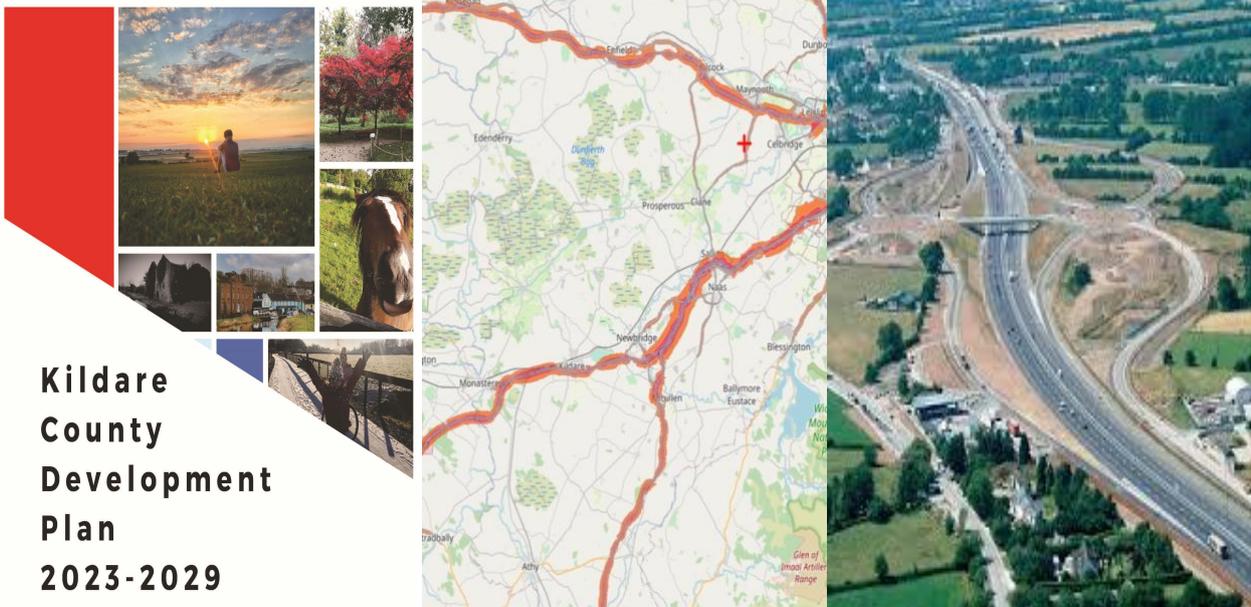




Kildare County Council

Noise from Transportation Sources



**Kildare
County
Development
Plan
2023-2029**

Planning Advice Note for Applicants, Consultants and Planners.

Kildare County Council,
Áras Chill Dara,
Devoy Park, Naas, Co.
Kildare.

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Disclaimer

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Objective and Purpose

- 1.1.1 The objective of this guidance document is to provide advice to planning applicants, developers, their acoustic engineers, consultants or other suitable qualified expert in the acoustics field on the consideration of environmental noise from transportation in the design of new residential development.
- 1.1.2 The scope of this guidance is limited to new residential development that may be exposed to airborne noise from existing transportation¹ sources. The consideration of acoustic sources such as groundborne-noise and vibration are outside the scope of this document.
- 1.1.3 The guidance is aligned with *National Policy Objective 65* of the *National Planning Framework 2040* by encouraging the material consideration of environmental noise in the planning process, which is a key aspect of sustainable development.
- 1.1.4 A principle aspiration in the design of new residential development should be the application of **good acoustic design** so that:
 - (a) internal noise level guidelines, as outlined in BS 8233:2014³, can be achieved with adequate building ventilation and thermal comfort, in all living areas (e.g. living rooms, bedrooms) with openable windows;
 - (b) private external amenity areas can be enjoyed as intended taking cognisance of environmental noise levels recommended not to be exceeded by the World Health Organization (WHO).
- 1.1.5 This document recommends that consideration is given to the potential impact of transportation noise on new residential development in line with *Professional Practice Guidance on Planning and Noise: New Residential Development* (ProPG, 2017), which was supported in its preparation by the *Acoustics & Noise Consultants*, the *Institute of Acoustics* (UK) and the *Chartered Institute of Environmental Health*. This guidance document outlines salient points of the approach presented in ProPG and it sets out where a cautionary approach may be required. Additional information is available to practitioners in the publication by the Acoustic Consultants of Ireland (AACI) *Environmental Noise Guidance for Local Authorities - Planning and Enforcement* (2021)
- 1.1.6 By considering the potential impact of transportation noise⁴ at the early stages of the planning process should lead to speedier delivery of new residential development, particularly where there is a negligible noise risk from transportation sources.
- 1.1.7 This guidance is intended to be used alongside other relevant documents that outline requirements for the consideration of transportation noise (e.g. Noise Action Plans, City and County Development Plans, national and local policies) and not as a replacement. National Guidance may be issued in Ireland in the future and when issued, will supercede this document. This document will be updated as necessary to take account of any evolving standards/ information/policy. Please check the Kildare Co. Council website for the current version.
- 1.1.8 This advice note promotes, expands and updates certain Noise Policy Actions and objectives set down in Kildare County Council's Third Noise Action Plan 2019-2023, (due to be updated in 2024) as referenced in Chapter 6.3 of the current 2023-2029 County Development Plan. TM O72 of the CDP strives to implement the requirements of S.I. No. 140 of 2006 Environmental Noise Regulations and the recommendations of the Kildare Noise Action Plan 2019-2023, to seek to reduce, where necessary, the harmful effects of traffic noise, through appropriate mitigation measures that meet the best environmental options. Applicants should familiarize themselves with the above docs/requirements.

¹ Existing transportation sources may also include infrastructure not yet constructed but with planning consent, infrastructure for which a planning application has been submitted and that which may have been refused planning but the planning decision is being appealed.

³ BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings*.

⁴ See Glossary for definition of transportation noise.

Legislative Context

- 1.2.1 The aim of the Environmental Noise Directive (2002/49/EC) is; “*to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise*”. The Directive has been transposed into Irish legislation under the Environmental Noise Regulations 2018⁵ which require Local Authorities to prepare Noise Action Plans. Such plans require the consideration of transportation noise in the planning process for new residential development to try to prevent additional members of the community from being exposed to undesirable noise levels.
- 1.2.2 The *Project Ireland 2040 National Development Plan 2018-2027* highlights that the continuation of existing patterns of housing development will accentuate “*the serious risk of economic, social and environmental unsustainability*”. There is a requirement in the Plan for a major increase in the delivery of housing within existing built-up urban areas and cities. As there is a growth of residential developments, particularly in built-up areas, there is the potential for transportation noise to cause a significant adverse impact on residents if it is not given due consideration in the planning process.
- 1.2.3 *National Policy Objective 65* under the *National Planning Framework 2040* (NPF) states “*Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans*” (see Appendix 1). The express inclusion of noise in the NPF means that it is a material consideration for planning authorities making decisions on proposed residential development. In the absence of any existing Government guidance or recommendations for the assessment of transportation noise and the design of new residential development, this guidance recommends the use of assessment methodologies laid out in current UK publications to encourage applicants to follow the principles of good acoustic design.
- 1.2.4 Under the *Climate Action Charter* (2019, updated 2021), Local Authorities understand that there is equivocal evidence of global warming and that the effects of climate change are clearly evident, with Ireland’s temperatures projected to rise across all seasons. In the context of climate action and sustainable development then the competing demands between acoustics, ventilation and thermal comfort should be considered in the design of new residential development.

Introduction

- 2.1.1 Indoor environmental quality is dependent on a combination of acoustics, air quality (ventilation) and thermal comfort (including the prevention of overheating). Where these environmental aspects are not considered together then there is the potential for residential accommodation in which the occupants may be forced to choose either acoustic comfort, or indoor air quality and thermal comfort, but cannot achieve both simultaneously.
- 2.1.2 In the absence of national noise planning guidance it is recommended that acoustic assessments prepared for the design of new residential development that may be effected by transport sources have regard to the *Professional Practice Guidance on Planning and Noise: New Residential Development* (ProPG).

⁵ The *Environmental Noise Regulations* (2018) both revise and revoke the *Environmental Noise Regulation* (2006).

- 2.1.3 ProPG was prepared with due regard to Government policy in England including the *National Policy Statement for England* (NPSE) for the management of noise and the *National Planning Policy Framework* (NPPF) for land-use planning. The objectives in these policy documents are broadly aligned to *National Policy Objective 65* in the Irish Government’s *National Planning Framework 2040*.
- 2.1.4 The primary goal of ProPG is to “assist the delivery of sustainable development by promoting good health and well-being through the effective management of noise”.
- 2.1.5 Although the recommended approach in ProPG is intended for the consideration of new residential development it may also be suitable for the consideration of other noise sensitive developments (e.g. educational facilities, hospitals, care homes). Additional standards and guidance may also apply to the assessment of such premises (e.g. a UK publication *Specialist Services Health Technical Memorandum 08-01: Acoustics, 2013*).

Acoustic Assessment of Noise

- 2.2.1 Excessive environmental noise can be harmful to the health and quality of life of individuals and communities in residential settings. There is growing evidence that long-term exposure to transport noise can cause various health outcomes including annoyance, sleep disturbance, cognitive impairment of children and cardiovascular disease.
- 2.2.2 Where a proposed development is located near a transport source then the acoustic environment should be considered from an early stage and the principles of good acoustic design should be applied from the outset, in line with ProPG.
- 2.2.3 Transport noise sources that should be considered are at the discretion of the relevant planning authority but should at least be those considered under strategic noise mapping, prepared in accordance with the *Environmental Noise Regulations* (2018). That is:
- major roads that have more than 3,000,000 vehicle passages per year;
 - major railways that have more than 30,000 train passages per year;
 - major airports which have more than 50,000 movements per year (excluding light aircraft); and
 - transport sources mapped in the agglomerations of Dublin, Cork and Limerick⁶.

It is recommended that the **planning applicant or developer familiarize themselves with this document** prior to any pre-planning discussions, including the Appendix summary document.

- 2.2.4 **ProPG advocates a systematic, proportionate, risk-based assessment as part of a two-staged approach. This approach facilitates straightforward accelerated decision making for lower risk sites and will assist proper consideration of noise issues where the acoustic environment is challenging. For convenience, the following paragraphs highlight the most relevant paragraphs but applicant and consultant should refer to the full document.**

⁶ Limerick is considered to be an agglomeration under *S.I. No. 549/2018 – European Communities (Environmental Noise) Regulations* and will be mapped under Round 4 of the strategic noise mapping process in 2022.

Stage 1: Initial Noise Risk Assessment

- 2.2.5 **Stage 1** is an *Initial Noise Risk Assessment* for the site of the proposed new residential development. The noise risk assessment should be carried out at the early stages of the residential development design based on external noise levels. It will provide an indication of the likely risk of adverse effects to occupants of the new residential development without consideration of any additional noise mitigation measures.
- 2.2.6 External noise levels can be measured or predicted to estimate long-term day-time and night-time noise levels effecting the site. Where strategic noise mapping is available for the locality then the planning applicant or the developer can use it initially as a guide to get an appreciation of noise levels at the site and determine any necessity for *Stage 2: Full Assessment*. This mapping can be viewed online at <https://gis.epa.ie/EPAMaps/>. Where measurements of external noise are used for the Stage 1 assessment then these must be collected and assessed by an acoustician in accordance with *ISO 1996-2 Acoustics – Description, measurement and assessment of environmental noise Part 2: Determination of sound pressure levels*.
- 2.2.7 Where the noise risk is likely to be greater than Negligible (see Figure 1) across the site (or across part of the site) then a *Stage 2: Full Assessment* should be conducted based on a combination of predicted and measured noise levels. The applicant and/or developer are strongly advised to engage an acoustic engineer for the Stage 2 assessment.
- 2.2.8 A site at Negligible risk is likely to have acceptably low noise levels and there is unlikely to be an objection by the planning authority to the development based on noise grounds.
- 2.2.9 No specific threshold noise levels are provided in ProPG for the determination of the risk categories which allows for flexibility in the planning process and encourages the use of good acoustic design. The noise indicators used in ProPG are $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$ which are the continuous sound pressure levels measured for day-time (07:00 - 23:00 hrs) and night-time (23:00 - 07:00 hrs), respectively.
- 2.2.10 Strategic noise mapping, which can be used initially to review transportation noise levels in the vicinity of the site, are presented using L_{den} and L_{night} noise indicators (where $L_{Aeq,8hr}$ is the same as L_{night}). The L_{den} parameter is a twenty-four hour noise indicator which includes corrections for increased adverse impact at evening- and at night-time (see Glossary). The $L_{Aeq,16hr}$ dB scale in Figure 1 can be used as an approximation of a L_{den} dB scale for the purpose of the Stage 1: Initial Noise Risk Assessment even though the L_{den} and $L_{Aeq,16hr}$ noise indicators are not the same.

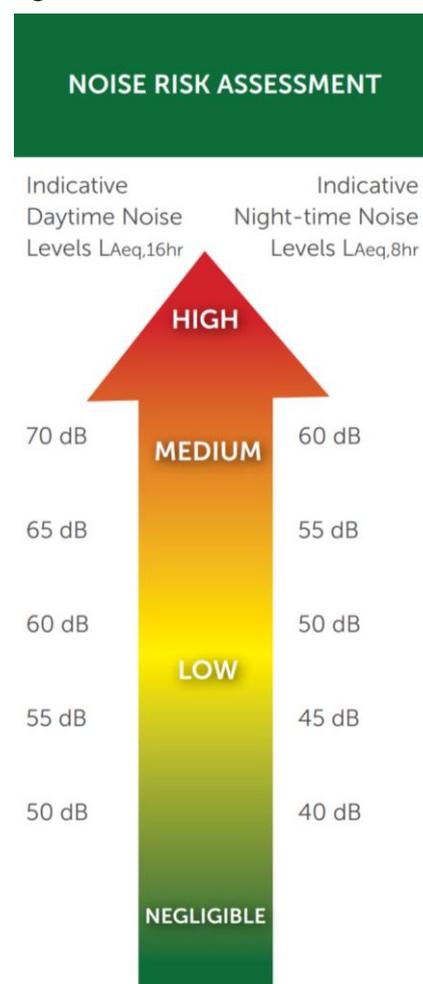


Figure 1. Initial Noise Risk Assessment

- 2.2.11 The latest available strategic noise mapping for Ireland (Round 3, 2017) was prepared using predicted environmental noise levels above 55 dB L_{den} and 50 dB L_{night} . The predicted noise levels in the mapping are presented in 5 dB bands. Round 4 strategic noise maps for Ireland were commenced in 2022 and are likely to report environmental noise levels for roads and railways at or above 50 dB L_{den} and 45 dB L_{night} inside agglomerations and 53dB L_{den} , 45dB dB L_{night} outside agglomerations for roads.
- 2.2.12 The WHO strongly recommends policy-makers to reduce the populations exposure below 53 dB L_{den} and 45 dB L_{night} for road noise and 54 dB L_{den} and 45 dB L_{night} for railway noise to avoid adverse effects on health and sleep (*Environmental Noise Guidelines for the European Region*). For the purpose of the *Stage 1: Initial Noise Risk Assessment* then Negligible risk can generally be considered to be below 55 dB L_{den} and 45 dB L_{night} for road and rail noise (i.e. there will be no requirement for a *Stage 2: Full Assessment*). The Round 3 strategic noise maps do not predict road and rail noise levels down to 45 dB L_{night} and so the likelihood of Negligible risk for a proposed residential development can only be based on the L_{den} indicator at present (i.e. below 55 dB L_{den}).
- 2.2.13 The WHO strongly recommends that policy-makers reduce the populations exposure below 45 dB L_{den} and 40 dB L_{night} for aircraft noise to avoid adverse effects on health and sleep (*Environmental Noise Guidelines for the European Region*). For the purpose of the *Stage 1: Initial Noise Risk Assessment* then Negligible risk can generally be considered to be below 45 dB L_{den} and 40 dB L_{night} for aircraft noise (i.e. there will be no requirement for a *Stage 2: Full Assessment*). The Round 3 strategic noise maps for aircraft noise do not predict noise levels down to the WHO recommended exposure levels. A pragmatic approach should be taken at present until the Round 4 maps become available. Where environmental noise from aircraft is likely to exceed 55 dB L_{den} and 50 dB L_{night} , based on the Round 3 strategic noise maps, the noise risk will be at least Medium (in contrast to the *Stage 1: Initial Risk Assessment* presented in Figure 1). If other noise predictions (based on modelling/calculations) or noise measurements are available then Negligible Risk can be considered to be below 45 dB L_{den} and 40 dB L_{night} .
- 2.2.14 Where the proposed development is in the vicinity of an airfield the applicant or developer should approach the planning authority to establish any particular requirements for the Stage 1 and Stage 2 assessments, or refer to any requirements set out under the relevant Development Plan or Local Area Plan.
- 2.2.15 Where there is Low noise risk across a site from transportation then the proposed development is likely to be acceptable from a noise perspective by the planning authority, **provided that good acoustic design process is followed**. It should be demonstrated within an Acoustic Design Statement (ADS) how adverse impacts of noise will be mitigated and minimised across the completed development.
- 2.2.16 As the risk increases at the site then it is less likely that the proposed development will be acceptable from a noise perspective by the planning authority. **The application may be refused unless good acoustic design process is followed and it is demonstrated within an ADS how adverse impacts of noise will be mitigated and minimised, and how significant adverse effects will be avoided in the completed development. There may be situations where good acoustic design is followed but that the mitigation proposals are not sufficient to meet acceptable internal or external noise levels which will increase the likelihood of refusal.**

- 2.2.17 Where there is **High risk** across the site then there is increased potential that the proposed development will be refused by the planning authority based on noise grounds. The risk should be minimized by the application of good acoustic design process which should be detailed within an ADS. Where appropriate, in exceptional cases, the Local Authority may balance the common good objective for certain sites with high noise risk. Where existing development are to be expanded on sites with constraints on space, the risk must be **minimized** with good spatial design of the buildings / amenity areas, by the application of good acoustic design process which should be detailed within an ADS.
- 2.2.18 Where the Stage 1 assessment is based on measured noise levels taken by an acoustic engineer then consideration should be given to noise events at night (23:00 to 07:00 hrs) and their potential effect on internal noise levels for occupants of the proposed residential development. Where there is a clear indication that there will be more than ten noise events at night with greater than 60 dB $L_{Amax,F}$ then the proposed development should not be considered to be at Negligible noise risk (<10 Noise events at 60dB) ranging to High Risk (>10 Noise events at 80dB) and any potential adverse effect to residents shall be assessed. It shall be demonstrated in the Stage 2 assessment how adverse effects will be mitigated and minimised and that significant adverse effects will be avoided.
- 2.2.19 The outcome of the *Stage 1: Initial Noise Risk Assessment* should not be a reason for a refusal, but to highlight any acoustic challenges that have been encountered in the vicinity of the site, the potential for adverse effects to health and well-being for occupants, and the level of detail required to be considered in an Acoustic Design Statement, where the risk is predicted to be greater than Negligible (see Table 1 in Appendix 1).

Stage 2: Full Assessment

- 2.2.20 ProPG outlines that **Stage 2** contains four key elements that should be carried out in tandem (Figure 2):
- “
- (a) *Element 1 is a demonstration of the application of good acoustic design⁷;*
 - (b) *Element 2 is an assessment of expected internal noise levels;*
 - (c) *Element 3 is an assessment of expected external noise levels in private amenity areas;*
 - (d) *Element 4 is an assessment of any other relevant issues.”*

⁷ Bullet-points are paraphrased from ProPG and it will be unlikely that the relocation of a noise source will be possible in the design of a new residential development.

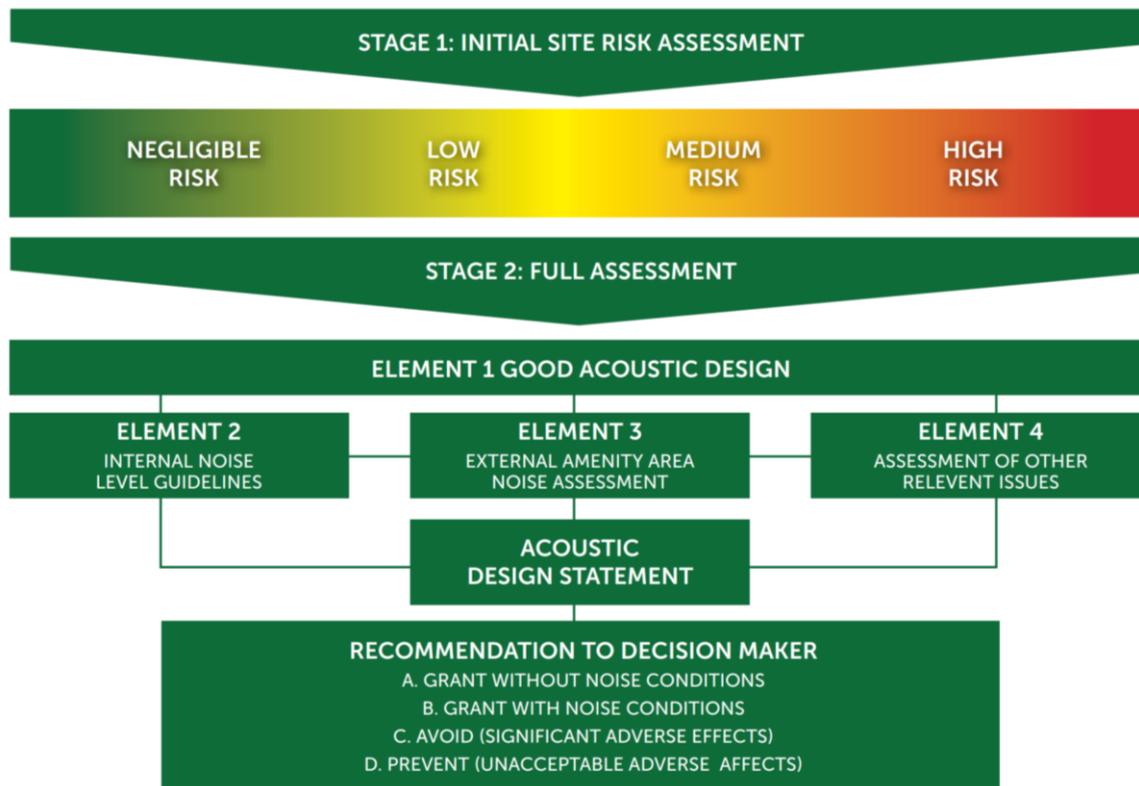


Figure 2. Full Assessment

Stage 2: Element 1 – Good Acoustic Design Process (an overarching element)

2.2.21 In demonstrating the application of good acoustic design an integrated approach should be used to achieve optimal noise conditions in both internal habitable rooms (e.g. living rooms, bedrooms) and in external amenity areas.

2.2.22 Good acoustic design should be demonstrated through an Acoustic Design Statement to avoid unreasonable acoustic conditions and prevent unacceptable acoustic conditions. Noise reports submitted with planning applications should include evidence that the following aspects, outlined in the ProPG guidance, have been properly considered at an early stage of the design:

- “
- (a) Check the feasibility of relocating, or reducing noise levels from the noise source;
 - (b) Consider options for the site and building layout;
 - (c) Consider the orientation of the proposed building(s);
 - (d) Select construction types and methods for meeting building performance requirements (e.g. consider the construction/treatment of floors and walls under the Building Regulations Technical Appendix E to prevent flanking sound in apartment blocks);
 - (e) Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost etc.;
 - (f) Assess the viability of alternative solutions;
 - (g) Assess outdoor amenity noise.”

2.2.23 Importantly, ProPG indicates that **unopenable glazing is generally unsatisfactory** and that solely relying on the sound insulation of the building to achieve acceptable acoustic conditions when other measures could be applied is not regarded as good acoustic design.

- 2.2.24 Additionally, the World Health Organization indicate that it is the preference of the European majority of the population to sleep with a window (at least partially) open. (World Health Organization. 2010. *Night noise guidelines for Europe.*)
- 2.2.25 In the context of sustainable development then it is encouraged to investigate the feasibility of **achieving optimal internal acoustic conditions with openable windows**.
- 2.2.26 The *Environmental Noise Guidelines for the European Region* highlight a study that found statistically there was a significant difference in the proportion of participants that reported a difficulty in falling asleep where there was road noise outside homes with and without a quiet side to the dwelling. Where the acoustic environment is challenging consideration should be given to locating an openable window for habitable rooms on a quiet façade.
- 2.2.27 ProPG highlights that where closed windows are required to achieve internal noise level guidelines in the design of the proposed residential development then *“full details of the proposed ventilation and thermal comfort arrangements must be provided.”*
- 2.2.28 A reliance on closed windows to achieve internal noise level guidelines will require justification and should be accompanied with a proposed ventilation and overheating strategy for the building(s). The acceptability of closed windows to achieve desirable internal noise levels inside should be agreed with the planning authority. It is recommended that applicants, developers and their acoustic engineers review any relevant local policies and engage with the relevant planning authority at an early stage to discuss any acoustic issues that are encountered.
- 2.2.29 Advice on good acoustic design is contained within *Supplementary Document 2 : Good Acoustic Design to ProPG*.

Stage 2: Element 2 – Internal Noise Level Guidelines

- 2.2.30 Recommended guidance for target internal noise levels in noise sensitive rooms are set out in BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* (Table 1).

Table 1. Target internal noise levels for outlined in Section 7.7.2 BS8233:2014 and (additions in ProPG in blue italics).

Activity	Location	07:00-23:00 hrs	23:00-07:00 hrs
Resting	Living room	35 dB <i>LAeq,16hr</i>	-
Dining	Dining room/area	40 dB <i>LAeq,16hr</i>	-
Sleeping	Bedroom	35 dB <i>LAeq,16hr</i>	30 dB <i>LAeq,8hr</i>
(Daytime resting)			45 dB <i>L_{Amax,F}</i>

- 2.2.31 A series of notes accompany the tables in BS 8233:2014 and ProPG that should be given consideration. Table 1 includes an addition presented in ProPG (in blue italics) of a guideline threshold for noise events of 45 dB *L_{Amax,F}*. Where noise events do not exceed the 45 dB *L_{Amax,F}* threshold more than ten times per night then adverse impacts on sleep can be considered to be negligible. A detailed assessment should be carried out where this criteria may be exceeded.
- 2.2.32 The acoustic consultant shall refer to Appendix A of the main ProPG document for the consideration of noise events.

- 2.2.33 Target internal noise limits presented in Table 1 are annual averages and represent typical noise levels where the external noise is steady. If the external noise is not steady and varies significantly throughout the calendar year then a shorter time period may need examining.
- 2.2.34 Typically there would be no more than a 10 to 15 dB(A) reduction from outdoors to indoors provided by the sound insulation of the building envelope in an open window scenario. ProPG highlights that residents value the ability to “*open windows at will*” and so it is reiterated here again that it is recommended to investigate the feasibility of achieving optimal acoustic conditions with openable windows.
- 2.2.35 Where the planning authority accepts the requirement for closed windows so as to be able to achieve internal noise level guidelines (e.g. in busy urban areas) then justification shall be provided as well as a ventilation and overheating strategy. If windows are recommended to be closed in order to achieve optimal internal noise levels then any ventilation and overheating strategy shall take the closed window scenario into account.
- 2.2.36 It is indicated in BS 8233:2014 that “*Where Development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal LAeq target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved*”. ProPG further indicates that as internal noise levels exceed target levels by more than 5 dB that most people will likely regard them as “*unreasonable*” and once they exceed 10 dB they are likely to be considered to be “*unacceptable*”. ProPG highlights that every effort should be made to avoid “*unacceptable*” internal noise levels in rooms where they are likely to occur frequently.
- 2.2.37 Caution should be taken in allowing internal noise levels in habitable rooms exceed 5 dB above target levels because it could lead to significant adverse effects to health and well-being for occupants. If agreed with the Local Authority it should only be considered as part of a detailed overheating strategy that justifies the reason. There may also be a necessity to provide evidence that the occupants are aware of the acoustic conditions and for the planning authority to apply a condition to any planning granted with a residency clause.
- 2.2.38 ProPG indicates that target internal noise levels are not generally applicable in the case of “*purge ventilation*” which will likely be for short duration and occur infrequently (rapid dilution of air pollutants or water vapour e.g. fumes from wet paint). Purge ventilation is different to the thermal cooling (the prevention of overheating).
- 2.2.39 Where the planning authority agrees with the justification for closed windows then an assessment should be carried out of the impact on internal noise levels of any mechanical ventilation services that are proposed, in addition to the impact of external noise levels.
- 2.2.40 Special attention is given in ProPG to where a site may also be exposed to industrial and commercial noise. Where industrial and commercial noise is dominant then this is outside the scope of ProPG and the relevant assessment standard is BS 4142:2014. *Methods for rating and assessing industrial and commercial sound*. In the case that industrial and commercial is not dominant then it may be necessary to consider the noise in the Stage 1 and Stage 2 Element 2 assessments along with the transport noise source.

Stage 2: Element 3 – External Amenity Area Noise Assessment

- 2.2.41 Element 3 requires an assessment of noise levels in the external amenity areas.

- 2.2.42 ProPG quotes BS 8233:2014 to state: “*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 $L_{Aeq,16hr}$* ” and 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.*”
- 2.2.43 ProPG also quotes PPG-Noise and states: “*If external amenity spaces are an intrinsic part of the overall design, **the acoustic environment of those spaces should be considered so that they can be enjoyed as intended***”.
- 2.2.44 The range of external noise levels recommended not to exceed in BS 8233:2014 broadly align with an exposure level of 53 dB $L_{Aeq,16hr}$ above which is associated with adverse health effects (*Environmental Noise Guidelines for the European Region*, WHO) and the exposure levels of 50 dB $L_{Aeq,16hr}$ and 55 dB $L_{Aeq,16hr}$ above which are associated with moderate annoyance and serious annoyance, respectively, in outdoor living areas (*Guidelines for Community Noise*, WHO).
- 2.2.45 BS 8233:2014 indicates that external noise levels should never be a reason for refusal so long as they are as low as practicable. Evidence should be provided to demonstrate that all the facets of good acoustic design (outlined in *Element 1*) have been given full consideration where it is not possible to achieve desirable external noise levels in the design of new residential development (e.g. feasibility of relocating, or reducing noise levels from the noise source, options for the site and building layout). It is at the discretion of the planning authority to agree on the suitability of predicted external noise levels for occupants of a proposed residential development.
- 2.2.46 Where good acoustic design has been demonstrated and it is not possible to achieve desirable external noise levels for occupants then access should be provided for those effected to a private amenity area (e.g. a quiet balcony or roof area for residents where there is an apartment block in an urban area) that has desirable external noise levels. Alternatively, there should be access nearby to a relatively quiet, protected, publically accessible external amenity area (e.g. public park or a designated Quiet Area). However, cognisance should be given to vulnerability of the occupants of the proposed development (e.g. residential care homes) giving cognisance that they may be restricted in their accessibility to external amenity areas away from the proposed residential development.
- 2.2.47 Kildare County Council follows the EPA-issued EPA Guidance Note for Noise Action Planning 2009 that **Local Authorities** consider the assessment of noise **mitigation** measures when levels reach 70 dB, L_{den} ; and 57 dB, L_{night} , a threshold for action for existing situations.
- 2.2.48 The above figures are considered by the authority as 'backstop' and not desirable limits for sustainability. **New sites should be designed to minimize noise and achieve the best possible figures using Good Acoustic Design.**

Stage 2: Element 4 – Assessment of Other Relevant Issues

- 2.2.49 ProPG outlines that the fourth element is a consideration other relevant issues such as national and local policies to aid the planning authority make a decision on the proposed residential development.

2.2.50 For example:

- Successful planning applications will need to demonstrate compliance with national and local policies.
- The likely occupants of buildings should be considered and their vulnerability. It may not be appropriate to require windows to be closed to achieve comfortable acoustic conditions for new residential developments designed for vulnerable groups of the community (e.g. the elderly).
- Consideration should be given to avoiding noise mitigation measures that have unintended adverse consequences e.g. the loss of connection between the inside and outside environment such as sealed balconies or winter gardens, roadside barriers that prevent road crossings or that remove views, blind façades that limit passive surveillance.
- Consideration should be given where there may be wider planning objectives that need to be achieved e.g. balconies opening onto public footpaths which might increase security.

2.2.51 ProPG also recommends that the magnitude and extent of compliance with the recommendations contained within the document should be assessed and that it recognises that it may not always be possible to achieve internal noise level guidelines in all noise sensitive rooms. This is an approach that may lead to noise complaints to the relevant planning authority by occupants and potentially result in significant adverse effects on health and quality of life, even if only for a small number of occupants. See also Para. 2.2.17.

Acoustic Design Statement

2.2.52 An **Acoustic Design Statement** (ADS) should be provided with the planning application for all proposed residential developments with greater than Negligible noise risk as determined under the *Stage 1: Initial Noise Risk Assessment*. The ADS is required to demonstrate that the elements of the *Stage 2: Full Assessment* have been appropriately followed.

2.2.53 ProPG indicates that the scale of the ADS should be proportionate to the scale of the development and the noise risk identified at the site. An increasing amount of detail should be included as the noise risk increases. Where there is Negligible noise risk an ADS should not normally be required (unless a major transport scheme has been granted approval in the area), which should allow the planning authority to expedite any planning application on noise grounds. A greater amount of detail will be required where the *Stage 1: Initial Noise Risk Assessment* indicates that there is Medium or High risk across the site compared to a Low risk.

2.2.54 The acoustic engineer should refer to ProPG to establish the issues that should generally be addressed in an ADS. A summary of the issues to be addressed is presented in Table 2 of Appendix 2.

2.2.55 The ADS should provide details of the *Stage 1: Initial Noise Risk Assessment* and demonstrate how good acoustic design has been incorporated into the design through the steps taken in the *Stage 2: Full Assessment*. Where information is not provided or incomplete, or difficult to determine from reasonable examination, clarification will be requested from the planning authority.

2.2.56 External noise levels should be described for the site for the *before* and *after* noise mitigation scenarios. It will be useful to predict external noise levels using proprietary noise calculation software for complex sites.

- 2.2.57 The ADS should identify all the relevant methods of noise control and mitigation proposed and provide particular attention to recommended specifications (e.g. sound reduction requirements for enhanced acoustic glazing).
- 2.2.58 Consideration should also be given to future proofing, taking account of any potential volume growth of the relevant transportation sources.

Ventilation and Overheating

- 2.3.1 The Building Regulations (Part F Amendment) Regulations 2019 (S.I. No. 263 of 2019) provide details on the ventilation requirements for new residential buildings in Ireland.
- 2.3.2 The purpose of ventilation is to provide an adequate and effective means to limit moisture and to limit harmful pollutants in the air within a building. The provision of adequate ventilation in new residential development buildings will not necessarily result in adequate thermal comfort for occupants and prevent overheating.
- 2.3.3 It is recommended to use a multi-faceted and integrated approach to the assessment of acoustics, ventilation and overheating strategy, such as that described in the *Acoustics, Ventilation and Overheating Guidelines Residential Design Guide (2020)*.
- 2.3.4 The majority of people value the ability of opening windows in their home and to be able to achieve optimal acoustic, ventilation and thermal conditions. The principle aspiration should be to apply good acoustic design that will provide acoustic, ventilation and thermal comfort to occupants with openable windows.
- 2.3.5 Where it is proposed that closed windows are required to achieve target internal noise levels then a ventilation and overheating strategy should be prepared that assesses impacts on internal noise levels by both external noise and any internal noise from any mechanical ventilation services.
- 2.3.6 In order to avoid overheating and excessive heat generation in new residential development then proposals should seek to reduce an over-reliance on mechanical ventilation services. Mechanical ventilation systems can be very resource intensive and increase energy use in buildings. A hierarchal approach should be taken for the selection of any thermal cooling strategy prioritising one that provides optimal cooling using the least amount of energy.

Additional Information

- 2.4.1 Where the applicant is not sure whether a *Stage 2: Full Assessment* is required for a proposed residential development following the *Stage 1: Initial Noise Risk Assessment* they should contact their relevant planning authority for clarification.
- 2.4.2. Tables 1 and 2 are provided in Appendix 2 to assist planning applicants, developers, their acoustic engineers in the noise risk assessment process and outline some common issues that should be considered for sites at greater than Negligible noise risk.
- 2.4.3 The steps outlined in ProPG, in the process of implementing good acoustic design, is encouraged regardless of the scale of the proposed development i.e. whether it is a large residential estate or a one-off house.
- 2.4.4 Planning applications for extensions to individual dwellings should be assessed in accordance with ProPG. Where an existing dwelling is exposed to excessively high noise levels from

transportation sources, it is a matter for the planning authority to decide on the appropriateness of a new extension that might significantly increase the design population equivalent of the property. Applicants are advised, for their own benefit, to address legacy noise issues on-site (e.g. inside the existing building) where there is a proposal for an extension.

- 2.4.5 Any ADS submitted as part of a planning application for Outline Permission should be prepared in as much detail as for a Full Permission, especially for Medium and High noise risk sites. This is because the planning authority needs to be satisfied that good acoustic design will be able to overcome any acoustic challenges encountered on the site.
- 2.4.6 Planning authorities may use *ISO 19488:2021 Acoustic classification of dwellings* to condition the sound insulation performance for the façades and rooves of new residential developments (classification A-F based on $D_{nT,A,tr}$ dB) to protect target internal noise levels in habitable rooms from external transportation noise where there is a justification for closed windows levels.
- 2.4.7 Where noise mitigation measures are proposed for a residential development it may be required to undertake **post-completion sound level monitoring of the development prior to occupation or of a completed phase (e.g. sample residential test units) in order to demonstrate the effectiveness and compliance with any guideline** internal and/or external noise levels (e.g. Table 1).
- 2.4.8 Planning applicants and developers seeking an acoustician to guide them in the consideration of acoustics and new residential development should ensure that they have specialist training, up to date knowledge, appropriate experience and access to survey equipment and calculation software (if necessary). Planning authorities may require evidence detailing the competence of the acousticians that assist in the preparation of planning applications for applicants and developers.
- 2.4.9 **Measurements need to be converted** using the CRTN conversion methods to the EU adopted L_{den} , L_{night} , L_{day} noise indices to allow comparison with EPA Noise contours where available and to allow assessment against the figures given in Kildare County Council Noise Action Plan.
- 2.5.1. For **multi-story apartments** or buildings predictions/calculations should also be carried out at 1st/2nd/3rd floor etc heights of apartments.

Glossary

A-weighting	The weighting applied to sound pressure level measurements to mimic perception by the human ear.
ADS	Acoustic Design Statement. An explanatory technical report detailing the approach to achieving optimal acoustic conditions for the proposed residential development
dB	Sound pressure levels are measured in decibels. The decibel is the logarithmic ratio of the sound pressure to a reference pressure (2×10^{-5} Pascals).
<i>DnT,A,tr</i>	<i>The weighted standardised level difference for a building envelope. It is the sum of the weighted standardised level difference between the sound pressure level outdoor at 2 metres in front of the building envelope and the sound pressure level in the receiving room, corresponding to a reference value of the reverberation time in accordance with ISO 16283-3 and weighted to a single number according to ISO 717-1, and the spectrum adaptation term, <i>Ctr</i>, according to ISO 717-1.</i>
Good Acoustic Design	A design that minimises noise impacts and avoids significant noise effects for the lifetime of the development or as long as practicable taking account of other economic, environmental and social impacts (<i>See ProPG Supplementary Document 2</i>).
<i>LAeq,T</i>	The A-weighted equivalent continuous sound pressure level, measured over a specific time period.
<i>LAmaz,F</i>	The maximum A-weighted sound pressure level reaches over the measurement period, using a fast time-weighting.
<i>Lden</i>	A descriptor of the long-term A-weighted sound pressure level based on the <i>Leq</i> over a twenty-four hours with a penalty of 10 dB applied for the night time noise, <i>Lnight</i> (23.00-7.00), and an additional penalty of 5 dB for the evening noise, <i>Levening</i> (i.e. 19.00-23.00), with no penalty applied for the day time noise, <i>Lday</i> (i.e. 07.00-19.00). $L_{den} = 10 \log \left(\frac{12 \cdot 10^{\frac{L_{day}}{10}} + 4 \cdot 10^{\frac{L_{evening} + 5}{10}} + 8 \cdot 10^{\frac{L_{night} + 10}{10}}}{24} \right)$
Noise	Generally considered as undesired sound by the recipient.
NPSE	<i>National Policy Statement for England</i> (NPSE) for the management of noise (England).
NPPF	<i>National Planning Policy Framework</i> (NPPF) for land-use planning (England).
ProPG	Professional Practice Guidance on Planning and Noise: New Residential Development.

Transportation noise Environmental noise associated with road, rail or aircraft.

WHO The World Health Organisation.

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Appendix 1. State of the Environment Report 2020 key messages

The State of the Environment Report (EPA) Environmental Noise chapter has identified **three key messages**.

1. **National noise planning guidance** for Local Authorities is needed to:
 - support and promote the proactive management of noise;
 - implement the noise objective in Project Ireland 2040 – **National Planning Framework 2040**;
 - consider the 2018 World Health Organization noise and health guidelines.

2. Noise pollution complaints from the public are increasing and current measures do not always allow for them to be adequately addressed. Local Authorities need to take a much stronger leadership role in dealing with noise issues.

3. Integrating air pollution and noise mitigation measures (and climate actions), can bring many benefits. Such integration options could be further explored under the plans for a clean air strategy for Ireland. Local Authorities should also promote the value of designating quiet areas in cities for health and wellbeing.

Appendix 2. Tables. (in the consideration of noise risk and issues to be addressed in an Acoustic Design Statement).

Table 1. The suitability for a new residential development based on the noise risk determined from the *Stage1: Initial Noise Risk Assessment* outlined in ProPG (amended in an Irish context using *Lden* and *Lnight* noise indicators).

Type of Development	Predicted Noise Level	Noise Risk
<ul style="list-style-type: none"> • New residential development • Extensions to existing residential estate including refurbishment and upgrade • New one-off dwellings (extensions significantly increasing the design population equivalent) • Any change of use to residential • Commercial development where transportation noise has the potential to disturb workers • Other potential noise sensitive buildings (e.g. schools, hospitals, care homes) 	<p>Generally ≥ 55 dB <i>Lden</i> / ≥ 45dB <i>Lnight</i> for road and railway noise based on strategic noise mapping, predictions and/or measurements.</p> <p>Generally ≥ 45 dB <i>Lden</i> / ≥ 40dB <i>Lnight</i> for noise from major airports based on predictions and/or measurements. Where noise based predictions or measurements are not available then at least Medium noise risk should be assumed where levels exceed ≥ 55 dB <i>Lden</i> / ≥ 50dB <i>Lnight</i> based on strategic noise mapping.</p>	<p><u>Low to High Noise Risk</u> (determined based on Figure 1 of this document)</p> <p>A Stage 2: Full Assessment necessary to be contained within an Acoustic Design Statement (ADS). The detail of the ADS will be greater with increased risk (see Table 2 for issues for consideration).</p> <p>Where the site is identified to be at a Low noise risk from the Stage 1 assessment then it is likely to be suitable from a noise perspective provided that the process of good acoustic design is followed and demonstrates how adverse effects will be mitigated and minimised.</p> <p>As the noise risk increases to Medium then the less likely the site will be suitable from a noise perspective and any application may be refused unless good acoustic design is followed and demonstrates how adverse effects will be mitigated and minimised and clearly demonstrates that significant adverse effects will be avoided.</p> <p>Where there is High risk identified at the site from the Stage 1 assessment then there is an increased risk that the proposed development may be refused on noise grounds. This risk may be reduced by following good acoustic design.</p>
<ul style="list-style-type: none"> • Same as above 	<p>Generally < 55 dB <i>Lden</i> / < 45dB <i>Lnight</i> for road and railway noise based on strategic noise mapping, predictions and/or measurements.</p> <p>Generally < 45 dB <i>Lden</i> / < 40dB <i>Lnight</i> for noise from major airports based on predictions and/or measurements.</p>	<p><u>Negligible Noise Risk</u></p> <p>There will unlikely be an objection to the proposed residential development by the planning authority.</p>

Table 2. Issues to be addressed in an Acoustic Design Statement (ADS) where the noise risk is determined from the *Stage 1: Initial Noise Risk Assessment* outlined in ProPG (amended from ProPG).

Typical issues for low noise risk sites	Additional issues for medium/high noise risk sites
Identify relevant noise sources	Identify and quantify multiple noise source contributions
Assess the extent of noise risk for the unmitigated site (current and foreseeable future, 15 years ahead)	Consider the effects of noise across the site (all buildings, all relevant heights)
	Alternative site layout considered
	Use adequate non-sensitive buildings for screening
Identify opportunities to mitigate the noise source within the site	Identify opportunities to mitigate the noise source outside owned land e.g. physical mitigation
Maximise separation distances	Consider existing topographical advantages e.g. change site level
Consider the necessity for noise barriers ⁸ and screening opportunities	Consider the need to provide barriers ⁸ inside the site
Consider the site layout and protecting residential units	Design the external amenity spaces (e.g. balconies) to reduce noise entering sensitive rooms
Consider the site layout and protecting external amenity space	Access to quiet open space on or off site
Use non-sensitive elements designed as screens	Use non-sensitive rooms to screen noise
Use building layout to self-screen sensitive rooms	Orientate noise sensitive rooms away from the source of the noise exposure i.e. quiet façades
Provide building treatment to screen openings	Consideration of alternative acoustic options
Consider window location and size on affected façades	Innovative façade and window designs e.g. use of acoustic fins to provide shelter
	Consider façade insulation design
Consider ventilation – natural, from quiet façade	Consider acoustic performance of ventilation, thermal comfort
	Complete the acoustic design process throughout

⁸ Acoustic barriers should have the appropriate CE marking (*EN 14388:2015 Road traffic noise reducing devices - Specifications*).