	52	
		17:00-18:00	62	76	66	49	
		18:00-19:00	61	76	66	48	
		19:00-20:00	60	76	64	46	
		20:00-21:00	60	80	64	43	
		21:00-22:00	59	77	62	40	
		22:00-23:00	56	76	60	35	
	14/05/2022	07:00-08:00	58	78	61	38	
		08:00-09:00	60	84	64	42	
		09:00-10:00	60	80	64	46	
		10:00-11:00	60	86	64	48	
		11:00-12:00	60	75	64	48	
		12:00-13:00	60	76	64	47	
		13:00-14:00	61	96	64	44	
		14:00-15:00	61	87	64	44	

The daily daytime ambient noise levels were in the range 56 to 65 dB $L_{Aeq,1hr}$. Road traffic movements were noted to be the dominant source of noise at this measurement position.

Table 9-5 summarises the measured night-time (i.e. 23:00 to 07:00hrs) noise levels at Location N1.

Table 9-5 Measured Night-time Noise Levels at Location N1

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Night-time	13/05/2022	23:00-00:00	54	75	56	37	Local and distant road traffic dominant
	14/05/2022	01:00-02:00	53	76	54	35	
		02:00-03:00	50	77	47	27	
		03:00-04:00	48	73	41	25	
		04:00-05:00	49	75	44	24	
		05:00-06:00	48	77	45	31	
		06:00-07:00	51	76	50	34	

The night-time ambient noise levels were in the range 48 to 54 dB $L_{Aeq,1hr}$. Local and distant road traffic were dominant noise sources during night-time period. Figure 9-2 shows the time-history graph of measured noise levels between 13th and 14th May 2022 at Location N1.

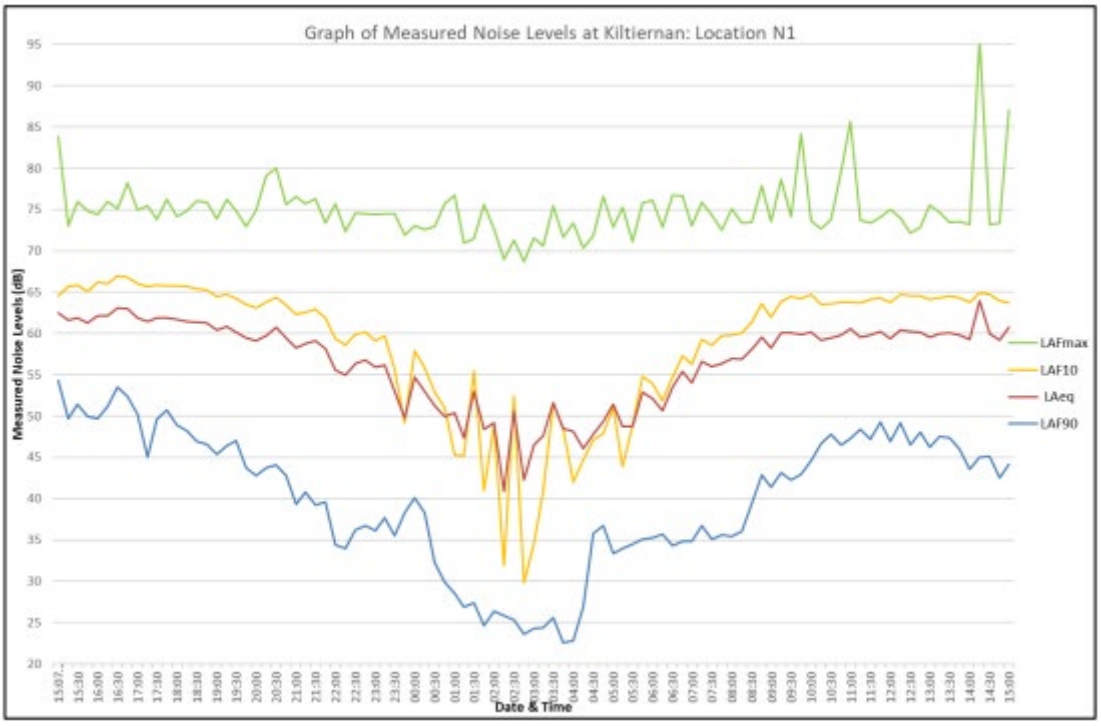

Figure 9-2 Profile of Baseline Monitoring Results at Location N1 (13th – 14th May 2022) (RSK Ireland Limited, 2024)

9.3.1.6.2 Location N2

Table 9-6 summarises the measured daytime (i.e., 07:00-23:00) noise levels at Location N2.

Table 9-6 Measured Daytime Noise Levels at Location N2

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	23/02/24	(07:00-23:00)	61	99	62	50	Local and distant road traffic dominant
	24/02/24		59	94	61	49	
	25/02/24		59	91	61	48	
	26/02/24		60	82	63	51	
	27/02/24		60	84	61	51	
	28/02/24		60	81	63	53	
	29/02/24		60	86	63	52	
	01/03/24		61	85	64	52	

The daily daytime ambient noise levels were in the range 59 to 61 dB $L_{Aeq,1hr}$. Road traffic movements were noted to be the dominant source of noise at this measurement position.

Table 9-7 summarises the measured night-time (i.e. 23:00 to 07:00hrs) noise levels at Location N2.

Table 9-7 Measured Night-time Noise Levels at Location N2

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Night-time	23-24/02/24	(23:00-07:00)	50	76	50	35	Local and distant road traffic dominant
	24-25/02/24		49	71	51	33	
	25-26/02/24		50	73	47	37	
	26-27/02/24		46	75	45	33	
	27-28/02/24		51	83	45	29	
	28-29/02/24		51	74	49	37	
	29/02-01/03/24		53	77	53	38	

The night-time ambient noise levels were in the range 46 to 53 dB $L_{Aeq,1hr}$. Local and distant road traffic were dominant noise sources during night-time period. Figure 9-3 shows the time-history graph of measured noise levels between 23rd and the 1st of March 2024 at location N2.

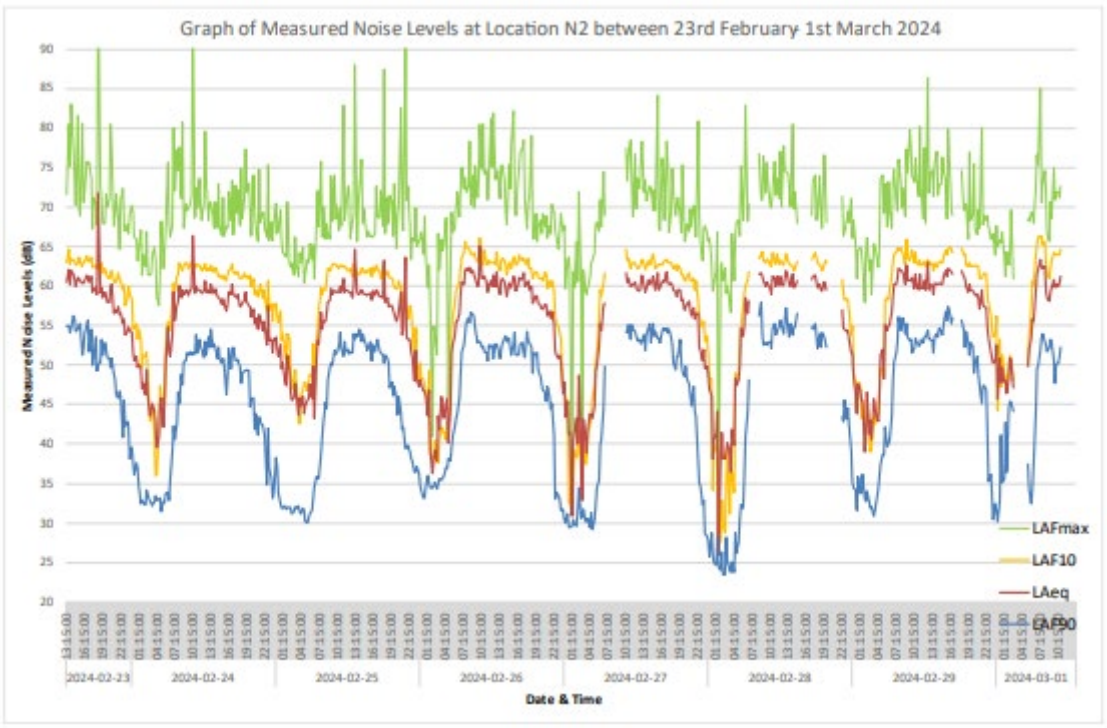

Figure 9-3 Profile of Baseline Noise Monitoring Results at Location N2 (23rd February – 1st March 2024) (RSK Ireland Limited, 2024)

9.3.1.6.3 Location N3

Table 9-8 summarises the measured noise levels at Location N3.

Table 9-8 Measured Noise at Location N3

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	20/05/22	10:21	53	57	55	48	Distant and local road traffic dominant.
		10:36	53	68	56	49	
		10:51	54	72	56	49	

The daytime ambient noise levels were in the range 53 to 54 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise. Construction noise, birdsong, tree song, cows and children playing nearby were also audible as secondary sources.

9.3.1.6.4 Location N4

Table 9-9 summarises the measured noise levels at Location N4.

Table 9-9: Measured Noise Levels at Location N4

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	20/05/22	11:34	61	84	59	47	Distant and local road traffic dominant.
		11:49	54	62	57	45	
		12:04	56	75	59	48	

The daytime ambient noise levels were in the range 54 to 61 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise. Construction noise, birdsong, tree song, cows and children playing nearby were also audible as secondary sources.

9.4 Noise Criteria

Noise is defined as any sound that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it. In summary noise can be defined as any unwanted sound. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0dB is nominally the "threshold of hearing" and 120dB is nominally the "threshold of pain" (refer to Figure 9-1 below).

Background noise is defined as '*the steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$)*'. According to the EPA Noise Guidance NG4, an area of low background noise is one where the existing background noise levels measured during an environmental noise survey are as follows:

- Average Daytime Background Noise Level ≤40dB L_{AF90}, and;
- Average Evening Background Noise Level ≤35dB L_{AF90}, and;
- Average Night-time Background Noise Level ≤30dB L_{AF90}.

The Proposed Development is considered to be a non-quiet area as per EPA screening guidelines.

Figure 9-4 depicts typical sounds and their noise levels on a decibel scale.

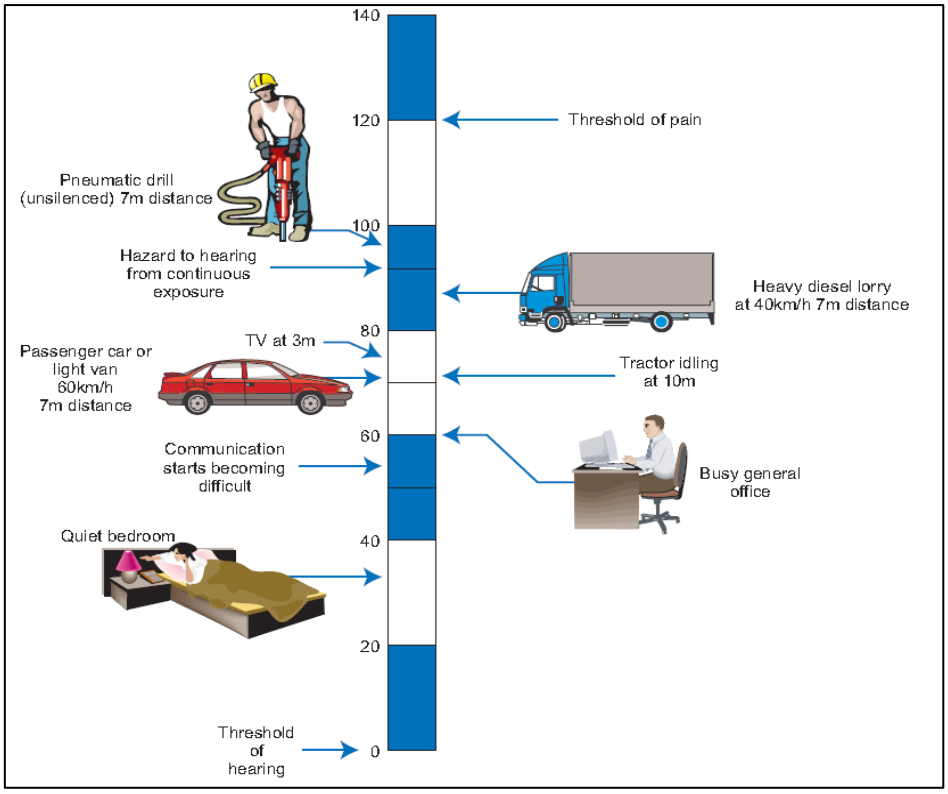

Figure 9-4: Scale and Indicative Noise Levels on the dB(A) Scale (Based on guidance taken from: Design Manual for Roads and Bridges, Volume 11 Consolidated Edition 1993)

In deriving noise criteria for the Proposed Development, consideration has been given to the following documents:

- Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 2, Dún Laoghaire – Rathdown County Council;
- Dún Laoghaire-Rathdown County Development Plan 2022-2028;
- The Professional Guidance on Planning & Noise (ProPG), May 2017;
- BS 8233 Guidance on sound insulation and noise reduction for buildings; and
- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound.

9.4.1 Construction Phase

During the construction phase, the range of activities with potential to generate noise and vibration emissions to off-site sensitive receptors will include site preparation works, construction of the Proposed Development, landscaping and erection of any temporary buildings/compounds that may be required.

9.4.1.1 *Recommended Noise Limits*

There is currently no statutory Irish guidance for construction noise requirements from noise during the construction phase of a project.

In the absence of specific noise limits, the appropriate criteria for the allowable construction noise levels may be found in British Stand BS 5228 – 1:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites – Noise.* The standard (BS5228–1:2009+A1) provides examples of acceptable limits for construction and/or demolition noise in both subjective and objective form. For example, paragraph E.2 of the standard states:

"*Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut.*"

Paragraph E.2 goes on to state:

"*Noise levels between 07:00 and 19:00hrs, outside the nearest window of the occupied room closest to the site boundary should not exceed:*

- *70dB in rural, suburban and urban areas away from main road traffic and industrial noise;*
- *75dB in urban areas near main roads in heavy industrial areas."*

Typically, the local councils refer to BS 5228 Part 1 as a method to control construction noise from sites on the local environment. This standard is therefore the de facto appropriate standard in the absence of regulatory guidance.

Based on paragraph E.2 of BS 5228 the following criteria is adopted for the Proposed Development:

- For residential properties it is considered appropriate to adopt the 70dB(A) criterion; and
- For non-residential locations it is considered appropriate to adopt the higher category values of 75dB(A) during the day. These will only be considered as noise sensitive during office hours.

These limit values are also in agreement with those set by Transport Infrastructure Ireland (TII) for construction projects. Buildings other than dwellings which have a residential function will be considered for the lower noise limit, this including hotels, B&B's, student accommodation, and co living developments. This is in line with the guidance and definition of noise sensitive residences of EPA NG4. Table 9-10 outlines the project criteria in tabular form.

Table 9-10 BS 5228 Threshold Levels.

Assessment category and threshold value period	Threshold value, in decibels (dB) (L_{Aeq})		
	Category A[1]	Category B[2]	Category C[3]
Daytime (07:00 – 19:00) and Saturdays (07:00 – 14:00)	65	70	75
Evenings and weekends[4]	55	60	65
Night-time (23:00 to 07:00hrs)	45	50	55

Table 9-11 presents the TII indicative levels of acceptable construction noise from the TII publication *Good Practice Guidance for the Treatment of Noise during Planning of National Road Schemes*, March 2014. These noise limits are applied during the construction of road infrastructure projects at the façade of Noise Sensitive Locations (NSLs).

Table 9-11 TII Indicative Levels for Construction Noise

Day	Working Hours hrs	Level, dB L_{Aeq}	Maximum, dB L_{Amax}
Monday to Friday	07:00 to 19:00	70	80
	19:00 to 22:00	60*	65*
Saturday	08:00 to 16:30	65	75
Sundays and Bank Holidays	08:00 to 16:00	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the local authority.

The TII limits set out in Table 9-11 will apply at all NSLs during the construction phase.

In the unlikely event that construction works were to be required during the night-time period, advice in relation to establishing significant construction noise effects as set out in BS5228-1:2014+A1 – *Code of practice for noise and vibration control on construction and open sites*. Annex E of BS5228 allows for the designation of a noise sensitive location into a specific category (A, B or C) through consideration of existing ambient noise levels in the absence of construction noise. With reference to the measured ambient noise levels at the Proposed Development site, it is expected that Category A values would be appropriate for night-time, i.e., 45 dB L_{Aeq} for the period 23:00 – 07:00 hrs. Construction activity at these times, other than

[1] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
[2] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
[3] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category B values.
[4] 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

that required for emergency works, will require the explicit permission of Dún Laoghaire-Rathdown County Council.

9.4.1.2 *Recommended Vibration Limits*

Vibration criteria for the Proposed Development has been developed based on the guidance on construction vibration prediction, assessment and control contained within British Standard *Code of Practice for Noise and Vibration Control on Construction and Open Sites Pt 2: Vibration*.

Humans are sensitive to vibration and can feel vibration long before it becomes an issue in terms of cosmetic damage or structural damage to buildings. Vibration causes nuisance to humans as it is assumed that if vibration can be felt then damage to the building or structure is inevitable.

Table 9-12 Guidance of Effects of Vibration Levels on Residents/People

Vibration Level	Description
0.14mm/s	Vibration might just be perceptible for frequencies normally associated with construction vibration. People are less sensitive to lower frequency vibration.
0.3mm/s	Vibration might just be perceptible in residential environments.
1.0mm/s	It is likely that vibration at this level in a residential environment will cause complaints. It can be tolerated, if prior warning and explanation is given to residents.
10.0mm/s	Vibration is likely to be intolerable for any more than a brief exposure to this level.

Table 9-13 Transient Vibration Guide for Cosmetic Damage

Type of Building	Peak Component Particle Velocity (PPV)	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures / industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	50mm/s at 4 Hz and above
Unreinforced or light framed structures. Residential or light commercial buildings[5]	15mm/s at 4 Hz increasing to 20mm/s at 15 Hz	20mm/s at 15 Hz increasing to 50mm/s at 40 Hz and above

The type of buildings near the development are residential. The peak component particle velocity limits are recommended for this scheme, noting that peaks above 10mm/s are likely to be intolerable to residents for any more than a brief period.

[5] At frequencies <4Hz a maximum displacement of 0.6mm is not to be exceeded.

The following limits from continuous vibration are required for the Proposed Development:

i. For vibration sensitive spaces an upper limit of 1mm/s is required. This includes educational and residential buildings. In addition to the lower limit for educational and residential buildings some buildings may contain vibration sensitive equipment including laboratories and hospitals. Impacts on sensitive equipment can occur well below the range of human perception. It is not always practical to mitigate construction vibration such that it achieves the very stringent vibration criteria for sensitive equipment. Rather, consultation should occur with the users of the equipment appropriate vibration limits set and vibration-intensive works should be scheduled such that the equipment can be used during agreed hours.
ii. For commercial buildings where the activities are not of a particularly sensitive nature for vibration or for potentially vulnerable unoccupied buildings a vibration limit of 3mm/s is required.
iii. For all other buildings 5mm/s is required. This includes unoccupied buildings and non-sensitive buildings.

Exceedance of these levels should only be for short durations where required and with prior notice to the sensitive receivers of concern. The vibration levels should never exceed 10mm/s at any of the adjacent buildings.

The TII Guidance suggest that vibration levels should be limited to 8 mm/sec at frequencies of <10Hz, to 12.5 mm/sec at frequencies 10 – 50Hz and to 20 mm/sec at 50Hz and above.

The Proposed Development will comply with BS 5228 "*Noise Control on Construction and open sites Part 1: Code of Practice for basic information and procedures for noise control*" and all works will be limited to normal daytime working hours:

- 7am – 7pm Monday to Friday
- 7am – 2pm Saturdays
- No works Sundays or on Public Holidays

Deviation from these times will only take place when written approval is granted by Dún Laoghaire Rathdown County Council (DLRCC) in exceptional circumstances.

9.4.2 Operational Phase

9.4.2.1 *Local Authority Guidelines*

9.4.2.1.1 Dublin Agglomeration Environmental Noise Action Plan (2018-2023): Volume 2 Dún Laoghaire – Rathdown County Council

With regard to inward noise impact on the Proposed Development reference is made to The Dublin Agglomeration Environmental Noise Action Plan, December 2018 – July 2023, Volume 2, Dún Laoghaire-Rathdown County Council (NAP) provides guidance for the scenario whereby a residential development is proposed in an area exposed to pre-existing levels of environmental noise. Section 8.2.3 discusses Noise in the Planning Process:

"8.2.3 Noise in the Planning Process The planning system has the potential to exercise a significant influence on the control of future exposure to environmental noise and can play a

key role in the improvement of amenity. The appropriate use of the planning system can help avoid, or minimise, the adverse impacts of noise without placing unreasonable restrictions on development. Scope exists within the planning and development management process to manage increased levels of noise arising from new development where exposure levels can be harmful to health. There are two main scenarios in development where noise could be considered as being a material issue, namely: 1) Introducing people into potentially noisy areas through the provision new residential housing, hospital, schools nursing homes etc in the vicinity of existing road rail industrial or airport noise, or where there are potential high levels of noise with buildings or in adjoining gardens or public open spaces. 2) Introducing potentially noisy developments such as new or altered roads, railways, industrial sites, and airports, commercial or large sporting recreational developments into the vicinity of noise sensitive locations. In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that Action Planning Authorities should examine the planning policy guidance notes issued in England titled, „ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise". This has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England".

The noise levels measured on site will therefore be compared to relevant guidance for assessing the suitability of the site for residential development i.e. ProPG: ProPG: Professional Practice guidance on Planning and Noise for new Residential Development (May 2017).

9.4.2.1.2 Dún Laoghaire-Rathdown County Development Plan 2022-2028

Section 12.9.2 Noise Pollution and Noise Nuisance of the Dún Laoghaire-Rathdown County Development Plan 2022-2028 states the following in relation to a scenario where a residential development is located in an area potentially exposed to environmental noise sources. "*To require developers to produce an Acoustic Design Assessment (informed by guidance such as is set out in 'ProPG Planning and Noise', 2018, as referenced in the 'Dublin Agglomeration Noise Action Plan 2018 – 2023'), where a noise-sensitive use is proposed in an area that may have high pre-existing environmental sound levels*".

9.4.3 ProPG: Professional Practice Guidance on Planning and Noise for new Residential Development

Professional Practice Guidance on Planning and Noise (ProPG) provides a two staged approach for evaluating noise exposure on a proposed residential development. The two stages of the approach can be summarised as follows:

Stage 1 - Involves a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.
Stage 2 – Involves a full detailed appraisal of the Proposed Development covering four "key elements" that include:

Element 1 - Good Acoustic Design Process;

Element 2 - Noise Level Guidelines;

Element 3 - External Amenity Area Noise Assessment, and;

Element 4 - Other Relevant Issues.

An Acoustic Design Statement (ADS) is then prepared for submission to the planning authority. This ADS outlines the findings of the Stage 1 and Stage 2 assessments; and allows the planning authority to make an informed decision on the suitability of the Site for development, with consideration of noise control measures where required. The ProPG document outlines the following potential outcome with respect of the ADS:

A. Planning consent may be granted without any need for noise conditions;

B. Planning consent may be granted subject to the inclusion of suitable noise conditions.

C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”); or

D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”)

A summary of the ProPG approach is illustrated in Figure 9-5.

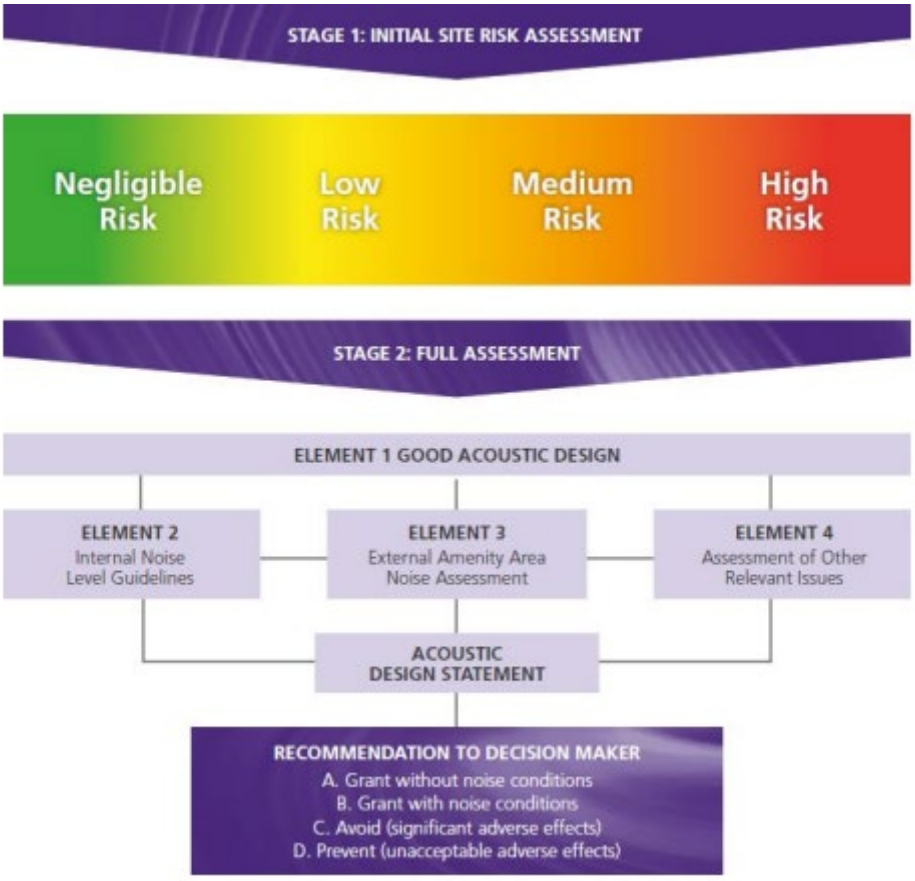

Figure 9-5 ProPG Assessment Strategy (Source: ProPG)

9.4.3.1 *ProPG and BS 8233 Guidance on sound insulation and noise reduction for buildings*

BS 8233 is referenced in ProPG with regard to internal noise levels within the proposed new dwellings. The following internal noise targets are presented as derived from BS 8233 (2014).

Table 9-14 ProPG Internal Noise Targets (derived from BS 8233:2014) (Source: RSK Ireland Limited, 2024)

Activity	Location	Daytime (07:00 to 23:00 hours)	Night-time (23:00 to 07:00 hours)
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}$ [6]

[6] Internal $L_{Amax,T}$ noise level may be exceeded up to 10 times per night without a significant impact occurring

9.4.3.2 *ProPG and BS 4142 Methods for rating and assessing industrial and commercial sound*

Given that there are commercial buildings in the vicinity, it is appropriate to consider the guidance provided in BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. ProPG states the following in the case of sites exposed to industrial and/or commercial noise:

2.13 As stated in the Introduction, the scope of this ProPG is restricted to sites that are exposed predominantly to noise from transportation sources. The key concerns regarding new residential development near existing industrial and/or commercial land uses are:

- *The future occupants of the new noise sensitive development may be subject to adverse effects of noise; and*
- *The existing industrial and/or commercial business may become subject to complaints from future occupants of the new noise sensitive development and at risk of having to modify operations and/or incur additional costs.*

2.14 In the special case where industrial or commercial noise is present on the site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk (and if included, this should be clearly stated).

2.15 Where industrial or commercial noise is present on the site and is considered to be "dominant" (i.e. where the impact would be rated as adverse or greater (subject to context) if a BS4142:2014 assessment was to be carried out), then the risk assessment should not be applied to the industrial or commercial noise component and regard should be had to the guidance in BS4142:2014. The judgement on whether or not to undertake a BS4142 assessment to determine dominance should be proportionate to the level of risk. In low-risk cases a subjective judgement of dominance, based on audibility, would normally be sufficient.

The Southside Autolink car dealership and Boyle's Solid Fuel in the Sancta Maria property adjoins the developments north-western boundary. This site includes some industrial/commercial use. The baseline noise survey included surveys and site inspections/observations along this boundary. The dominant noise sources observed were road traffic from the surrounding public road network. There were occasional sounds from the adjacent site which included primarily the movement of vehicles. In this instance and based upon a subjective judgement of personnel conducting the baseline noise surveys, it is concluded that industrial/commercial noise is audible occasionally but is "not dominant" at any location across the site. As such the contribution to measured noise levels from any industrial or commercial noise is included in the noise level used to establish the ProPG degree of risk, and a separate BS 4142 assessment of industrial or commercial noise is not required.

9.5 Characteristics of the Proposed Development

The characteristics of the Proposed Development are set out in detail in Chapter 2 of this EIAR. The following components of the Proposed Development are of particular note with respect to noise and vibration:

- Site clearance/preparation works;
- Foundation formation;
- General construction works;
- Landscaping and erection of any temporary buildings/compounds that may be required; and
- Traffic along local road network.

9.6 Potential Impact of the Proposed Development

9.6.1 Construction Phase

9.6.1.1 *Noise Sensitive Locations*

The EPA define noise sensitive locations as '*any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels*'.

In identifying sensitive receptors, consideration has been given residential properties or noise sensitive premises such as schools or hospitals, or recreational spaces within a close proximity of the Proposed Development.

The nearest noise sensitive locations (NSLs) are residential properties which are located approximately 30m - 40m from the Proposed Development site boundary. Representative NSLs have been selected and are presented in Table 9-5.

Table 9-15 Sensitive Receptors

Name	Type	ITM Coordinates		Orientation Relative to Site Boundary
		X	Y	
Cromlech Close/Glenamuck Road	Residential	720491	722592	40m North
Rockville Woods	Residential	720584	722606	30m East
Wayside Cottages	Residential	720436	722338	30m West
Ballycorus Road	Residential	720798	722178	30m South

9.6.1.2 *Plant Items Considered in Noise Assessment*

BS 5228-1:2009+A1:2014 provides catalogue of noise levels for various construction plant, machinery and activity that can be used for the prediction of noise levels. This allows for an assessment of the likely impacts of construction activity to nearby receptors.

Table 9-16 presents construction plant items that are typical for a site of this nature, along with the reference noise emission values.

Table 9-16 Typical Construction Plant Items and Reference Noise Emission Values

	Item of Plant (BS 5228-1 Ref.)	Reference Sound Power Level dB L_{wA}	Sound Level at Reference Distance (10m) $L_{Aeq,1hr}$
Site Clearance/preparation	Wheeled Loader Lorry (C2 28)	105	76
	Diesel Generator (C4 76)	89	61
	Track Excavator (C2 22)	100	72
	Dozer (C2 13)	106	78
	Dump Truck (C4 2)	106	78
	Track Excavator (C2 22)	100	72
	Wheeled Loader Lorry (C2 28)	105	76
	Concrete Pump (C3 25)	106	78
	Compressor (C3 19)	103	75
	Poker Vibrator (C4 33)	106	78
General Construction	Tower Crane (C4 48)	104	76
	Articulated Lorry (C11 10)	105	77
	Pneumatic Circular Saw (D7 79)	103	75
	Internal fit-out	97	70
Landscaping	Dozer (C2 13)	106	78
	Dump Truck (C4 2)	106	78
	Road Roller (D8 27)	104	76

9.6.1.3 *Assessment of Predicted Construction Noise Levels*

Noise and vibration can arise from vehicular traffic as well as from the operation of fixed or mobile machinery onsite. Onsite activity involves site clearance and construction. A variety of plant items will be used for the purposes of site clearance and construction.

Noise prediction calculations have been completed for the four scenarios presented in Table 9-16 (site clearance/preparation, foundation formation, general construction, and landscaping) noise from the use of onsite plant up to 250m from the source. According to the inverse square law, for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB. The reference levels were calculated and projected for a range of distances from the source to the appropriate receptor using the following formula:

$$L_{Source} \approx L_{Ref} - 20 \cdot Log10(R2/R1)$$

Where:

L_{Source} = Sound Pressure Level at Initial Location

L_{Ref} = Sound Pressure Level at the new Location

R1 = Distance from the noise source to initial location

R2 = Distance from noise source to the new location

The calculations make a number of assumptions such as:

1. There is a straight line between the source and observer.
2. Meteorological conditions are static.
3. There are no natural barriers that affect attenuation of noise other than distance.
4. All plant items are operating from a single source simultaneously and at full capacity.
5. All plant items are operating at the edge of the work area closest to the sensitive receptor.

The inverse square law is the logical first estimate of the sound you would get at a distant point in a reasonably open area. It is noted that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts.

Table 9-17 sets out the equipment associated with the Proposed Development and associated dB(A) levels according to *BS 5228-1*, and the inverse square law:

Table 9-17 Noise Predictions for Plant Associated with Proposed Construction Activities

Plant Item	Ref	Construction Noise Significance Threshold dB	dB (A) @10m	dB (A) @30m	dB (A) @40m	dB (A) @100m	dB (A) @200m	dB (A) @250m
Wheeled Loder Lorry	BS 5228-1	70	76	66.5	64	56	50	48
Diesel Generator	BS 5228-1		61	51.5	49	41	35	33
Track Excavator	BS 5228-1		72	62.5	60	52	46	44
Dozer	BS 5228-1		78	68.5	66	58	53	50
Dump Truck	BS 5228-1		78	68.5	66	58	53	50
Concrete Pump	BS 5228-1		78	68.5	66	58	53	50

Plant Item	Ref	Construction Noise Significance Threshold dB	dB (A) @10m	dB (A) @30m	dB (A) @40m	dB (A) @100m	dB (A) @200m	dB (A) @250m
Compressor	BS 5228-1		75	65.5	63	55	49	47
Poker Vibrator	BS 5228-1		78	68.5	66	58	53	50
Tower Crane	BS 5228-1		76	66.5	64	56	50	48
Articulated Lorry	BS 5228-1		77	67.5	65	57	51	49
Pneumatic Circular Saw	BS 5228-1		75	65.5	63	55	49	47
Internal fit-out	BS 5228-1		70	60.5	58	50	44	42

Table 9-17 outline the predicted noise levels at reference distances using *BS 5228-1* recommendations. The predicted noise levels from onsite activities up to 250m from the source have been included. As indicated in Table 9-17, it is not anticipated that the adopted criteria will be exceeded during the construction phase at the closest NSLs (30m and 40m from the site boundary). It is concluded that the likely noise impact of the development in the construction phase is therefore insignificant.

9.6.2 Operational Phase

9.6.2.1 *ProPG Stage 1 (Initial Noise Assessment)*

A Stage 1 noise risk assessment of the Proposed Development Site has been conducted by RSK Ireland Limited (2024), based on measured noise levels on site and expected noise levels on site in the foreseeable future, with comparison to the categories outlined in Figure 9-6.

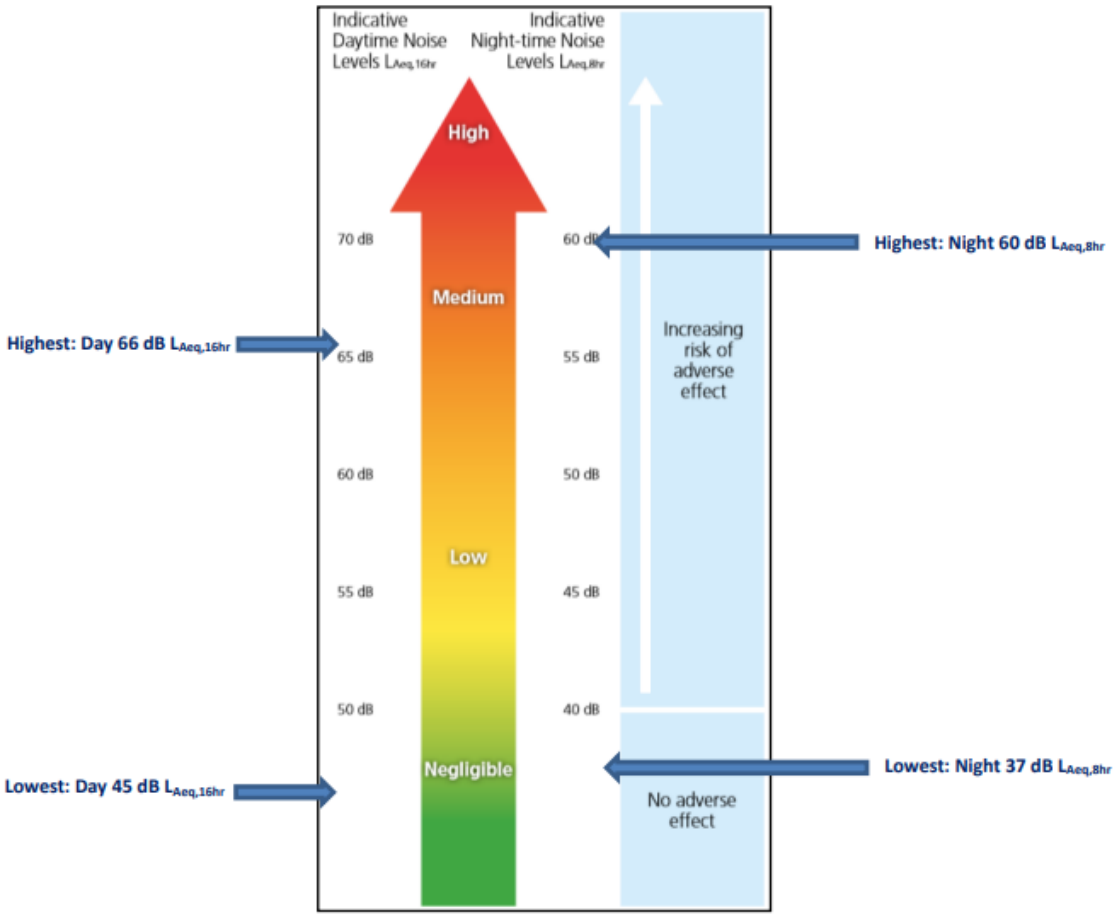

Figure 9-6 ProG Stage 1 – Noise Risk Assessment Categories (Highest Expected Site Noise Levels Indicated) (RSK Ireland Limited, 2024)

With reference to the existing noise levels measured on site (as presented in Tables 9-4 – 9-8), the initial ProPG noise risk categories, for the façades most exposed to road traffic noise, are summarised as follows (RSK Ireland Limited, 2024):

- Daytime: **Negligible** to **Medium/High**
- Night-time: **Negligible** to **High**

9.6.2.2 *ProPG Stage 2 (Acoustic Design Statement)*

With consideration of the Stage 1 review, it is considered that the site is suitable for residential development, provided that an appraisal of the Proposed Development is carried out, covering the four key elements (RSK Ireland Limited, 2024):

- Element 1 – Good Acoustic Design (GAD) Process;
- Element 2 – Noise Level Guidelines;
- Element 3 – External Amenity Area Noise Assessment; and
- Element 4 – Other Relevant Issues.

Each item listed above has been addressed in the ProPG Assessment (RSK Ireland Limited, 2024).

9.6.2.3 *Plant Noise Emissions from the Proposed Development*

Reference is made to British Standard *BS4142:2014+A1:2019* in setting criteria for any new mechanical plant items required for the Proposed Development (i.e., extract fans, heat pumps, air conditioning units etc.).

Based upon measured day and night-time background sound levels on site, appropriate plant noise criteria to nearby dwellings are as follows (RSK Ireland Limited, 2024):

- daytime (07:00 to 23:00) 45 dB $L_{Aeq,1hr}$
- night-time (23:00 to 07:00) 35dB $L_{Aeq,15\text{-}min}$

Plant noise emissions should not contain any characteristics that would warrant any acoustic feature penalties under the BS 4142:2014 assessment procedure.

At detailed design stage, noise emissions from new plant servicing the development will be designed so as not to exceed the above limit values. It is concluded that the likely noise impact of the development in the operational phase is therefore insignificant.

9.6.2.4 *PropG: Acoustic Design Statement Conclusion*

The report considered the potential inward impact of road traffic on the Proposed Development. Assessment methodologies use guidance from *The Professional Guidance on Planning & Noise (ProPG),* May 2017. The two primary stages of the ProPG assessment are the “Stage 1” initial noise risk assessment of the proposed site and “Stage 2” detailed appraisal of the proposed development and preparation of an Acoustic Design Statement.

The site noise survey has also been used to assess the sites noise risk categories, as per the ProPG “Stage 1” assessment. The ProPG noise risk categories, for façades most exposed to road traffic, are Negligible to Medium/High for daytime and Negligible to High for night-time periods.

Recommendation to mitigate noise emissions, to mitigate noise emissions, as specified in the “Stage 2” Acoustic Design Statement, include the following:

- Provision of glazing with minimum sound insulation properties as outlined in the ProPG: Acoustic Design Statement (RSK Ireland Limited, 2024); and
- Provision of acoustic attenuation to ventilation systems for dwellings as outlined in the ProPG: Acoustic Design Statement (RSK Ireland Limited, 2024).

In the developments operational phase, criteria have also been set for new building services plant (i.e., such as may be required to service the retail/commercial elements of the Proposed Development), to both existing and future residents, in accordance with the methodologies outlined in BS 4142:2014+A1:2019. It has been concluded that the likely noise impact of the development in its operational phase is not significant.

In summary, it is considered that the site is suitable for residential development subject to the provision of the noise control recommendations as outlined in this chapter (RSK Ireland Limited, 2024).

It is concluded that the likely noise impact of the development in the operational phase is therefore insignificant.

9.6.3 Potential Cumulative Impacts

Cumulative Impacts can be defined as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project*". Effects which are caused by the interaction of effects, or by associated or off-site projects, are classed as indirect effects. Cumulative effects are often indirect, arising from the cumulation of different effects that are individually minor. Such effects are not caused or controlled by the project developer.

A review of other off-site developments was completed as part of this assessment. Chapter 2 of this EIAR details the existing, proposed and granted planning permissions on record in the area, a review of these planning permissions has been completed as part of this assessment.

In terms of the effects of noise and vibrations, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the Proposed Development site. Due to the implementation of good construction practices at the site of the Proposed Development and these offsite permitted developments, it is not anticipated that significant cumulative impacts will occur.

9.6.4 "Do Nothing" Impact

A 'Do Nothing' scenario would result in the site remaining as a largely greenfield with hedgerows and treelines, with hardstanding, derelict buildings and a football pitch. Noise and vibration levels would remain unchanged onsite and at nearby sensitive receptors.

The site is zoned for residential development to be brought forward within the development plan period and therefore, it is reasonable to assume that a similar development could be brought forward on the site up to 2028.

9.7 Avoidance, Remedial and Mitigation Measures

9.7.1 Construction Phase

9.7.1.1 *Noise*

BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*, provides guidance on the various aspects of construction site noise mitigation, including, but not limited to:

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels,

the first action will be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following work methods will be implemented to ensure minimal noise and vibration are generated at sources during the construction phases:

- All plant and equipment liable to create noise whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and neighbouring occupied buildings.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as concrete breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensure any leaks in the air lines are sealed. Erect localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
- Any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.
- Site deliveries will be confined to working hours and allocated offloading location will be utilized for all deliveries.

- Working hours will be confined to those stipulated in the grant of planning permission.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation.

Liaison with the Public

A designated noise liaison officer (who may be the Environmental Officer referred to above) will be appointed to oversee the site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, prior to particularly noisy construction activity, e.g., demolition, breaking, piling, etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The construction programme will be arranged to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling or breaking works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities.

9.7.1.2 *Vibration*

Ground vibration may also potentially occur during the construction phase. Vibration can be measured in terms of Peak Particle Velocity (PPV), this is expressed in millimetres per second (mm/s). Vibration standards can be considered in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance.

Rock breaking and piling are considered the primary sources of vibration during the construction phase of a project. These would occur at higher levels of vibrations (up to 12mm/s and 6mm/s respectively), and this can be tolerated for events of a short duration.

Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 7385: 1993*: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration,* and;

- British Standard BS 5228: 2009+A1 2014: *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.*

9.7.2 Operational Phase

During the operational phase of the development, noise mitigation measures with respect to the outward impact of the development are not deemed necessary.

9.7.3 "Worst Case" Scenario

The worst-case scenario would involve the failure of mitigation measures for the Proposed Development. In this scenario there is the potential for short-term, intermittent noise-related impacts.

9.8 Residual Impacts

No significant residual noise and vibration effects are anticipated.

9.9 Monitoring

The Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary.

In the first instance, it is envisaged that such audits will take place on a monthly basis. This will be subject to review and the frequency of audits may be revised if deemed appropriate.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed;
- Opportunities for noise control 'at source';
- Optimum siting of plant items;
- Plant items being left to run unnecessarily;
- Correct use of proprietary noise control measures;
- Materials handling;
- Poor maintenance; and
- Correct use of screening provided and opportunities for provision of additional screening.

Noise and vibration monitoring reports will be maintained and made available to the Local Authority and members of the public on request.

9.10 Interactions

9.10.1 Population and Human Health

The impact assessment of noise and vibration has concluded that additional noise associated with the Proposed Development will not have any major negative impacts beyond the site boundary. Mitigation and monitoring measures will be incorporated to further reduce the potential for noise generation from the Proposed Development. No likely significant human health impacts are anticipated as a result of noise from the Proposed Development.

9.10.2 Traffic

The Proposed Development will have no significant impact on overall traffic volumes and therefore traffic will not result in any significant increase in noise at sensitive receptors. There is the potential for traffic related noise to impact residents during the operational phase of the Proposed Development; however, there will be no significant impact, due to the implementation of the following proposed mitigation measures, as specified in the “Stage 2” Acoustic Design Statement:

- Provision of glazing with minimum sound insulation properties as outlined in the ProPG: Acoustic Design Statement (RSK Ireland Limited, 2024); and
- Provision of acoustic attenuation to ventilation systems for dwellings as outlined in the ProPG: Acoustic Design Statement (RSK Ireland Limited, 2024).

9.10.3 Biodiversity

The noise and vibration effects of the Proposed Development will cause disturbance to the local fauna including birds during the construction phase of the Proposed Development; however, the proposed mitigation measures will reduce this disturbance. No likely significant biodiversity impacts are anticipated as a result of noise from the Proposed Development.

9.11 Difficulties Encountered When Compiling

No difficulties were encountered.

9.12 References

BS 8233 Guidance on sound insulation and noise reduction for buildings

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

Dept. of Housing, Planning and Local Government (DHPLG), 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018.

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 (HD 213/11 – Revision 1) (The Highways Agency et al., 2011).

Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 2, Dun Laoghaire – Rathdown County Council.

Dún Laoghaire-Rathdown County Development Plan 2022-2028

Environmental Protection Agency (2016) Guidance Note for Noise (NG4): Licence Applications, Surveys and Assessments in Relation to Scheduled Activities.

Environmental Protection Agency Environmental Management in the Extractive Industry (Non-Scheduled Minerals).

Guidelines for the Treatment of Noise & Vibration in National Road Schemes, National Roads Authority, Revision 1, 25th October 2004.

ISO 1996-1:2016 Acoustics - Description, measurement and assessment of environmental noise. Part 1: Basic quantities and assessment procedures.

ISO 1996-2:2017 Acoustics - Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels.

ISO 9613-1:1993 Acoustics - Attenuation of sound during propagation outdoors -- Part 1: Calculation of the absorption of sound by the atmosphere.

ISO 9613-2:1996 Acoustics - Attenuation of sound during propagation outdoors -- Part 2: General method of calculation.

ProPG: Acoustic Design Statement, RSK Ireland Limited, 2024.

The Professional Guidance on Planning & Noise (ProPG), May 2017.