Bartra Property Cookstown Limited

NOISE IMPACT ASSESSMENT OF PROPOSED TRANSITIONAL CARE FACILITY AT COOKSTOWN, TALLAGHT, D24.

603526 TC (01)

SEPTEMBER 2022

RSK

EXECUTIVE SUMMARY

RSK Ireland Limited (RSK) was instructed by Bartra Property Cookstown Limited to conduct a noise impact assessment and Acoustic Design Statement (ADS) in respect of the proposed Cookstown Transitional Care Facility at the Cookstown Industrial Estate, Tallaght, Co. Dublin. This report has been prepared following a request for an assessment to address the impact of the existing noise sources on the proposed development.

Baseline noise measurements were conducted, in accordance with ISO 1996-2:2017, at locations representative of proposed development facades. Measurements were taken by RSK in April 2021 and August 2022.

In conducting this review, reference is made to industry standard guidance including *The Professional Guidance on Planning & Noise* (ProPG), May 2017, BS 8233: 2014 *Guidance on sound insulation and noise reduction for buildings* (as referenced in the SDCC NAP) and BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound.*

The site noise survey has been used to assess the sites noise risk categories, as per the ProPG "Stage 1" assessment. The ProPG noise risk categories for the facades most exposed to traffic noise are as follows:

Daytime: Low to Medium Night-time Low to Medium

Recommendations 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 this document.
- Provision of acoustic attenuation to ventilation systems for dwellings exposed to the highest levels of traffic noise.
- Provision of external amenity areas, where daytime noise levels do not exceed the range 50 – 55 dB $L_{Aeq,16hr}$, for use by residents.

In addition to the above, noise criteria for building services plant, should any be required to service the proposed new development, has been set in accordance with BS 4142:2014+A1:2019 and with consideration of the measured baseline noise levels at the site boundary.

In summary, it is considered that the site is suitable for a transitional care development, subject to the provision of the noise control recommendations outlined in this report. The specific glazing and ventilation arrangements will be agreed post-planning, and will comply with the performance requirements outlined in this report.

Typical Planning Conditions, that may be applied to the development, to ensure to ensure future residents are not adversely impacted by noise, are as follows:

- Appropriate design/mitigation measures shall be incorporated into the proposed development to ensure suitable internal and external noise levels will be achieved.
- Internal noise levels within transitional care dwellings shall comply with the values outlined in BS 8233 (2014) *Guidance on sound insulation and noise reduction for buildings*.
- External amenity areas, where daytime noise levels do not exceed the range 50 – 55 dB $L_{Aeq,16hr}$, shall be incorporated into the proposed development design, for use by residents.
- Plant noise from the proposed development shall not cause adverse impact, when rated in accordance with BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound.*

RSK GENERAL NOTES

Project No.: 603526 TC (01)

Title: Noise Impact Assessment of Proposed Cookstown Transitional Care Facility, Tallaght, D24.

Client: Bartra Property Cookstown Limited

Date: 14th September 2022

Office: Dublin

Status: **FINAL**

Author	Aarron Hamilton, Acoustic Consultant	**Technical reviewer**	James Mangan, MIOA Associate Director (Acoustics)
Signature	Aarron Hamilton	Signature	James Mangan
Date:	14th September 2022	Date:	14th September 2022

RSK Ireland Ltd. Bluebell Business Centre, Old Naas Road, Bluebell, Dublin 12

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1 INTRODUCTION

RSK Ireland Limited (RSK) was instructed by Bartra Property Cookstown Limited to conduct baseline noise surveys and a noise impact assessment in respect of the proposed Cookstown Transitional Care Facility at the Cookstown Industrial Estate, Tallaght, Co. Dublin.

The objective of this study is to assess the suitability of the site for a transitional care development and to provide recommendations for noise mitigation measures, where necessary to ameliorate potential impacts.

2 THE SITE

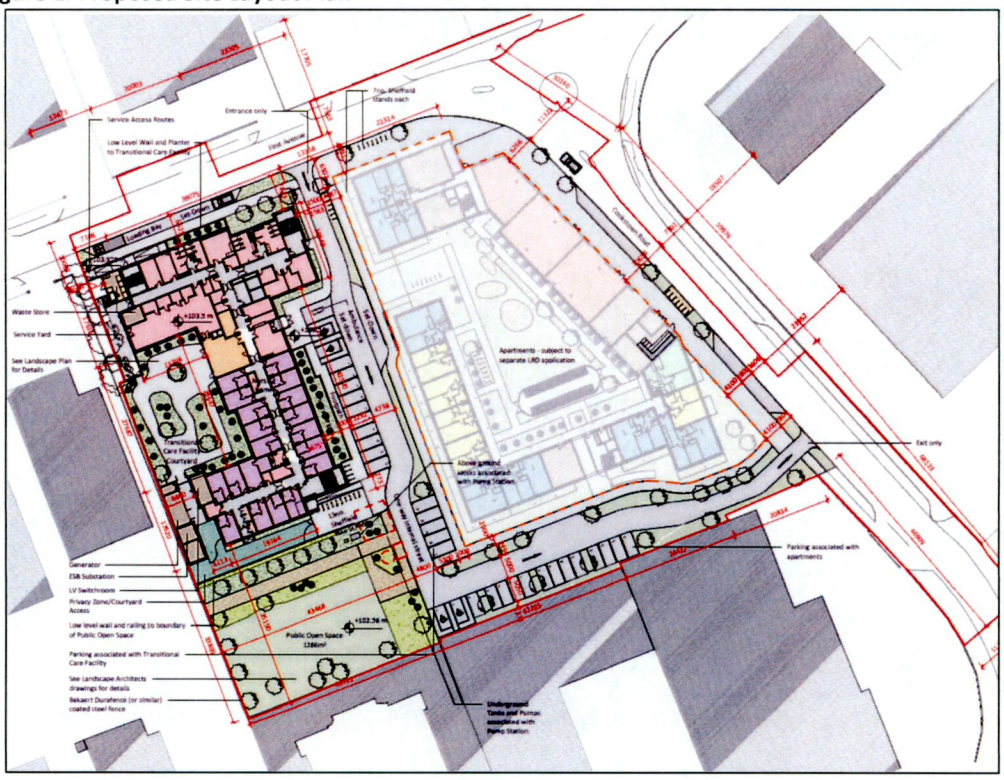
The site is an industrial area with a mixed range of industrial units in the nearby vicinity. To the north of the site there is the Belgard Car Service centre, a car wash, a car parts sales business and an Auto Depot Tyres. Further on is the Luas line and the busy Katherine Tynan Road. To the south of the site is two car repair and maintenance garages, GK hire, Aqua Fire Prevention and Healy group a food ingredient provider. To the east of the site is a limo hire company and a bus hire company as well as a car repair garage and a used car dealer. To the west of the site is another car repair garage and a water pump supplier.

Bartra Property Cookstown Limited intend to apply for permission for development at a site of c.1.67ha at Unit 21, First Avenue, Cookstown Industrial Estate, Dublin 24. The development will consist of the following:

- Demolition of all existing 1-3 storey industrial/commercial structures and small café on site totalling c.5,500sqm in area;
- Construction of a 1-5 storey Transitional Care Facility (step-up/step-down) providing 131 no. bedspaces over partial basement (total floor area c.6,743sqm) with central courtyard (c.519sqm);
- The basement consists of a sprinkler tank and pump rooms, water tank room, plant room and workshop;
- Provision of dining and kitchen areas, siting/family rooms, activity rooms, coffee dock, hair salon, oratory, lobbies/reception areas, ancillary offices and staff areas, stores, toilets, shower/changing facilities, ESB substation, generator, switchroom, service yard and waste areas serving the facility;
- Lobbies, stair/lifts, photovoltaic panels and green roofs throughout;
- Partial provision of the pocket park identified in the Tallaght LAP (c.1,286sqm);
- New vehicular access from First Avenue and egress onto Cookstown Road via a one-way system through the subject site;
- Entrance signage on the eastern elevation of the proposed facility;
- All associated site development works, services provision, connection to the water supply, foul and surface water networks on First Avenue and Cookstown Road including partial diversion of the foul line to the north east of the site at First Avenue, attenuation/bioretention systems, vehicular and pedestrian access including internal road and footpaths, public realm upgrade works, landscape and boundary treatment works, tree removal, bicycle storage (68 no. spaces), car parking (32 no. spaces), set-down parking spaces, 1 no. ambulance set-down space serving the facility and delivery/loading areas to First Avenue.

Figure 1 shows the proposed site layout plan.

Figure 1: Proposed Site Layout Plan



3 NOISE CRITERIA

In preparing this noise impact assessment report, reference is made to the most relevant guidance for assessing the suitability of the site for a transitional care development, and for formulating a schedule of noise control measures; as summarised below.

3.1 Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 4, South Dublin County Council

The *Dublin Agglomeration Environmental Noise Action Plan, December 2018 – July 2023, Volume 4, South Dublin 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*, and this section is reproduced below:

> "**7.10.1.2 Planning and Development**
>
> *When new developments are being constructed it is important that both houses and apartments are designed, orientated and located in such a way so as to limit the impacts of noise from traffic. All new applications for residential developments will be assessed and where there is the likelihood of an adverse noise impact the applicant will be required to produce a noise impact assessment carried out by appropriately qualified acousticians and competent persons[2]. The noise impact assessment should demonstrate that all facets of the UK "Professional Practice Guidance on Planning & Noise" (2017) (ProPG) have been followed.*

> ***"8.2.3 Noise in the Planning Process***
>
> *The Planning system has the potential to have a major influence on the control of future exposure to environmental noise. SDCC planning department already has in place measures to address potential noise issues in the planning process and guidance documents to aid planning applications in relation to noise. There is however scope to develop this further with particular emphasis on new developments where exposure levels can be harmful to health.*
>
> *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).

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

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;

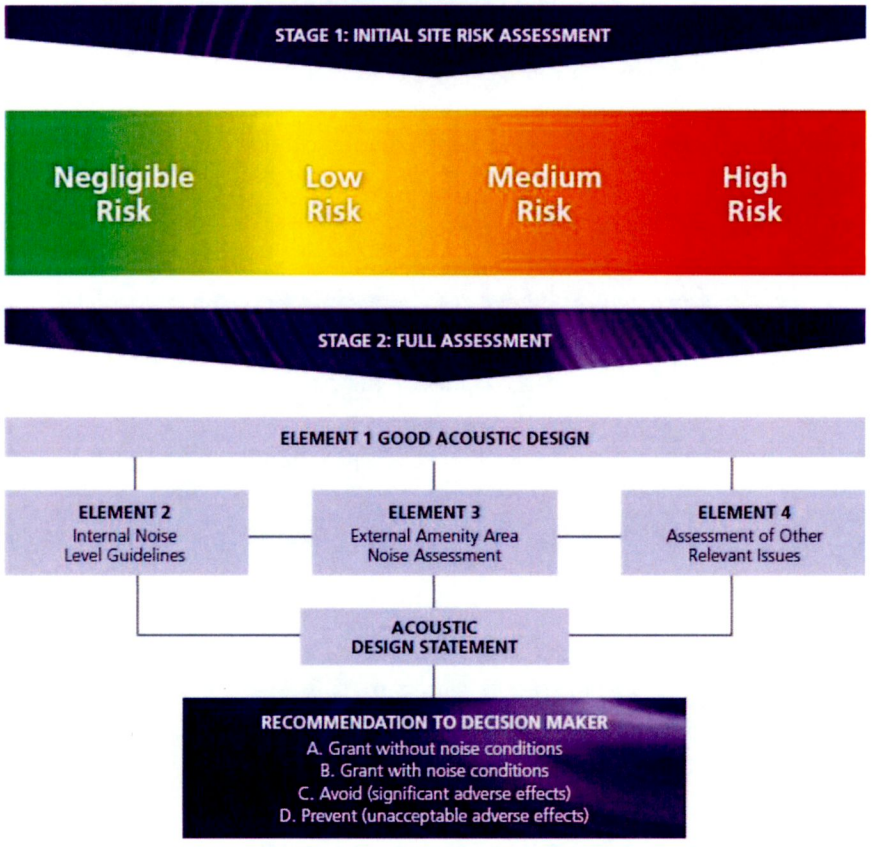
B. Planning consent may be granted subject to the inclusion of suitable noise conditions;

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 2.

Figure 2: ProPG Assessment Strategy (Source: ProPG)



3.2.1 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 dwellings. The following internal noise targets are presented as derived from BS 8233 (2014).

Table 1: ProPG Internal Noise Targets (derived from BS 8233:2014)

Activity	Location	Daytime (07:00 to 23:00hrs)	Night-time (23:00 to 07:00hrs)
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 $L_{Amax,T}$*

* internal $L_{AFmax,T}$ noise level may be exceeded up to 10 times per night without a significant impact occurring.

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

Given that the site is in a commercial area, it is appropriate also 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.*

In this instance and based upon a subjective judgement of personnel conducting the baseline noise surveys, it is concluded that commercial noise 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.

4 BASELINE NOISE SURVEYS

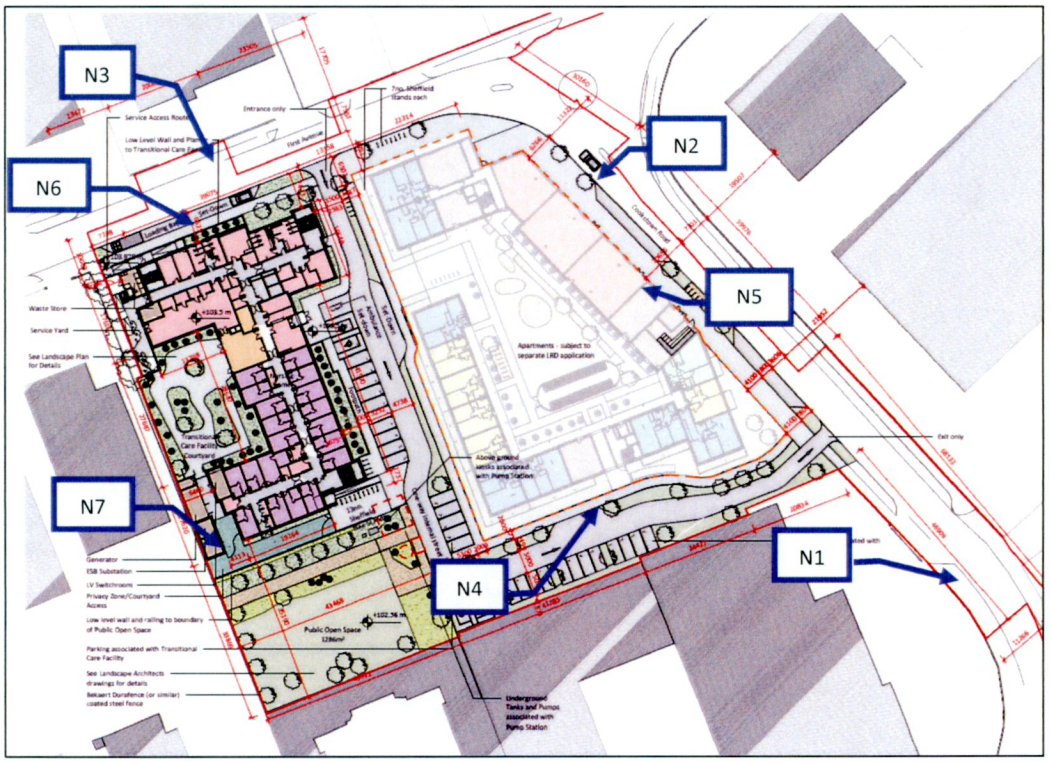
Environmental noise surveys have been conducted on site in order to establish the baseline noise environment. Noise survey have been conducted in accordance with ISO 1996-2:2017 "*Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels*".

Baseline noise measurements were made in April 2021 consisting of attended daytime and night-time surveys at three locations (N1 – N3) close to the site boundary. These 2021 surveys were carried out during Covid-19 travel restrictions and therefore were updated in August 2022. Measurements made in August 2022 consisting of attended daytime surveys at 3-locations (N4 – N6) and the provision of an unattended monitor (N7), continually logging noise data on site, for an approx. 7-day period. Both sets of data are presented in this report, however the 2022 data is the data used in the analysis and or the assessment of potential noise impacts.

4.1 Monitoring Locations

A mix of attended and unattended noise measurements were conducted at Locations N1 to N7. The noise measurement locations are shown in Figure 3 with photographs of each measurement position shown adjacent to each location description.

Figure 3: Proposed Site Plan Showing Baseline Monitoring Positions



Location N1 to the south east of the site along Cookstown Road. This noise survey position comprised of attended day and night-time time monitoring (2021).

Location N2 to the east of the site with the microphone positioned at ground floor level. This noise survey position comprised of attended day and night-time time monitoring (2021).

Location N3 to the north of the site at the façade of the proposed Transitional Care Facility with the microphone positioned at ground floor level. This noise survey position comprised of attended day and night-time monitoring (2021).

Location N4 to the south of the site at the location of the Transitional Care Facility entrance road/car park with the microphone positioned at ground floor level. This noise survey position comprised of attended daytime monitoring (2022).

Location N5 to the east of the site at the façade of the proposed transitional care development with the microphone positioned at ground floor level. This noise survey position comprised of attended daytime monitoring (2022).

Location N6 to the north of the site at the façade of the proposed Transitional Care Facility with the microphone positioned at ground floor level. This noise survey position comprised of attended daytime monitoring (2022).

Location N7 to the south of the site at the façade of the proposed Transitional Care Facility with the microphone positioned at first floor level. This noise survey position comprised of unattended daytime and night-time monitoring over an extended 7-day period. The measurement location was close to nearby road and neighbouring industrial noise sources.

4.2 Survey Periods

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

Table 2: Noise Survey Periods

Period	Location	Date	Start Time	Stop Time
Daytime (07:00 – 23:00hrs) attended	N1 to N3	22nd April 2021	14:34	17:27
Night-time (23:00 – 07:00hrs) attended	N1 to N3	29th April 2021	00:03	02:34
Daytime (07:00 – 23:00hrs) attended	N4 to N6	30th August 2022	16:02	17:58
Day / Night-time Unattended	N7	23rd – 30th August 2022	23/08 at 13:30	30/08 at 07:00

4.3 Weather

The weather during the attended daytime survey of 22nd April 2021 was sunny and calm. Temperatures were in the range of 9 to 14 degrees Celsius and the wind direction was East North Easterly.

The weather during the attended night-time survey of 29th April 2021 was clear and calm. Temperatures were in the range of 5 to 7 degrees Celsius and the wind direction was South-westerly

The weather during the attended daytime survey of 30th August 2022 was part cloudy and calm. Temperatures were in the range of 15 to 18 degrees Celsius and the wind direction was Easterly.

The weather during the unattended daytime surveys of 30 – 30 August 2022 was generally dry and calm. Temperatures were in the range of 12 to 22 degrees Celsius and the wind direction was broadly South-westerly (23rd - 26th August) and Easterly (27th – 30th August). Wind speeds were generally less than 4m/s. There were no significant or notable periods of rainfall.

The weather during the unattended night-time surveys of 30 – 30 August 2022 was generally dry and calm. Temperatures were in the range of 7 to 18 degrees Celsius and the wind direction was broadly South-westerly (23rd - 26th August) and Easterly (27th – 30th August). Wind speeds were generally less than 2m/s. There was some light rain on the morning of 26th August and some heavier showers on the night of the 23rd/24th August.

4.4 Instrumentation

The noise measurements were undertaken using the following equipment.

Table 3: Survey Equipment

Survey	Equipment	Type	Serial No.	Calibration Date
2021	Class 1 Sound Level Meter	Bruel & Kjaer 2260	1894051	14/08/19
2022 Attended	Class 1 Sound Level Meter	Rion NL52	00710314	15/09/21
2022 Unattended	Class 1 Sound Level Meter	Larson Davis SoundExpert® LxT	0005837	09/03/21

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 available on request.

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'*.

4.5 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.

$L_{AF90,T}$ 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 this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa. Noise measurements use a reference time period (T) of 15-minutes.

4.6 Measurement Results

4.6.1 Location N1

Table 4 summarises the measured noise levels at Location N1.

Table 4: Measured Noise Level at Location N1

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	22/04/21	15:22	66	87	64	57	Road traffic dominant.
		16:17	59	76	63	49	
		17:12	65	90	70	50	
Night-Time	29/04/21	00:37	58	84	48	34	Road traffic dominant.
		01:27	59	79	55	35	
		02:19	42	62	42	37	

The daytime ambient noise levels were in the range 59 to 66 dB $L_{Aeq,15min}$. Night time ambient noise levels were in the range of 42 – 59 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with nearby and distant roads contributing. Other sounds were construction activity on the site marked for development and generator noise as well as a nearby fan unit, also on the site

marked for development. At night truck movements were audible at location N1 and a distant bus parking garage was also audible.

4.6.2 Location N2

Table 5 summarises the measured noise levels at Location N3.

Table 5: Measured Noise Level at Location N2

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	22/04/21	15:00	62	82	64	53	Road traffic dominant.
		15:58	66	80	70	56	
		16:56	66	90	70	54	
Night-Time	29/04/21	00:20	50	79	41	32	Road traffic dominant.
		01:11	55	77	49	35	
		02:03	42	69	43	37	

The daytime ambient noise levels were in the range 62 to 66 dB $L_{Aeq,15min}$. Night time ambient noise levels were in the range of 42 – 55 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with nearby and distant roads contributing. Other sounds were construction activity on the site marked for development, as well as and generator noise, also on the site marked for development. At night truck deliveries were audible at location N2 and also a bus parking garage was audible.

4.6.3 Location N3

Table 6 summarises the measured noise levels at Location N3.

Table 6: Measured Noise Level 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	22/04/21	14:34	52	68	54	47	Road traffic dominant.
		15:40	56	83	57	47	
		16:36	50	65	53	44	
Night-Time	29/04/21	00:03	42	68	43	34	Road traffic dominant.
		00:54	40	59	41	36	
		01:46	40	72	39	36	

The daytime ambient noise levels were in the range 50 to 56 dB $L_{Aeq,15min}$. Night time ambient noise levels were in the range of 40 – 42 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with

nearby and distant roads contributing. At night a nearby condenser or chiller could also be heard as a secondary source, in the distance.

4.6.4 Location N4

Table 7 summarises the measured noise levels at Location N4.

Table 7: Measured Noise Level 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	30/08/22	16:02	57	73	60	52	Road traffic dominant.
		16:55	54	81	56	49	
		17:24	53	73	55	48	

The daytime ambient noise levels were in the range 53 to 57 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with distant sounds from the nearby Luas, HGV movements and a rustle of wind in nearby foliage also contributing. Industrial sounds from nearby factories were audibly as secondary noise sources.

4.6.5 Location N5

Table 8 summarises the measured noise levels at Location N5

Table 8: Measured Noise Level at Location N5

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	30/08/22	16:18	57	75	59	60	Road traffic dominant.
		17:05	59	75	61	51	
		17:29	58	74	61	50	

The daytime ambient noise levels were in the range 57 to 59 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with distant sounds from the Luas, HGV movements and a rustle of wind in nearby foliage also contributing. Industrial sounds from nearby factories were audibly as secondary noise sources, as was a beep from an alarm in a nearby building.

4.6.6 Location N6

Table 9 summarises the measured noise levels at Location N6

Table 9: Measured Noise Level at Location N6

Period	Date	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	30/08/22	16:37	55	73	57	50	Road traffic dominant.
		17:12	58	79	58	50	
		17:43	60	90	55	47	

The daytime ambient noise levels were in the range 55 to 60 dB $L_{Aeq,15min}$. Road traffic was the dominant source of noise with distant sounds from the Luas, HGV movements and a rustle of wind in nearby foliage also contributing. Industrial sounds from nearby factories were audibly as secondary noise sources.

4.6.7 Location N7

Table 10 summarises the measured daytime (i.e. 07:00 to 23:00) noise levels at Location N7.

Table 10: Measured Daytime Noise Levels at Location N7

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Daytime	23/08 Tue	13:30-23:00	49	81	48	44	Road traffic dominant
	24/08 Wed	07:00-23:00	51	82	51	47	
	25/08 Thu		50	74	50	46	
	26/08 Fri		50	78	50	45	
	27/08 Sat		45	78	45	38	
	28/08 Sun		43	75	44	37	
	29/08 Mon		51	91	49	42	

The daily daytime ambient noise levels were in the range 45 to 51 dB $L_{Aeq,16hr}$. Road traffic movements were noted to be the dominant source of noise at this measurement position.

Table 11 summarises the measured night-time (i.e. 23:00 to 07:00hrs) noise levels at Location N7.

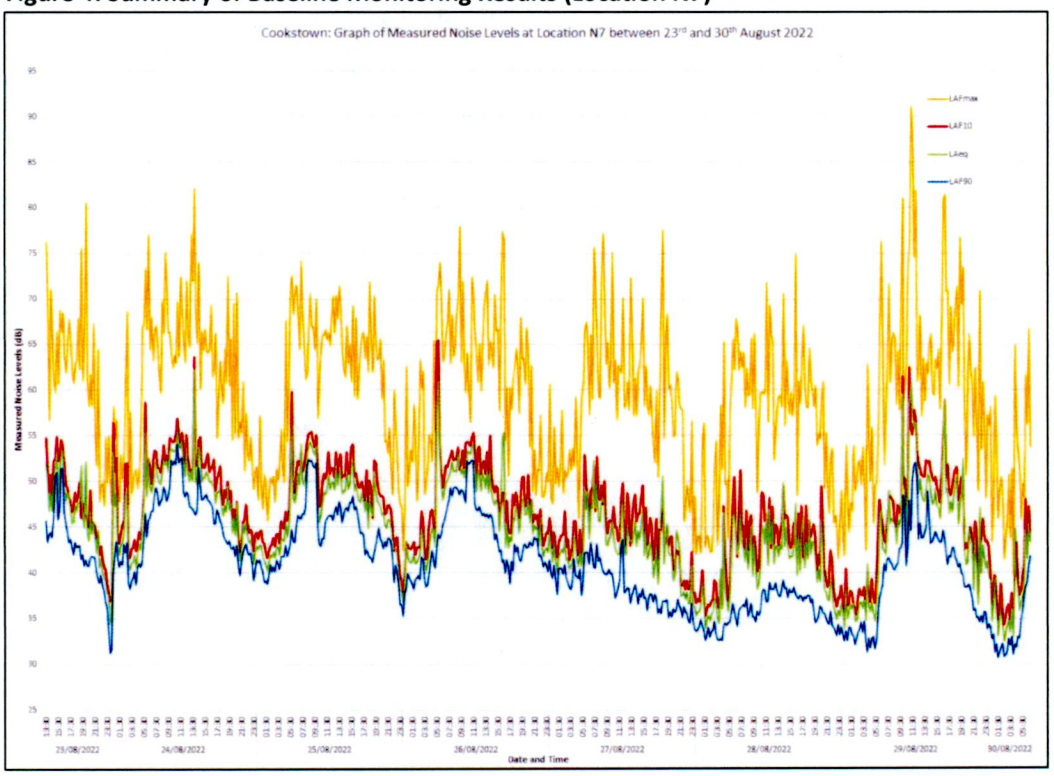
Table 11: Measured Night-time Noise Levels at Location N7

Period	Date	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)				Notes
			L_{Aeq}	L_{Amax}	L_{A10}	L_{A90}	
Night-time	23-24/08 Tue	23:00-07:00	47	77	46	41	Local and distant road traffic dominant
	24-25/08 Wed		46	73	46	41	
	25-26/08 Thu		49	74	45	40	
	26-27/08 Fri		44	68	44	40	
	27-28/08 Sat		40	68	39	34	
	28-29/08 Sun		39	76	39	34	
	29-30/08 Mon		40	67	40	34	

The night-time ambient noise levels were in the range 39 to 49 dB $L_{Aeq,8hr}$. Local and distant road traffic were dominant noise sources during night-time periods.

Figure 4 shows the time-history graph of measured noise levels between 23rd and 30th August 2022 at Location N7.

Figure 4: Summary of Baseline Monitoring Results (Location N7)



5 PROPG ACOUSTIC DESIGN STATEMENT

ProPG outlines a systematic risk based 2 stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels, and;

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.

ProPG is intended to outline the methodology and findings of the assessments, so as the planning authority can make an informed decision on the permission. ProPG outlines the following possible recommendations in relation to the findings:

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").

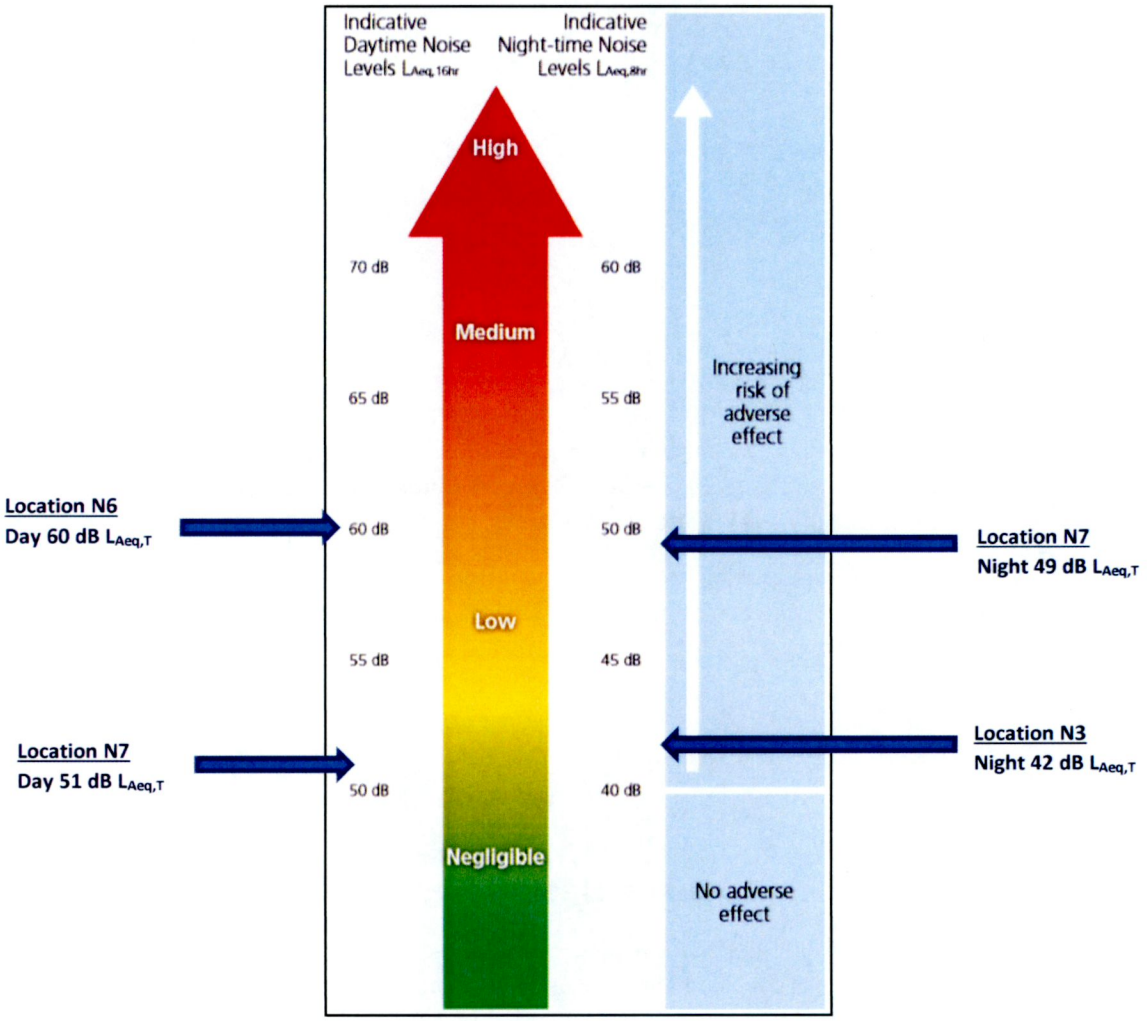
The following sections present the results of both the Stage 1 and Stage 2 studies.

5.1 ProPG Stage 1 (Initial Noise Risk Assessment)

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorization of the site as a negligible, low, medium or high risk based on the pre-existing noise environment.

Figure 5 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site. The noise levels indicated on Figure 5 are 'worst-case' values derived from the attended noise survey data.

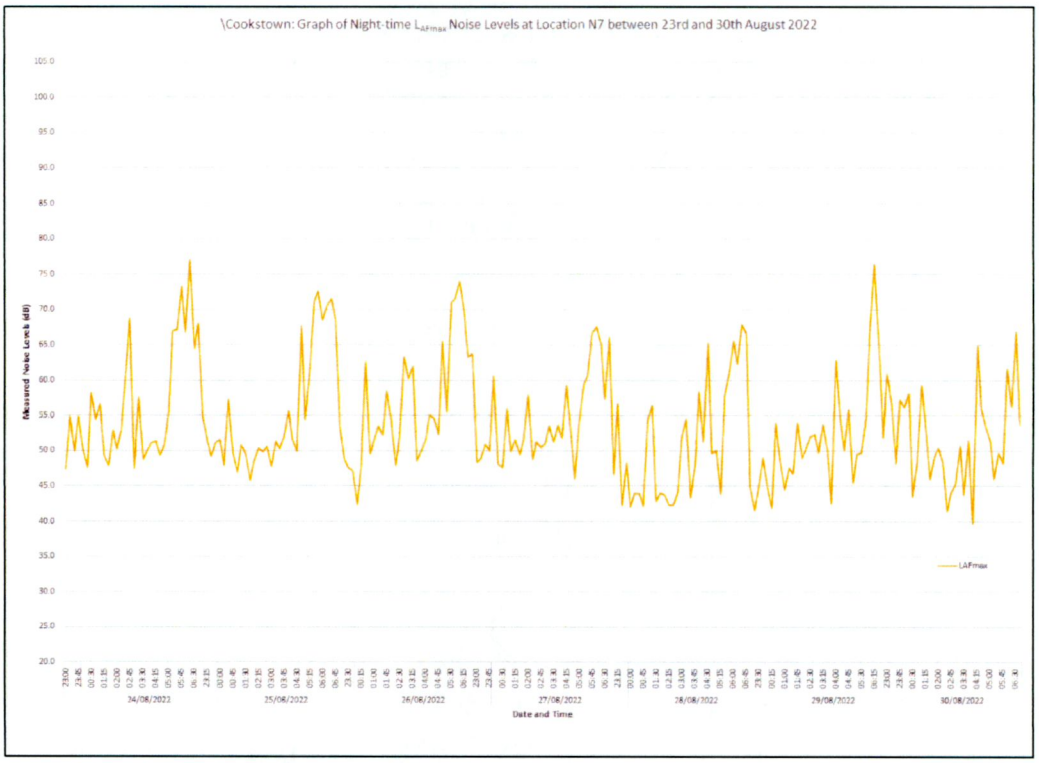
Figure 5 ProPG Stage 1 - Noise Risk Assessment Categories (Site Noise Levels Indicated)



ProPG also states that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.

Reference to the L_{AFmax} noise measurement data (Figure 6) confirms that 80dB L_{AFmax} was not exceeded on any occasion over the course of the 1-week survey (i.e. not more than 20 times in any of the nights), thus would not fall within the high-risk category.

Figure 6: Profile of Night-time (23:00 – 07:00) L_{AFmax} Noise Levels



A Stage 1 noise risk assessment of the proposed site has been conducted, 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 5.

With reference to the existing noise levels measured on site (as presented in Section 4.6), the initial ProPG noise risk categories, for the facades most exposed to road traffic noise, are summarised as follows:

Daytime:	Low to Medium
Night-time	Low to Medium

5.2 ProPG Stage 2 (Acoustic Design Statement)

With consideration of the Stage 1 review, as presented above, it is considered that the site is suitable for residential development, provided that an appraisal of the proposed development is carried out, covering four key elements that include:

- Element 1 - Good Acoustic Design Process.
- Element 2 - Noise Level Guidelines.
- Element 3 - External Amenity Area Noise Assessment.
- Element 4 - Other Relevant Issues.

5.2.1 Element 1: Good Acoustic Design (GAD) Process

Good acoustic design should aim to deliver optimum acoustic design for a site without adversely affecting amenity or quality of life or compromising other sustainable design objectives ProPG states that good acoustic design is not equivalent to overdesign of all new development but that it seeks to deliver an optimum acoustic environment for a given site. ProPG outlines the following checklist for GAD:

- Check the feasibility of relocating or reducing noise levels from relevant sources.
- Consider options for planning the site or building layout.
- Consider the orientation of proposed building(s).
- Select construction types and methods for meeting building performance requirements.
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.
- Assess the viability of alternative solutions.
- Assess external amenity area noise.

Each item listed above have been addressed in the following sections.

5.2.1.1 *Relocation or Reduction of Noise from Source*

The dominant noise source impacting upon the site is road traffic from the surrounding transport network. Given that the roads are located outside the site boundary, additional reduction of noise as source cannot be considered in respect of this development.

Additionally, the height of the proposed development, and access requirements, mean that an acoustic barrier between the surrounding transport network and the proposed development is not practical or feasible method of reducing noise ingress.

5.2.1.2 *Planning, Layout and Orientation*

Development buildings are set back from the nearby transport network in accordance with local planning guidelines. It is considered that the layout and orientation of the proposed development is sufficient in the context of noise emissions and GAD.

5.2.1.3 *Select Construction Types for meeting Building Regulations*

Concrete constructions will be used for external walls of dwellings. Solid concrete constructions provide high levels of sound insulation performance.

Glazing and ventilation paths are typically the weakest façade elements in terms of sound insulation performance. The provision of glazing and ventilators offering an appropriate level of sound insulation will therefore be provided. Additional review of specific locations in provided in Section 5.2.2.4.

It will be necessary to provide habitable rooms with acoustically rated ventilators along the building elevations most exposed to traffic noise. Occupants will have the options to open the windows if they so wish, however, doing so will increase the internal noise level. This approach to mitigation is acknowledged in ProPG, as reproduced below:

"2.22 Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents "

Note 5 Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the "open" position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded

2.34 Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide "whole dwelling ventilation" in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal L_{Aeq} target noise levels should not generally be exceeded."

It is therefore acceptable to provide building facades with appropriate sound insulation, with windows closed and vents open, that result in a good internal acoustic environment.

5.2.1.4 *Impact of noise control measures on fire, health and safety etc*

The proposed noise control measures do not have a significant impact on fire or other health and safety issues.

5.2.1.5 *Assess Viability of Alternative Solutions*

The major noise sources incident on the site are road traffic. Road traffic is mitigated by the distance from the road edge to the building, screening by existing/proposed structures, off and on-site buildings and orientation of windows. All the measures listed above aid in the control of noise intrusion to the living areas and bedrooms across the majority of the development.

5.2.1.6 *Assess External Amenity Area Noise*

ProPG advises the following in relation to external noise levels in amenity areas:

> *The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.*

An assessment of noise within external amenity areas is addressed in the relevant section of this document.

5.2.1.7 *GAD Summary*

It is considered that the principles of Good Acoustic Design have been applied to the development.

5.2.2 Element 2: Internal Noise Level Guidelines

5.2.2.1 *Internal Noise Criteria*

ProPG recommends internal noise targets as derived from BS 8233. These internal noise level targets are presented in Table 1.

ProPG acknowledges that there can be some flexibility given in cases where the development is necessary or desirable, and that a relaxation by up to 5dB of the internal L_{Aeq} values can still provide reasonable internal conditions.

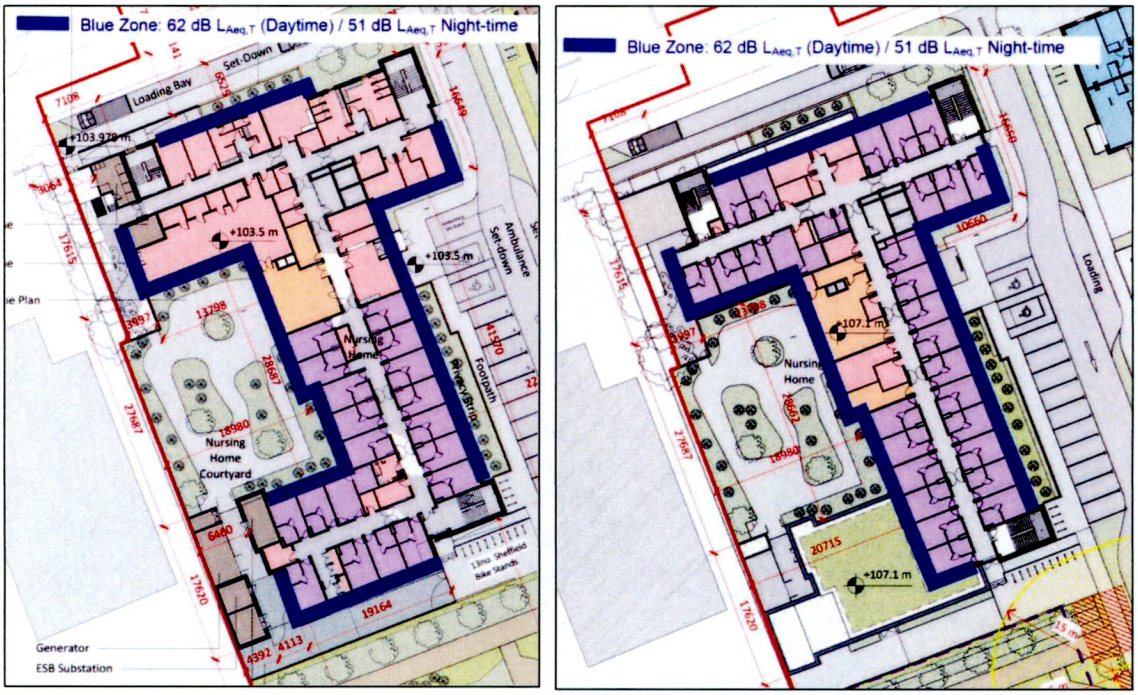
5.2.2.2 *Assessed External Noise Levels*

Noise surveys and calculations have been conducted across the site in order to establish the range and magnitude of noise levels at various positions on-site. Table 12 presents the free-field noise levels used for assessment purposes.

Table 12: Projected Noise Levels at Development Facades

Development Zone (Ref. Figure 7)	Period	Assessment Level (dB $L_{Aeq,T}$)
Zone A (**Blue**)	Daytime (07:00 to 23:00)	62
Zone A (**Blue**)	Night-time (23:00 to 07:00)	51

Figure 7: **Façade Noise Level Designations (Ground Floor & Typical Upper Floor)**



5.2.2.3 *Proposed Façade Acoustic Specification*

The methodology to estimate internal noise level within a building is outlined in Annex G of BS 8233: 2014 and is derived from BS EN 12354-3: 2000: B*uilding acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound*. The methodology calculates internal noise levels based on a reference external noise level (i.e. octave band frequency data as measured in baseline noise surveys) and proposed façade constructions. The standard takes into account the following site-specific characteristics:

- External noise level;
- Area and type of each façade element (i.e. window, wall, etc.);
- Shape of the façade, and;
- Characteristics of the receiving room (i.e. room volume, reverberation time etc.)

This method has been used to determine the required sound insulation performance for the various building façade elements.

Glazing

Facades shall be provided with glazing that achieves the following minimum sound insulation performance.

Table 13: Glazing Acoustic Specification (Ref. Figure 7)

Specification	Sound Reduction Performance Requirements (dB) in Octave Frequency Bands (Hz)						Typical Overall dB R_w
	125	250	500	1k	2k	4k	
Zone A (**Blue**)	28	31	40	39	40	54	40

The overall R_w values outlined above are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values.

The acoustic performance specifications are minimum requirements which apply to the overall glazing system. The 'glazing system' is understood to include any and all of the component parts that form part of the glazed element of the façade, i.e. glass, frames, seals, openable elements etc.

The window supplier shall provide laboratory tests confirming the sound insulation performance, (to British Standard 2750 Part 3:1980 and British Standard 5821, or British Standard EN ISO 140 Part 3 1995 and British Standard EN ISO 717, 1997).

Wall / Roof Constructions

Masonry wall and roof constructions with plasterboard linings typically offer sound insulation performance much greater than that offered by the glazed elements.

The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 56 dB R_w for these constructions. The performance of non-glazed elements of the façade will be confirmed as part of the detailed design phase.

5.2.2.4 *Acoustic Attenuation to Ventilation Systems*

It has been well established that a partially open window will typically offer between 15 dB[1] and 18dB attenuation from external noise sources. If we consider the internal noise criteria as outlined in Table 1, with the 5 dB relaxation for reasonable conditions, and then allow the 15 dB attenuation value for a partially open window, we arrive at external noises, above which reasonable internal conditions will not be achieved without the use of acoustic attenuation to ventilation systems. This allows us to provide a key to locations where acoustically attenuated ventilation will need to be provided.

Acoustic attenuation to ventilation systems shall therefore be provided in accordance with the following specification:

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1 Ref. Section 2.33 of ProPG, additional information can be found in the DEFRA NANR116: *'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows'*

Table 14: Specification for Acoustic Ventilators

Development Zone (Ref. Figure 7)	Rooms	Vent Required Acoustic Performance dB $D_{ne,w}$
Zone A (**Blue**)	Living/Dining Rooms	38
	Bedrooms	

The ventilation supplier shall provide evidence, consisting of calculations and/or laboratory tests confirming the acoustic performance of ventilation systems.

The acoustic ventilator performance specification outlined in Table 14 is relevant to the proposed Transitional Care Facility bedrooms/living rooms.

5.2.3 Element 3: External Amenity Area Noise Assessment

It is a ProPG requirement, as part of the acoustic design statement, to assess noise levels within external amenity spaces. ProPG refers to guidance contained in BS 8233 (2014) for this element of the assessment, the relevant extract of BS 8233 (2014) states:

> *"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."*

BS 8233 also comments that:

> *Other locations, such as balconies, roof gardens and terraces, are also important in residential buildings where normal external amenity space might be limited or not available, i.e. in flats, apartment blocks, etc. In these locations, specification of noise limits is not necessarily appropriate. Small balconies may be included for uses such as drying washing or growing pot plants, and noise limits should not be necessary for these uses. However, the general guidance on noise in amenity space is still appropriate for larger balconies, roof gardens and terraces, which might be intended to be used for relaxation. In high-noise areas, consideration should be given to protecting these areas by screening or building design to achieve the lowest practicable levels. Achieving levels of 55 dB $L_{Aeq,T}$ or less might not be possible at the outer edge of these areas, but should be achievable in some areas of the space."*

With consideration of the various open amenity spaces / gardens proposed as part of the development, the following comments are provided:

Courtyard and Public Open Space

The projected noise levels in the proposed ground floor amenity spaces (refer Figure 3 : Baseline Monitoring Locations N4 and N7) are within the recommended range of noise levels as outlined in ProPG Guidance i.e. *noise levels should ideally not be above the range 50 – 55 dB* $L_{Aeq,T}$.

Therefore, there are relatively quiet external amenity spaces on site, available for use by residents. The provision of these ground floor communal amenity spaces therefore results in compliance with the ProPG requirements for external amenity area noise.

Element 4: Assessment of Other Relevant Issues

ProPG defines a number of other issues that should be considered and may prove pertinent to the assessment:

- 4(i) compliance with relevant national and local policy
- 4(ii) magnitude and extent of compliance with ProPG
- 4(iii) likely occupants of the development
- 4(iv) acoustic design v unintended adverse consequences
- 4(v) acoustic design v wider planning objectives

Each of the above considerations are discussed below.

5.2.3.1 *Compliance with Relevant National and Local Policy*

The *Dublin Agglomeration Environmental Noise Action Plan, December 2018 – July 2023, Volume 4, South Dublin County Council* (NAP), Section 8.2.3, discusses *Noise in the Planning Process*, and advocates the use of *ProPG: Professional Practice guidance on Planning and Noise for new Residential Development* (May 2017).

This report has therefore been prepared in compliance with the requirements of local policy.

5.2.3.2 *Magnitude and extent of compliance with ProPG*

The following conclusions are made in relation to the magnitude and extent of compliance with ProPG:

- All dwellings have been designed to achieve the good internal noise levels, as specified within ProPG, when windows are closed.
- Dwellings will also achieve good internal noise levels with windows closed and acoustic ventilators open.
- The external amenity space has been assessed and is determined to be within the ProPG guidance for noise levels in external amenity areas.

It is therefore concluded that the proposed development is in compliance with the requirements of ProPG.

5.2.3.3 *Likely occupants of the development*

The development consists of a mixture of dwelling type and is designed predominantly for the purpose of transitional care use. The criteria adopted as part of this assessment are based on those recommended for permanent dwellings and are therefore considered robust and appropriate for the occupants.

5.2.3.4 *Acoustic design v unintended adverse consequences*

There have not been any unintended adverse consequences identified resulting from the acoustic design and control measures.

5.2.3.5 *Acoustic design v wider planning objectives*

Acoustic design has been considered in the context of wider planning objectives, particularly the National Planning Framework 2040. (NPF) The NPF is taken into consideration in the production of local planning policy/guidelines and plans. In following existing local / national guidelines and policies, it is considered that the acoustic design is compliant with wider planning objectives.

6 PLANT NOISE FROM THE PROPOSED DEVELOPMENT

Reference is made to British Standard BS4142:2014+A1: 2019: *'Methods for Rating and Assessing Industrial and Commercial Sound'* (BS 4142) in setting criteria for any new mechanical plant items. This standard outlines methods for analysing building services plant sound emissions to residential receptors. BS 4142 is frequently referenced in DCC Planning Conditions and is widely considered the 'industry standard' methodology for the assessment of industrial noise in the Dublin City region.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature, using outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling upon which the sound is incident.

The BS 4142 assessment methodology compares the measured external background sound level (in the absence of plant items) to the rating sound level, of the plant items, when operational. Where sound emissions are found to be tonal, impulsive, intermittent or to have other sound characteristics that are readily distinctive against the residual acoustic environment, BS4142:2014 advises that penalties be applied to the specific level to arrive at the rating level.

Based upon measured day and night-time background sound levels on the site, appropriate plant noise criteria to nearby dwelling facades (including those proposed as part of this development) are as follows:

- Daytime (07:00 to 23:00hrs) 40 dB $L_{Aeq,1hr}$
- Night-time (23:00 to 07:00hrs) 35 dB $L_{Aeq,15\text{-}min}$

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

7 CONCLUSIONS

RSK Ireland Limited (RSK) was instructed by Bartra Property Cookstown Limited to conduct a noise impact assessment and Acoustic Design Statement (ADS) in respect of the proposed Cookstown Transitional Care Facility at the Cookstown Industrial Estate, Tallaght, Co. Dublin.

This report has been prepared following a request for an assessment to address the impact of the existing noise sources on the proposed development.

Baseline noise measurements were conducted, in accordance with ISO 1996-2:2017, at locations representative of proposed development facades. Measurements were taken by RSK in April 2021 and August 2022.

In conducting this review, reference is made to industry standard guidance including *The Professional Guidance on Planning & Noise* (ProPG), May 2017, BS 8233: 2014 *Guidance on sound insulation and noise reduction for buildings* (as referenced in the SDCC NAP) and BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

The site noise survey has been used to assess the sites noise risk categories, as per the ProPG "Stage 1" assessment. The ProPG noise risk categories for the facades most exposed to road traffic noise are as follows:

Daytime: Low to Medium Night-time Low to Medium

Recommendations 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 this document.
- Provision of acoustic attenuation to ventilation systems for dwellings exposed to the highest levels of traffic noise.

In addition to the above, noise criteria for building services plant, should any be required to service the proposed new development, has been set in accordance with BS 4142:2014+A1:2019 and with consideration of the measured baseline nose levels at the site boundary.

In summary, it is considered that the site is suitable for a transitional care development, subject to the provision of the noise control recommendations as outlined in this report. The specific glazing and ventilation arrangements will be agreed post-planning, and will comply with the performance requirements outlined in this report.

Typical Planning Conditions, that may be applied to the development, to ensure to ensure future residents are not adversely impacted by noise, are as follows:

- Appropriate design/mitigation measures shall be incorporated into the proposed development to ensure suitable internal and external noise levels will be achieved.
- Internal noise levels within transitional care dwellings shall comply with the values outlined in BS 8233 (2014) *Guidance on sound insulation and noise reduction for buildings*.
- External amenity areas, where daytime noise levels do not exceed the range 50 – 55 dB $L_{Aeq,16hr}$, shall be incorporated into the proposed development design, for use by residents.
- Plant noise from the proposed development shall not cause adverse impact, when rated in accordance with BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound.*

APPENDIX A
SERVICE CONSTRAINTS

RSK ENVIRONMENT LIMITED SERVICE CONSTRAINTS

1. This report (the "Services") was compiled and carried out by RSK Ireland Limited (RSK) for Bartra Property Cookstown Limited (the "client") in accordance with the terms of a contract between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be** well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK 's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services.

7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.