WAVE DYNAMICS
ACOUSTIC CONSULTANTS

South Green Kildare

Acoustic Design Statement
27 February 2026

WDA250440RP_B_01

www.wdacoustics.com

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Document Information

Project Name:	South Green Kildare
Address:	Co. Kildare
Project Number	WDA250440
Report Title	Acoustic Design Statement
Client	Pousterle Ltd

Document History

Revision	Status	Description	Author	Reviewer	Issue Date
A	Issued	Acoustic Design Statement	 Saoirse Mulvaney	 Sean Rocks	10/07/2025
B	Issued	Acoustic Design Statement	 Saoirse Mulvaney	 Sean Rocks	27/02/2026

Dublin Office
Wave Dynamics
Unit 302 Nesta Business Centre,
Old Airport Road,
Santry, Dublin 9
D09 HP96

Wexford Office
Wave Dynamics
Unit 14 Enterprise Centre,
Gorey Business Park,
Ramstown Gorey,
Co Wexford, Y25 Y2C8

Cork Office
Wave Dynamics
Cube Building,
Monahan Rd,
Cork,
T12 H1XY

Phone (DUB/Wex): +353 (0)1 9125070
Phone (Cork): +353 (0)21 2032017
Phone (UK): +44 20 8157 2967
Email: info@wdacoustics.com
Web: www.wdacoustics.com

Executive Summary

Wave Dynamics were engaged by Pousterle Ltd as the acoustic consultants to undertake an Inward Noise Impact Assessment for the planning application for the proposed new residential development at South Green Kildare, Co. Kildare.

Pousterle Limited intend to apply for permission for development of a Large - Scale Residential Development (LRD) on a site of approx. 6.13 ha at Southgreen Road, Kildare, Co. Kildare. The site is generally bounded to the north by agricultural fields; to the south by the recently constructed Southern Internal Link Road; to the west by Southgreen Road and an existing Electricity Station; and to the east by Old Road and existing residential properties.

The proposed development will consist of:

- The construction of a new residential scheme of 146 no. residential units ranging in height from 1-3 storeys as follows:
    - 136 no. houses (7 no. 2 bed units; 102 no. 3 bed units; and 27 no. 4 bed units) in a mixture of bungalow, detached, semi-detached, and terrace style units ranging in height from 1 – 2 storeys.
    - 10 no. duplex apartment units (5 no. 1 beds, 3 no. 2 beds, and 2 no. 3 beds) in new Block A ranging in height from 2-3 storeys
- Each residential unit will be afforded with private open space in the form of a front/rear/side garden for houses or terrace / balconies for duplex apartment units.
- The provision of a new creche facility (approx. 161 sq m GFA) and associated areas of external open space (approx. 60 sq m) located at Block A.
- Public open space (approx. 6,992 sq m) is proposed in the form of 2 no. new large public open space areas within the site (approx. 3,046 sq m and 3,946 sq m respectively).
- Communal open space (approx. 82 sq m) is proposed adjacent to Block A.
- A total of 321 no. car parking spaces (305 no. for residential units and 16 no. for the creche facility) are provided. This provision includes 2 no. accessible spaces and 17 no. visitor spaces.
- A total of 527 no. cycle parking spaces (517 no. for residential units and 10 no. for the creche facility) are provided. This provision includes 75 no. visitor spaces. Resident cycle parking is proposed in the form of secure bicycle store enclosures to the front of terraced units; on curtilage spaces to the rear of units with side access; and a bicycle store for apartment units located within Block A. Visitor parking is proposed in the form of Sheffield stands.
- The development shall be served via 2 no. new vehicular access points from Southgreen Road. An additional private vehicular access point is proposed via Old Road to service 1 no. new bungalow (4 no. bed residential unit). Provision is also made for future vehicular access via Southgreen Road to serve the open space and amenity zoned lands to the north of the main development site.
- Pedestrian and Cyclist access is also proposed via Southgreen Road and via a new secondary access point from the Southern Internal Link Road to the south of the site and Old Road to the east of the site.
- Upgrades/widening to Southgreen Road including the provision of 2 no. directional single lane cycle tracks and pedestrian footpaths on either side of the Southgreen Road, together with amendments to the existing cycle tracks and footpaths on Southgreen Road north of Southern Internal Link Road are proposed.
- A new pedestrian/cycle link is also delivered to the north of the main development site connecting South Green Road to Old Road.
- The associated site and infrastructural works include provision for an ESB Sub Station; water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works; boundary treatment; PV/Solar Panels; internal roads and footpaths; waste storage areas, all electrical services and all associated site development works.

Noise Impact Assessment

A Stage 1 and Stage 2 ProPG assessment have been undertaken. As part of the stage one assessment to categorise the site, a baseline noise survey was undertaken to measure the existing noise levels. Following a review of the noise levels on the site, including the L_{AFmax} and $L_{Aeq,}$ the site has been characterised as low risk.

Internal Noise Levels

Following the baseline survey, a noise impact assessment was undertaken, this included break-in noise calculations to predict the internal noise levels from road traffic noise. Consideration has also been given to the future growth of the roads. The noise measurements were taken during weekdays and the weekend, which is indicative of peak traffic conditions. Following the assessment, the building envelope performance requirements were determined. The performance specification for the building envelope has been provided in this report which includes the external walls, glazing, roof and ventilation requirements.

External Amenity Noise Levels

The external amenity spaces on the development includes front/rear/side gardens to the houses, terraces/balconies for the duplex apartments, creche play area and public and communal outdoor spaces across the development. Appropriate amenity has been provided on the development for residents using the gardens, terraces/balconies and public and communal outdoor spaces across the development. This is in line with element 3(v) of ProPG.

Based on the measured noise levels at the site it is predicted that the external amenities in the form of gardens to the houses, terraces/balconies for the duplex apartments, creche play area and public and communal outdoor spaces across the development will achieve the ProPG recommendations for desirable external amenity noise levels of 50-55dBA $L_{Aeq,16hour}$.

Façade Noise Levels

The onset façade noise levels in terms of L_{den} and L_{night} meet the Kildare County Council requirements without any additional mitigation when considering each floor level.

Based on the recommendations in this report it is predicted that the internal and external noise levels will achieve the targeted noise levels in line with BS 82233:2014 and ProPG 2017 guidance. The onset façade noise level requirements in terms of L_{den} and L_{night} are achieved without any additional mitigation.

Table of Contents

1 Introduction 1
1.1 Statement of Competence 2
2 Site Description 3
3 Project Criteria 4
3.1 Noise Assessment Criteria 4
4 ProPG Stage 1 – Assessment 8
4.1 Baseline Noise Survey 9
4.1.1 Site Description and Measurement Locations 9
4.1.2 Survey Methodology and Personnel 9
4.1.3 Survey Period 10
4.1.4 Noise Measurement Equipment 10
4.1.5 Subjective Noise Environment 11
4.2 Noise Measurement Results 11
4.3 Weather Conditions for Monitoring Period 13
4.4 Future Noise Levels 13
4.5 ProPG Stage 1 – Initial Risk Assessment 13
4.6 Consideration of EPA Noise Maps 14
5 ProPG Stage 2- Full Assessment 16
5.1.1 Element 1: Good Acoustic Design Process 16
5.1.2 Discussion of Good Acoustic Design 16
5.2 Element 2 – Assessment of Internal Noise Levels 17
5.2.1 Noise Prediction Modelling 17
5.2.2 Predicted Road Noise Levels 17
5.3 Element 3- External Amenity Spaces 24
5.4 Element 4- Assessment of Other Relevant Issues 25
5.4.1 Compliance with Relevant National and Local Policy 25
5.4.2 Magnitude and Extent of Compliance with ProPG 25
5.4.3 Likely Occupants of The Development 26
5.4.4 Acoustic Design v Unintended Adverse Consequences 26
5.4.5 Acoustic Design v Wider Planning Objective 26
5.5 Stage 2 Assessment Conclusion 26
6 Conclusion 27
Appendix A- Glossary of Terms 29
Appendix B- Façade Mark Ups 30

1 Introduction

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    - 10 no. duplex apartment units (5 no. 1 beds, 3 no. 2 beds, and 2 no. 3 beds) in new Block A ranging in height from 2-3 storeys
- Each residential unit will be afforded with private open space in the form of a front/rear/side garden for houses or terrace / balconies for duplex apartment units.
- The provision of a new creche facility (approx. 161 sq m GFA) and associated areas of external open space (approx. 60 sq m) located at Block A.
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- The development shall be served via 2 no. new vehicular access points from Southgreen Road. An additional private vehicular access point is proposed via Old Road to service 1 no. new bungalow (4 no. bed residential unit). Provision is also made for future vehicular access via Southgreen Road to serve the open space and amenity zoned lands to the north of the main development site.
- Pedestrian and Cyclist access is also proposed via Southgreen Road and via a new secondary access point from the Southern Internal Link Road to the south of the site and Old Road to the east of the site.
- Upgrades/widening to Southgreen Road including the provision of 2 no. directional single lane cycle tracks and pedestrian footpaths on either side of the Southgreen Road, together with amendments to the existing cycle tracks and footpaths on Southgreen Road north of Southern Internal Link Road are proposed.
- A new pedestrian/cycle link is also delivered to the north of the main development site connecting South Green Road to Old Road.
- The associated site and infrastructural works include provision for an ESB Sub Station; water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works; boundary treatment; PV/Solar Panels; internal roads and footpaths; waste storage areas, all electrical services and all associated site development works.

Appendix A outlines a glossary of the acoustic terminology used in this report.

1.1 Statement of Competence

This report was completed by Wave Dynamics, an acoustic consultancy that specialises in noise and vibration. Our consultants have completed numerous similar projects in the Ireland the UK and Europe.

This assessment and report were completed by Saoirse Mulvaney | Acoustic Consultant. Saoirse holds a BSc (Hons) in Physics with Astronomy from Dublin City University and has conducted numerous similar planning stage noise impact assessments.

The peer review was completed by Sean Rocks, Director | Senior Consultant, Sean has experience of numerous planning stage assessments. Sean's qualifications include; BEng (Hons) in Mechanical and Manufacturing Engineering, Diploma in Acoustics and Noise Control (Institute of Acoustics), IOA Certificate of Competence in Environmental Noise Measurement and SITRI certified sound insulation tester. Sean is a member of both Engineers Ireland and the Institute of Acoustics.

2 Site Description

The site is located at South Green Kildare, Co. Kildare. The site is bounded by residential housing to the east, south and west, with an active building site to the south. The site has greenfields to the north, with the site bounded by Southgreen Road and L7016 Old Road.



Figure 1: Site Location, measurement locations A1-A2, logger location L1, and the surrounding area.

3 Project Criteria

The acoustic criterion for the project is set out in this section, the purpose of the criteria is to ensure reasonable:

- Internal noise levels and
- External amenity noise levels.

To provide adequate conditions Wave Dynamics have developed the project criteria for:

- Façade sound insulation performance,
- Ventilation requirements and,
- External amenity requirements.

Assessment Standards

The criteria for the project have been developed based on the following industry standards:

- ✓ BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.
- ✓ Kildare County Council Noise Action Plan 2024 – 2028.
- ✓ ProPG 2017 Professional Practice Guidance on Planning & Noise.
- ✓ ISO 1996-1:2016 Acoustics — Description, measurement and assessment of environmental noise — Part 1:
- ✓ Basic quantities and assessment procedures
- ✓ Previous experience on similar projects.

3.1 Noise Assessment Criteria

The internal ambient noise levels requirements have been developed from the following standards:

Kildare County Council Noise Action Plan 2024 – 2028

The Kildare County Council Noise Action Plan 2024 – 2028 states the following with respect to the prevention of excessive noise levels for proposed new developments:

> *"Applications for new residential developments in the Kildare County Council administrative area will be assessed in accordance with the policies and goals outlined in the relevant Development Plans. Where applicable, these include adoption of the principles of Professional Planning Guidance (ProPG) on Planning & Noise: New Residential Development, as described in Section 7.2.1.*
>
> *Where the assessment outcome determines the likelihood of an adverse noise impact, planning applications should be supplemented by an Acoustic Design Statement carried out by appropriately qualified acousticians and competent persons31. The Acoustic Design Statement should demonstrate that all facets of ProPG have been followed."*

The noise action plan goes on to say:

> *"Kildare County Council requires new development to be spatially located or acoustically shielded to achieve the lowest noise levels possible for the particular site and the use of the EPA thresholds to trigger assessment (70dB L_{den} / 57dB L_{night}) is generally regarded as appropriate to infill, legacy and in some cases, common good developments".*

ProPG: Professional Practice Guidance on Planning & Noise

ProPg 2017 is used to assess airborne noise from transport sources including road, rail and aircraft noise. The aim of the document is to provide a good design process which considers the internal acoustic environment at an early stage in the design process. The guidance was prepared by the Institute of Acoustics, the Association of Noise Consultants and the Chartered Institute of Environmental Health and is based on the findings by the World Health Organisation in relation to noise impact on humans. Its adoption is considered best practice for assessing the potential noise impact on the future occupants for residential developments.

The guidance is primarily designed for residential developments however it can be applied to other development types including developments where people require appropriate noise levels for rest and sleep. This includes residential care homes, hospitals etc. The guidance advocates a holistic design process which considers the site, its location and likely suitability for the development at an early stage.

The two primary stages of the ProPg design approach are summarised as follows:

Stage 1 – The first stage is to undertake an initial high-level noise risk assessment of the proposed site considering the noise levels (measured and or predicted) to identify any noise risks. This would include consideration of the current noise environment, future use and future noise levels.

Stage 2 –The second stage is a full detailed assessment of the proposed development covering the "*Four Key Elements*":

1. *"Good Acoustic Design Process,*
2. *Internal Noise Level Guidelines,*
3. *External Amenity Area Noise Assessment; and*
4. *Assessment of Other Relevant Issues."*

As part of the process an Acoustic Design Statement is produced and submitted to the planning authority. This document sets out the design process used to come to the conclusions and recommendations in the report.

Following the ProPg the following conclusions are recommended by ProPG in relation to the findings of the Acoustic Design Statement based one the recommendations of the Acoustic Consultant:

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")."*

Section 3 of the ProPG outlines the recommended approach decision makers should following in coming to their conclusions based on the recommendations of the Acoustic Design Statement. Figure 1 on the next page illustrates the ProPG approach.

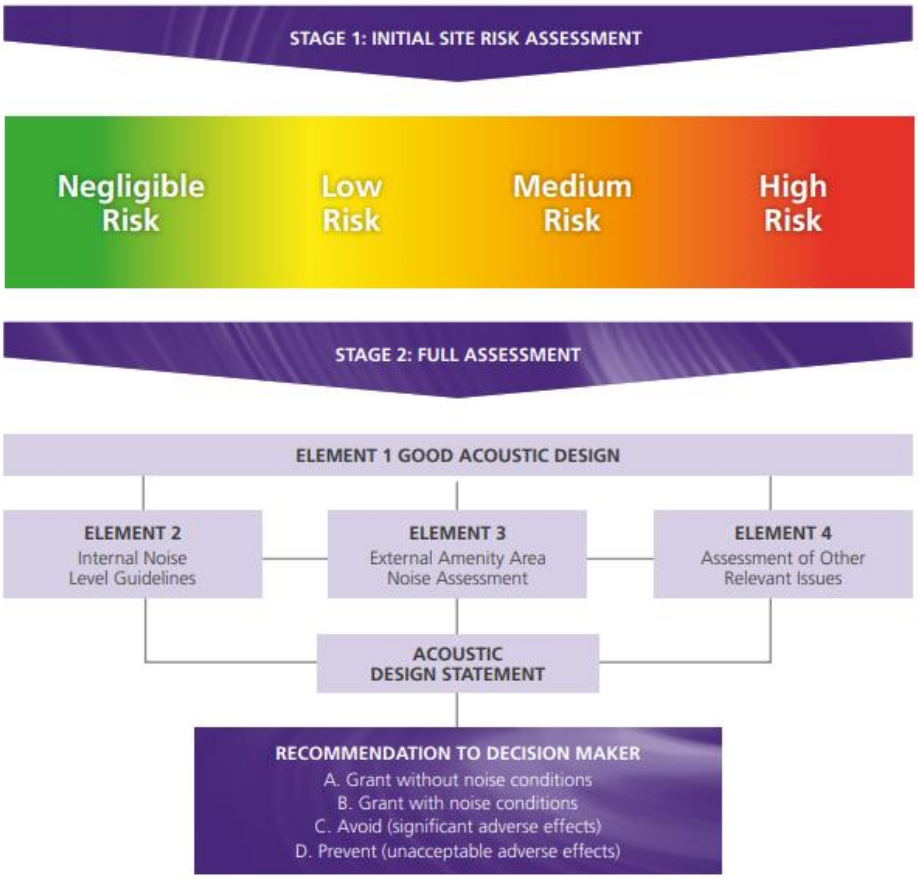


Figure 2: Summary of overall ProPG approach

Internal Noise Levels

Table 1 below outlines the recommended internal noise levels from BS 8233:2014 within living accommodation for residential buildings for dining, resting and sleeping. These limits are in line with the ProPG and the World Health Organisation Guidelines.

Table 1: BS 8233:2014 internal noise criteria –Residential Buildings.

Activity	Location	07:00 to 23:00 Hrs	23:00 to 07:00 Hrs
Resting	Living Room	35 dB $L_{Aeq,\ 16\ hour}$	-
Dining	Dining Room/Area	35 dB $L_{Aeq,\ 16\ hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,\ 16\ hour}$	30 dB $L_{Aeq,\ 8\ hour}$ 45dB L_{AFmax} (See Note 1)

1: Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45dB L_{AFmax} more than 10 times a night.

External Amenity Space Noise Levels

With regard to noise levels in external amenity spaces ProPG 2017 refers to the BS8233:2014 guidance which states that:

> "*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 $L_{Aeq,16hr}$".*

It also states that:

"These guideline values may not be achievable in all circumstances where development might be desirable. In such a situation, development should be designed to achieve the lowest practicable noise levels in these external amenity spaces but should not be prohibited."

After mitigation/with mitigation if the adverse noise impacts are still above the recommended noise levels they can be offset by providing an alternative amenity space to partially offset the noise impact by providing access to:

- *"a relatively quiet facade (containing openable windows to habitable rooms) or a relatively quiet externally ventilated space (i.e. an enclosed balcony) as part of their dwelling; and/or*
- *a relatively quiet alternative or additional external amenity space for sole use by a household, (e.g. a garden, roof garden or*
- *a relatively quiet, protected, nearby, external amenity space for sole use by a limited group of residents as part of the amenity of their dwellings; and/or*
- *a relatively quiet, protected, publically accessible, external amenity space (e.g. a public park or a local green space designated because of its tranquillity) that is nearby (e.g. within a 5 minutes walking distance). The local planning authority could link such provision to the definition and management of Quiet Areas under the Environmental Noise Regulations."*

BS 8233:2014 elaborates on this further, it acknowledges that it may not always be necessary or feasible to ensure that noise levels remain within the guideline values. In respect of gardens and patios, BS 8233:2014 states:

> *"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."*

Both BS8233:2014 and ProPG 2017 do not advise that development should be restricted in areas with undesirable noise levels. The standards recommend that mitigation measures are put in place where practicable to achieve the recommended noise levels for the external amenity spaces. It notes that this may not be practical in all situations and local or governmental policy should take precedence in these situations.

4 ProPG Stage 1 – Assessment

The stage one risk assessment is used to assess the site for potential risks that may occur in terms of noise impact. The ProPG sets out four categories of risk:1) negligible, 2) low, 3) medium or 4) high risk. Figure 2 below illustrates the ProPG risk assessment and the values associated with each risk category.

The risk assessment also considers the risk based on the number of L_{AFmax} events per night as follows;

- A site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and;
- A site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times per night.

Paragraph 2.9 of ProPG states that,

> *"The noise risk assessment may be based on measurements or prediction (or a combination of both) as appropriate and should aim to describe noise levels over a "typical worst case" 24 hour day either now or in the foreseeable future."*

To assess the noise impact with the ProPG risk categories a baseline noise survey was undertaken on the site to quantify the existing noise environment.

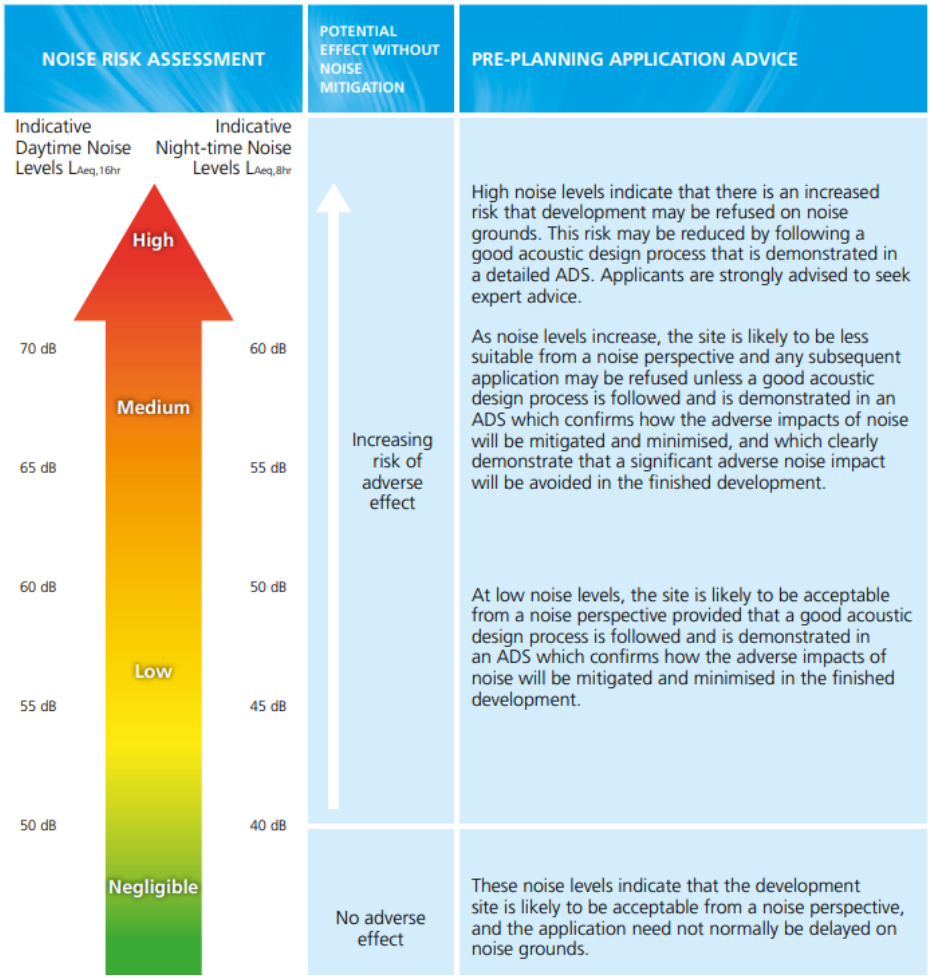


Figure 3: ProPG Risk Analysis

4.1 Baseline Noise Survey

An unattended and attended noise survey was conducted to quantify the existing noise environment. The attended measurement survey included measurements across the site and attended measurements of traffic noise and from the surrounding areas. The purpose of the measurements was to quantify the existing noise environment to assess the break in noise.

4.1.1 Site Description and Measurement Locations

The site is located at South Green Kildare, Co. Kildare. The site is bounded by residential housing to the east, south and west, with an active building site to the south. The site has greenfields to the north, with the site bounded by Southgreen Road and L7016 Old Road.



Figure 4: Site location and measurement locations L1 and A1-A2.

4.1.2 Survey Methodology and Personnel

The attended and unattended survey was completed by Daniel Cousins (Field Engineer), the unattended logger was deployed on the 14th of May 2025 at 11:45hrs and collected on the 22nd of May 2025 at 17:45hrs. The attended measurements were taken on the 14th, 16th and 22nd of May 2025.

Unattended Noise Measurements

An unattended noise logger was deployed in location L1. The monitor was deployed on the 14th of May 2025 at 11:45hrs and collected on the 22nd of May 2025 at 17:45hrs. The logger was positioned in a free field position at approximately 2.5m above ground. The logger was calibrated before and after the measurements and no significant drift was noted. Measurements were filtered for periods of unsuitable weather conditions (where appropriate).



Figure 5: Unattended Measurement Setup.

Attended Noise Measurements

Noise measurements were undertaken in general accordance with ISO 1996-1:2016 using ISO Class 1 sound analysers. Attended measurements were taken for a duration of 15 minutes in the locations A1, A2 and L1 as noted in Figure 4. Care was taken to avoid any effect on the measurement of extraneous noise, acoustic vibration, or interference. During the attended noise measurements, the sound level meter was positioned at approximately 1.5m above the ground level at both A1 and A2, and 2.5m above ground at L1. The weather conditions were calm (wind less than 5m/s) with no rain, a wind shield was used for the duration of the attended surveys. The noise logger was calibrated before and after the survey and no significant drift was noted.

4.1.3 Survey Period

The unattended logger was deployed on the 14th of May 2025 at 11:45hrs and collected on the 22nd of May 2025 at 17:45hrs. The attended measurements were taken on the 14th, 16th and 22nd of May 2025.

4.1.4 Noise Measurement Equipment

A Class 1 sound level meter/noise logger in general accordance with IEC 61672-1:2013 was used for the attended measurements. Table 2 below summarises the measurement equipment used.

Table 2: Noise Measurement Equipment

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Calibrator	CAL3	Nor 1251	32096	AC250308	22/07/2026
Sound Level Meter	SLM3	Nor 140	1403082	SLM50651/ 50650	13/04/2027

Description	WD Asset Number	Model	Serial No.	Calibration Certificate No.	Calibration Due Date
Sound Level Meter	SLM7	Nor 140	1405924	U48184/ U47386	25/07/2026
Sound Level Meter	SLM8	Nor 140	1403345	SLM250258	09/05/2027

4.1.5 Subjective Noise Environment

During the attended noise survey, the following noise sources were identified:

- Road traffic noise from Southgreen Road and L7016 Old Road,
- Distant construction noise,
- Birdsong.

4.2 Noise Measurement Results

Attended measurements were taken to measure the noise levels across the site. This section outlines the results of the attended and unattended noise measurements.

Attended Measurement Results

Table 3 outlines the results of the attended measurement survey.

Table 3: Attended Noise Measurement Results

Measurement				Measured Noise Levels		
Location	Date	Time (hrs)	Duration (mins)	L_{Aeq} dB	L_{AFmax} dB	L_{A90} dB
A1	14/05/2025	10:15	15:00	51	73	36
A1	14/05/2025	10:30	15:00	52	77	36
A1	14/05/2025	10:45	15:00	48	70	36
A1	14/05/2025	11:00	15:00	51	73	36
A1	14/05/2025	11:15	15:00	51	76	36
A1	14/05/2025	11:30	15:00	47	67	36
L1	14/05/2025	10:30	15:00	55	70	47
A2	14/05/2025	11:10	15:00	47	67	40
A2	14/05/2025	11:25	15:00	48	74	40
A2	14/05/2025	11:40	15:00	47	66	41
A2	14/05/2025	11:55	15:00	45	64	40
A1	16/05/2025	06:39	15:00	43	62	40
A1	16/05/2025	06:54	15:00	53	78	39
A1	16/05/2025	07:09	15:00	51	75	39

Measurement				Measured Noise Levels		
Location	Date	Time (hrs)	Duration (mins)	L_{Aeq} dB	L_{AFmax} dB	L_{A90} dB
A1	16/05/2025	07:24	15:00	50	75	40
A1	16/05/2025	07:39	15:00	50	75	41
A1	16/05/2025	07:54	15:00	55	76	40
L1	22/05/2025	17:49	15:00	49	64	39

Unattended Monitoring Results

Table 4 outlines the results of noise measurements at the unattended monitoring location L1.

Table 4: Unattended Measurement Results

Start Date	$L_{Aeq,16hour}$ 07:00 - 23:00 dB	L_{night} ($L_{Aeq,8hour}$ 23:00 - 07:00) dB	L_{den} (00:00 - 00:00) dB	10th highest night-time L_{AFmax}	L_{A90} (23:00 - 07:00) dB
14/05/2025	54[3]	49	55[3]	64	40
15/05/2025	55	47	57	61	39
16/05/2025	55	45	56	63	37
17/05/2025	52	46	54	64	38
18/05/2025	50	49	53	64	37
19/05/2025	55	47	57	63	38
20/05/2025	54	47	56	63	35
21/05/2025	52	49	55	67	34
22/05/2025	55[3]	N/A	N/A	N/A	N/A

(1) Where night-time period is referred to the date is the date the measurement commenced on at 23:00hrs and finished at 07:00hrs on the following calendar day.

(2) Arithmetic average of L_{AF90}.

(3) Shortened measurement duration.

L_{AFmax} Noise Levels

Based on the project criteria outlined in Section 3, the internal $L_{AFmax\ 15min}$ inside the dwelling bedrooms cannot exceed 45dBA more than 10 times per night. With regard to the maximum noise levels ProPg states:

"A site should not be regarded as negligible risk if the $L_{Amax,F}$ exceeds, or is likely to exceed 60 dB more than 10 times a night. A site should be regarded as high risk if the $L_{Amax,F}$ exceeds, or is likely to exceed 80 dB more than 20 times a night."

Figure 6 below highlights the average number of L_{AFmax} events recorded on the noise logger per night based on a 15min measurement interval. Based on the ProPG risk assessment of the L_{AFmax} noise levels, the site is not considered high risk as there are not typically more than 20 occurrences exceeding 80dB L_{AFmax}.

The façade specification outlined in Table 6 has been determined in accordance with achieving the internal noise levels for both L_{Aeq} and the L_{AFmax} incident noise levels below.

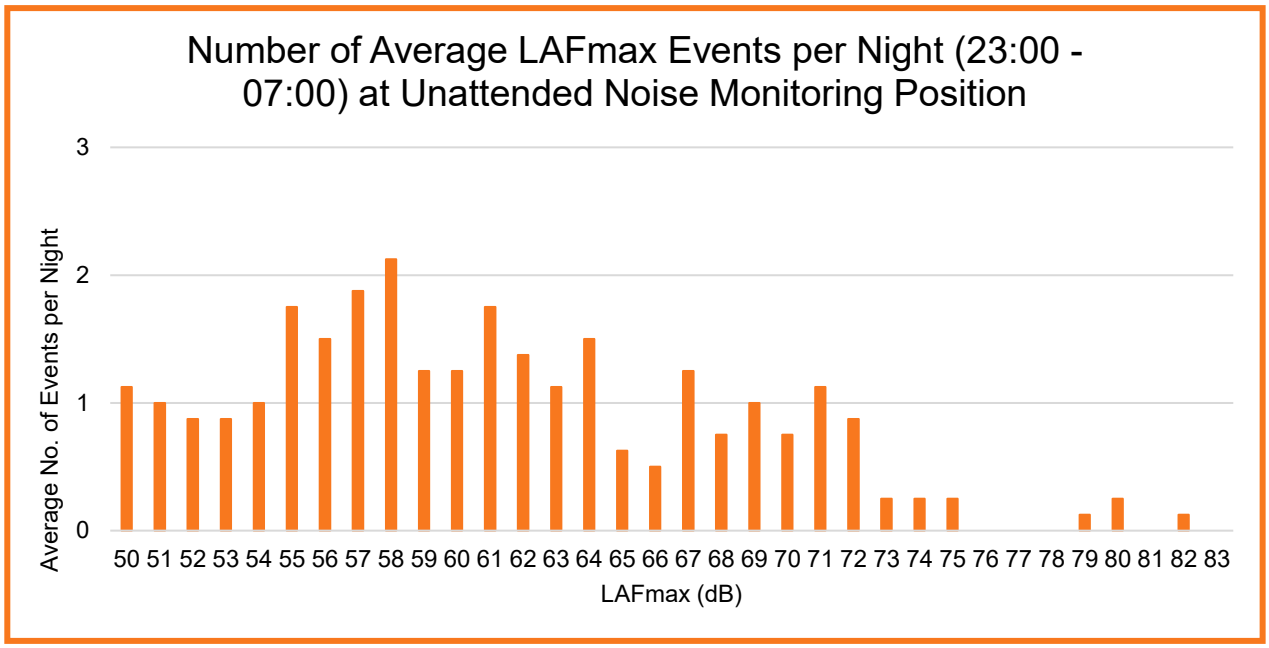


Figure 6: Average recorded L_{AFmax} events per night based on 15min measurement intervals.

Discussion of Measurement Results

The measurements were taken on weekdays and a weekend to provide an understanding of the noise climate around busier times. From the noise levels recorded there, the dominating noise sources included passing traffic on both the Southgreen Road and L7016 Old Road.

Based on the ProPG risk assessment of the L_{AFmax} noise levels, the site is not considered high risk as there are not typically more than 20 occurrences exceeding 80dB L_{AFmax}.

4.3 Weather Conditions for Monitoring Period

Good weather conditions were noted in general during the deployment and collection during the attended survey, with winds of less than 5 m/s and no rain for the attended surveys.

Where weather conditions during the unattended survey impacted on the results they were filtered where required.

4.4 Future Noise Levels

Based on data from the TII (2017) the average rate of growth on Irish roads is a 3.9%. Assuming linear growth of 3.9% over the next 10 years an increase in noise levels from road traffic of 3 dB would be expected. WDA have allowed for this growth in our assessment.

4.5 ProPG Stage 1 – Initial Risk Assessment

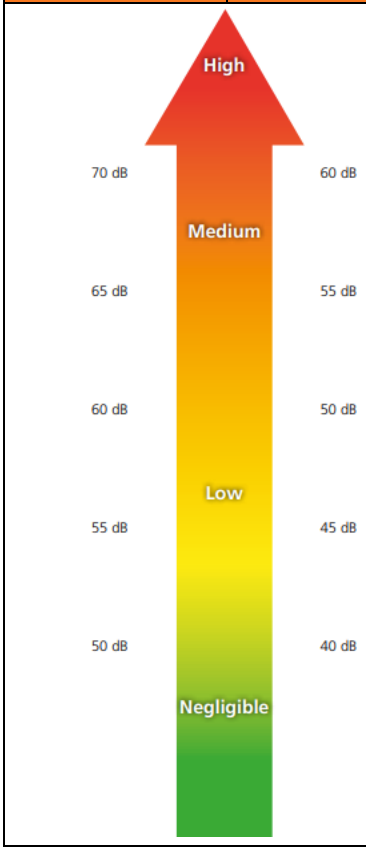
The measured noise levels on the site and future noise levels have been predicted for road traffic noise to assess the probability of an adverse impact.

Table 5 below identifies the Noise Risk Categorisation of the site based on the predicted free field façade noise levels. The site has been categorised as low risk in accordance with the ProPg risk assessment. It should be noted that the ProPG 2017 states the following with regard to how the initial site noise risk is to be used:

"2.12 It is important that the assessment of noise risk at a proposed residential development site is not the basis for the eventual recommendation to the decision maker. The recommended approach is intended to give the developer, the noise practitioner, and the decision maker an early indication of the likely initial suitability of the site for new

residential development from a noise perspective and the extent of the acoustic issues that would be faced. Thus, a site considered to be high risk will be recognised as presenting more acoustic challenges than a site considered as low risk. A site considered as negligible risk is likely to be acceptable from a noise perspective and need not normally be delayed on noise grounds. A potentially problematical site will be flagged at the earliest possible stage, with an increasing risk indicating the increasing importance of good acoustic design."

Table 5: ProPG Stage 1 Risk Assessment of Existing Noise Levels

Noise Risk Assessment		**Risk Assessment Rating**	
Indicative Daytime Noise Levels $L_{Aeq,16hour}$	**Indicative Night-time Noise Levels** $L_{Aeq,8hour}$	**Daytime Noise Levels**	**Night-time Noise Levels**
		**High Risk**	**High Risk**
		N/A.	N/A.
		Medium Risk	**Medium Risk**
		N/A.	N/A.
		Low Risk	**Low Risk**
		The southern boundary is in low risk. Good Acoustic design should be considered.	The southern boundary is in low risk. Good Acoustic design should be considered.
		Negligible Risk	**Negligible Risk**
		N/A.	N/A.

4.6 Consideration of EPA Noise Maps

In addition to the attended and unattended noise surveys conducted on the site, consideration was also given to the predicted noise levels at the site as per the EPA Noise Maps as requested in the further information request. It should be noted that the EPA maps specifically state the following in relation to the use of these contours for site specific assessments and therefore the measured noise levels provide a better understanding into the noise climate at the site:

> *"The strategic noise maps should not be relied upon in the context of planning applications for noise sensitive developments in the vicinity of the mapped sources".*

Additionally, the EPA noise maps are based on major road networks and does not include the local road network surrounding the development. The EPA mapsin combination with the noise measurements demonstrate that the local surrounding roads of Newbridge town are dominant over the distant M7 motorway.

The EPA L_{den} predicted noise maps place the site is outside the traffic noise level contour as shown in Figure 7. In reality the measured noise levels at the most exposed boundary of the site were measured to be in the 50-55 dB Lden range as shown in Table 4.



Figure 7: EPA predicted Lden road traffic noise levels at the proposed site

The EPA L_{night} predicted noise maps place the site is outside the traffic noise level contour as shown in Figure 8. In reality the measured noise levels at the most exposed boundary of the site were measured to be in the 45-49dB L_{night} range as shown in Table 4.



Figure 8: EPA predicted Lnight road traffic noise levels at the proposed site

5 ProPG Stage 2- Full Assessment

This section outlines the full acoustic design assessment in line with ProPG guidance.

5.1.1 Element 1: Good Acoustic Design Process

ProPg States the following in relation to Good Acoustic Design Process:

"A good acoustic design process takes a multi-faceted and integrated approach to achieve optimal acoustic conditions, both internally (inside noise-sensitive parts of the building(s)) and externally (in spaces to be used for amenity purposes)."

"Good acoustic design should avoid "unreasonable" acoustic conditions and prevent "unacceptable" acoustic conditions (these terms are defined in Element 2). Good acoustic design does not mean overdesign or gold plating of all new development but seeking to deliver the optimum acoustic outcome for a particular site"

The following considerations are recommended by ProPG:

- *"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."*

5.1.2 Discussion of Good Acoustic Design

Mitigation of Sources

The development is located close to road noise sources which are not on or part of the development therefore it is not possible to reduce or relocate the relevant noise sources.

Site Layout and Orientation

The eastern, southern and western elevation is the most exposed to road traffic noise from local roads.

Construction Methods

Section 3.1 considers the construction methods required to meet the building performance control measures. The construction measures are in general robust, providing standard external wall and façade details to meet thermal, fire and weathertightness requirements will in general provide adequate performance to achieve good levels of sound insulation.

Impact of Noise Control Measures

The effects for noise control measures on other building elements including ventilation are considered in Section 5.2.1.It is generally impractical to provide ventilation via openable windows in urban/built up areas. An open window will provide 10-15dB of attenuation which in build-up urban areas is not practical. In general, the good acoustic design process in these areas is to provide ventilation via attenuated natural vents or mechanical ventilation. This allows the occupants to have adequate ventilation with adequate noise levels.

External Amenity

ProPG states the following with regard to external amenity spaces:

"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 LAeq,16hr."

The external amenity source noise levels are considered in section 5.3.

5.2 Element 2 – Assessment of Internal Noise Levels

This section outlines the assessment of the building envelope including the façade noise modelling, and specification of the glazing requirements.

A noise intrusion assessment for the proposed development has been completed in accordance with the methodology outlined International Standard *ISO EN 12354-3:2017 Building acoustics — Estimation of acoustic performance of buildings from the performance of elements — Part 3: Airborne sound insulation against outdoor sound*. The standard provides a method for calculating the indoor noise levels due to for instance Road Traffic Noise.

The calculation method accounts for multiple factors including:

- The external noise level at the affected building façade.
- The frequency characteristics of the specific noise source (i.e. road traffic noise).
- The sound insulation performance of each façade element (i.e. Windows, Walls, Roof…).
- The area of each façade element.
- Direct and flanking transmission paths.

5.2.1 Noise Prediction Modelling

Following the survey a model of the development using SoundPLAN 9.1 modelling software was developed to establish the noise levels from the development in a worst-case scenario. The software implements the algorithms contained in ISO 9613-1 and ISO 9613-2. The noise model considers:

- Distance attenuation,
- Source and receptor locations,
- Barrier effects (buildings, walls etc)
- Topographical elevations,
- Ground effects and absorption,
- Source sound power levels,
- Directivity and orientation of the source,
- Atmospheric attenuation and meteorological effects,

The noise model has been calibrated against the attended measurements. SoundPlan 9.1 predicts road traffic noise levels in accordance with *Calculation of Road Traffic Noise* (UK Department for Transport, 1998). This is the recognised appropriate standard for road traffic noise prediction as per TII (Transport Infrastructure Ireland).
The following information was input into the model:

- Development layout provided by architects drawings.
- Google Maps terrain and elevation data of surrounding area.
- Traffic speed of 50km/hr as per local signage and onsite observation.
- Percentage of HGV assumed at 4% based on assessment of similar local roads.
- Annual traffic growth rate of 3.9%.
    - This has been assessed based on pre-covid traffic growth data.

5.2.2 Predicted Road Noise Levels

Incident road traffic noise levels have been predicted across all facades of the development for both the day and nighttime period.

Daytime Noise Levels

Figure 9, Figure 10, Figure 11 below outline the predicted road traffic noise levels across the proposed site for the daytime period at 1.5m, 4m and 6.5m.



Figure 9: Predicted $L_{Aeq,16hour}$ (07:00hrs – 23:00hrs) at 1.5m height for the future development.



Figure 10: Predicted $L_{Aeq,16hour}$ (07:00hrs – 23:00hrs) at 4m height for the future development.



Figure 11: Predicted $L_{Aeq,16hour}$ (07:00hrs – 23:00hrs) at 6.5m height for the future development.

Nighttime Noise Levels

Figure 12, Figure 13, Figure 14 below outline the predicted road traffic noise levels across the proposed site for the nighttime period at 1.5m, 4m and 6.5m.



Figure 12: Predicted $L_{Aeq,8hour}$ (23:00hrs – 07:00hrs) at 1.5m height for the future development.

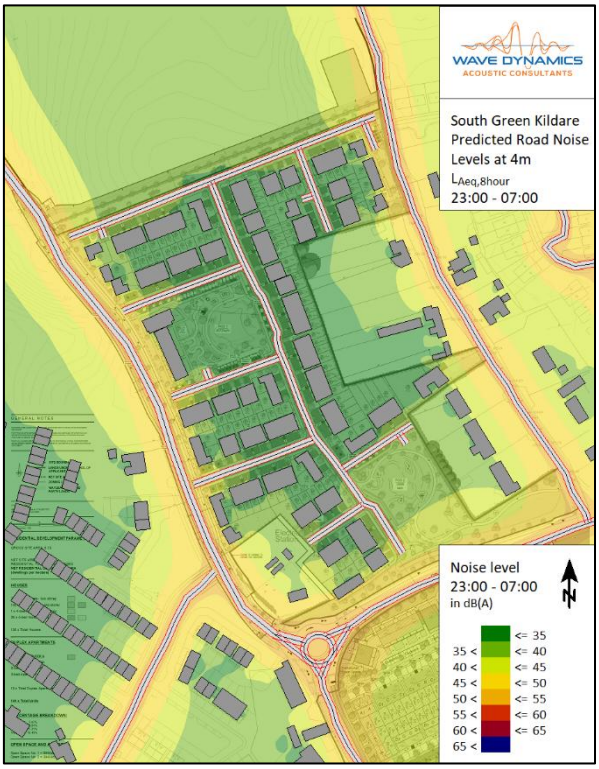


Figure 13: Predicted $L_{Aeq,8hour}$ (23:00hrs – 07:00hrs) at 4m height for the future development.

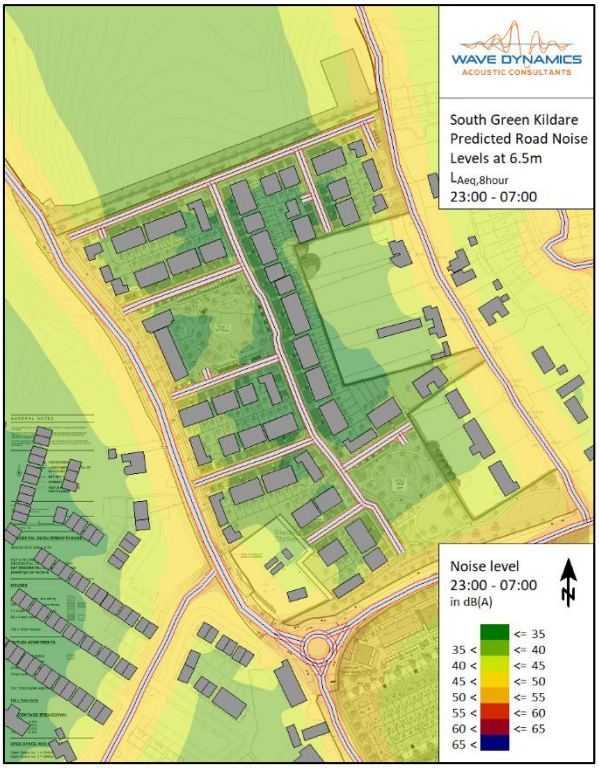


Figure 14: Predicted $L_{Aeq,8hour}$ (23:00hrs – 07:00hrs) at 6.5m height for the future development.

L_{den} Noise Levels

Figure 15, Figure 16 and Figure 17 outline the predicted L_{den} calculation for road traffic noise levels across the proposed site at 1.5m, 4m and 6.5m.



Figure 15: Predicted Lden (00:00Hrs – 00:00Hrs) at 1.5m height for the future development.



Figure 16: Predicted Lden (00:00Hrs – 00:00Hrs) at 4m height for the future development



Figure 17: Predicted Lden (00:00Hrs – 00:00Hrs) at 6.5m height for the future development

Glazed Elements and Ventilation

The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of façade glazed is outlined in Table 6 below.

Table 6: Sound Insulation performance requirements for glazed elements and ventilation

Façade	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)							Façade Ventilation Requirement[2]
	Octave Band Frequency Requirements[1] R dB						Glazing Acoustic Performance dB R_W	
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
BLUE	Standard Double Glazing[3]							Standard passive ventilation

(1) Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria.

(2) The calculation assumes a maximum of 1 ventilation opening per bedroom at the specification outlined in Table 7.

(3) Standard double glazing assumes a construction of two panes of 3mm glass with a 10mm cavity achieving a minimum 29dB R_W, equal or approved. Similarly, standard natural ventilation assumes a performance of 29dB $D_{n,e,w}$.

It is important to note that the requirements outlined above are minimum requirements for the glazed element as a whole. The octave band values are indicative and specific to the assessed glazing type, equal or approved to meet the minimum project requirements is acceptable.

We understand the ventilation strategy for the development has not been confirmed at this stage of the design. It has been assumed that ventilation will be provided via natural ventilation system. Should the ventilation strategy change to mechanical ventilation strategy Wave Dynamics should be notified. Typically, the use of a natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position.

The calculations for the glazing figures in Table 6 are based on the use of basic trickle vents. The performance value, and that used in the calcs is given in Table 7 below.

Table 7: Recommended ventilation specification

Façade	Description	Octave Band Centre Frequency (Hz) Sound Reduction Index $D_{n,e}$ dB					
		125	250	500	1k	2k	4k
BLUE	Standard trickle ventilator typically ≥ $D_{n,e,w}$ 28dB	33	27	27	28	26	27

External Wall Construction

The façade wall construction has been assumed to achieve a minimum sound insulation performance of 56dB R_W. Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

Roof Construction

The roof construction has been assumed to achieve a minimum sound insulation performance of 50dB R_W. Any skylights and glazing in the roof system to corridor or communal areas should be of standard double-glazed construction to meet a performance of minimum 29 dB R_w. If there are any skylights to habitable bedrooms Wave Dynamics should be informed to provide specific guidance in each case.

Consideration of Openable Windows

From a review of predicted noise contours across the site there are a number of facades which benefit from screening from the building layouts. The areas facing into the rear of buildings are provided with natural shading from the proposed buildings themselves. In some locations the screening provided by the proposed buildings is adequate to allow for consideration of openable windows to provide ventilation during the daytime period.

Figure 18 below shows the facades of the development which have low enough onset noise levels to achieve the internal noise levels with windows in the half-open or tilted position in the daytime period.



Figure 18: Locations of façades suitable for ventilation via openable windows in the daytime period (green).

5.3 Element 3- External Amenity Spaces

The external amenity spaces on the development include external amenity in the form of front/rear/side gardens to the houses, terraces/balconies for the duplex apartments, a creche play area and public and communal outdoor spaces across the development. All external amenity spaces have been assessed, and it can be concluded that all front/rear/side gardens of the houses, terraces/balconies for duplex apartments, the creche play area and the public and communal outdoor space across the site are predicted to achieve the external amenity noise levels in accordance with BS8233:2014 of 55dBA L_{Aeq_16hr}.

Based on the measured noise levels at the site it is predicted that the external amenities in the form of gardens to the houses, terraces/balconies for the duplex apartments, creche play area and public and communal outdoor spaces across the development will achieve the ProPG recommendations for desirable external amenity noise levels of 50-55dBA $L_{Aeq,16hour}$.



Figure 19: Communal/Public External Amenity Layout

5.4 Element 4- Assessment of Other Relevant Issues

This section of the acoustic design report considered the other relevant issues. Element 4 considers other issues which may remain relevant to the assessment, these issues are as follows:

- 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 and;
- 4(v) acoustic design v wider planning objectives.

5.4.1 Compliance with Relevant National and Local Policy

The Kildare County Council Noise Action Plan 2024 – 2028 provides additional criteria for this assessment, which recommended that the post mitigation (where required) L_{den} noise levels at 1.5m above all floor levels are below the 70dB (A) L_{den} threshold. The action plan also requires that the predicted post mitigation L_{night} noise levels at 1.5m above all floor levels is below the 57dBA threshold.

The L_{den} noise levels at 1.5m, 4m and 6.5m height are shown in Figure 15, Figure 16 and Figure 17. All L_{den} noise levels across the site at all facades are predicted to be below the 70dB L_{den} KCC threshold.

The L_{night} noise levels at 1.5m, 4m and 6.5m height are shown in Figure 12, Figure 13 and Figure 14. All L_{night} noise levels across the site at all facades are predicted to be below the 57dB L_{night} KCC threshold.

5.4.2 Magnitude and Extent of Compliance with ProPG

This report demonstrates that all dwellings will meet the specified internal noise level requirements provided the guidance in this report is followed. External amenity spaces have been provided in line with the guidance set out in ProPG. Based on this the development is in general compliance with the ProPG requirements.

5.4.3 Likely Occupants of The Development

Additional needs of the future occupants are not known at this stage however the needs of all potential occupants have been considered with the assessment of adequate internal noise levels and provision of adequate external amenity spaces to meet the needs of potential occupants.

5.4.4 Acoustic Design v Unintended Adverse Consequences

The design has considered the impact of adverse consequences, mitigation has been provided by specification of the sound insulation and ventilation requirements.

5.4.5 Acoustic Design v Wider Planning Objective

Where possible the wider planning objectives have been considered including the need for residential housing with good transport links. It is assumed that the winder planning objectives have been adhered to by following the ProPG guidance.

5.5 Stage 2 Assessment Conclusion

The stage 2 assessment considers all four (4) elements, the principals of good acoustic design have been followed.

The element 2 assessment has considered the measures required to provide an adequate acoustic environment with appropriate noise levels for internal spaces. The sound insulation and ventilation requirements have been specified based on the predicted façade noise levels.

The element 3 assessment of external amenity spaces has considered the noise impact on the development and the external amenity spaces. The appropriate provision of external amenity space has been provided through the use of front/rear/side gardens to the houses, terraces/balconies for the duplex apartments, a creche play area and public and communal outdoor spaces across the development in line with the ProPG guidance.

Other relevant issues have been considered including, local policy, unintended consequences and the wider planning objectives.

6 Conclusion

Wave Dynamics were engaged by Pousterle Ltd as the acoustic consultants to undertake an Inward Noise Impact Assessment for the planning application for the proposed new residential development at South Green Kildare, Co. Kildare.

Pousterle Limited intend to apply for permission for development of a Large - Scale Residential Development (LRD) on a site of approx. 6.13 ha at Southgreen Road, Kildare, Co. Kildare. The site is generally bounded to the north by agricultural fields; to the south by the recently constructed Southern Internal Link Road; to the west by Southgreen Road and an existing Electricity Station; and to the east by Old Road and existing residential properties.

The proposed development will consist of:

- The construction of a new residential scheme of 146 no. residential units ranging in height from 1-3 storeys as follows:
    - 136 no. houses (7 no. 2 bed units; 102 no. 3 bed units; and 27 no. 4 bed units) in a mixture of bungalow, detached, semi-detached, and terrace style units ranging in height from 1 – 2 storeys.
    - 10 no. duplex apartment units (5 no. 1 beds, 3 no. 2 beds, and 2 no. 3 beds) in new Block A ranging in height from 2-3 storeys
- Each residential unit will be afforded with private open space in the form of a front/rear/side garden for houses or terrace / balconies for duplex apartment units.
- The provision of a new creche facility (approx. 161 sq m GFA) and associated areas of external open space (approx. 60 sq m) located at Block A.
- Public open space (approx. 6,992 sq m) is proposed in the form of 2 no. new large public open space areas within the site (approx. 3,046 sq m and 3,946 sq m respectively).
- Communal open space (approx. 82 sq m) is proposed adjacent to Block A.
- A total of 321 no. car parking spaces (305 no. for residential units and 16 no. for the creche facility) are provided. This provision includes 2 no. accessible spaces and 17 no. visitor spaces.
- A total of 527 no. cycle parking spaces (517 no. for residential units and 10 no. for the creche facility) are provided. This provision includes 75 no. visitor spaces. Resident cycle parking is proposed in the form of secure bicycle store enclosures to the front of terraced units; on curtilage spaces to the rear of units with side access; and a bicycle store for apartment units located within Block A. Visitor parking is proposed in the form of Sheffield stands.
- The development shall be served via 2 no. new vehicular access points from Southgreen Road. An additional private vehicular access point is proposed via Old Road to service 1 no. new bungalow (4 no. bed residential unit). Provision is also made for future vehicular access via Southgreen Road to serve the open space and amenity zoned lands to the north of the main development site.
- Pedestrian and Cyclist access is also proposed via Southgreen Road and via a new secondary access point from the Southern Internal Link Road to the south of the site and Old Road to the east of the site.
- Upgrades/widening to Southgreen Road including the provision of 2 no. directional single lane cycle tracks and pedestrian footpaths on either side of the Southgreen Road, together with amendments to the existing cycle tracks and footpaths on Southgreen Road north of Southern Internal Link Road are proposed.
- A new pedestrian/cycle link is also delivered to the north of the main development site connecting South Green Road to Old Road.
- The associated site and infrastructural works include provision for an ESB Sub Station; water services; foul and surface water drainage and connections; attenuation proposals; permeable paving; all landscaping works; boundary treatment; PV/Solar Panels; internal roads and footpaths; waste storage areas, all electrical services and all associated site development works.

Noise Impact Assessment

A Stage 1 and Stage 2 ProPG assessment have been undertaken. As part of the stage one assessment to categorise the site, a baseline noise survey was undertaken to measure the existing noise levels. Following a review of the noise levels on the site, including the L_{AFmax} and $L_{Aeq,}$ the site has been characterised as low risk.

Internal Noise Levels

Following the baseline survey, a noise impact assessment was undertaken, this included break-in noise calculations to predict the internal noise levels from road traffic noise. Consideration has also been given to the future growth of the roads. The noise measurements were taken during weekdays and the weekend, which is indicative of peak traffic conditions. Following the assessment, the building envelope performance requirements were determined. The performance specification for the building envelope has been provided in this report which includes the external walls, glazing, roof and ventilation requirements.

External Amenity Noise Levels

The external amenity spaces on the development includes front/rear/side gardens to the houses, terraces/balconies for the duplex apartments, creche play area and public and communal outdoor spaces across the development. Appropriate amenity has been provided on the development for residents using the gardens, terraces/balconies and public and communal outdoor spaces across the development. This is in line with element 3(v) of ProPG.

Based on the measured noise levels at the site it is predicted that the external amenities in the form of gardens to the houses, terraces/balconies for the duplex apartments, creche play area and public and communal outdoor spaces across the development will achieve the ProPG recommendations for desirable external amenity noise levels of 50-55dBA $L_{Aeq,16hour}$.

Façade Noise Levels

The onset façade noise levels in terms of L_{den} and L_{night} meet the Kildare County Council requirements without any additional mitigation when considering each floor level.

Based on the recommendations in this report it is predicted that the internal and external noise levels will achieve the targeted noise levels in line with BS 82233:2014 and ProPG 2017 guidance. The onset façade noise level requirements in terms of L_{den} and L_{night} are achieved without any additional mitigation.

Appendix A- Glossary of Terms

Ambient Noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from all the noise sources in the area.
Background Noise	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 ($L_{AF90,T}$).
dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa).
dB(A)	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz	The unit of sound frequency in cycles per second.
L_{A90}	A-weighted, sound level just exceeded for 90% of the measurement period and calculated by statistical analysis. See also the background noise level.
L_{Aeq}	A-weighted, equivalent continuous sound level.
L_{AFmax}	A-weighted, maximum, sound level measured with a fast time-constant - maximum is not peak
L_{den}	day-evening-night noise level, the A-weighted, Leq (equivalent noise level) over a whole day, but with a penalty of 10 dB(A) for night-time noise (23:00-07:00) and 5 dB(A) for evening noise (19:00-23:00), also known as the day evening night noise indicator

Appendix B- Façade Mark Ups



Glazed Elements Specification

Standard Double Glazing

WAVE DYNAMICS
ACOUSTIC CONSULTANTS
DUBLIN WEXFORD CORK LONDON

Project:	South Green Kildare
Title:	Glazing Markup - Site Layout
Prepared By:	Saoirse Mulvaney
Reviewed By:	Sean Rocks
Date:	25/02/2026