Comhairle Contae County Council

Good Practice Guide for Acoustic Planning of New Projects

August 2022

Introduction

The objective of this advice is to provide good practice guidance for environmental design and construction of new build high density developments to assist developers in demonstrating to local planning and waste management authorities that they have considered how the design, construction and operation of the proposed development complies with best environmental management practice.

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 supersede this document. This document will be updated as necessary to take account of any evolving standards/ information/policy. Please check the Dún Laoghaire-Rathdown County Council website (https://www.dlrcoco.ie) for the current version.

Noise can have a significant effect on the environment and on the health and quality of life of individuals and communities. Noise can interfere with residential and community amenity and the utility of noise-sensitive land uses.

Noise exposure can lead to a range of adverse effects including sleep disturbance and annoyance. For this reasons, noise is a material consideration in the planning process and a key aspect of sustainable development. Noise must therefore be given serious attention when new developments might create additional noise and when new developments would be sensitive to prevailing acoustic conditions.

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. For this reason, and as ambient air quality issues and traffic noise often coexist, it is important that acoustic design is considered in conjunction with the ventilation/heating strategy for the proposed development.

Good acoustic design can involve, for example, careful site layouts and better orientation of rooms within dwellings. This guidance seeks to encourage and promote design outcomes that are proportionate and reasonable in the particular circumstances of each development site.

This Guidance does not constitute an official legal code of practice and neither replaces nor provides an authoritative interpretation of the law or government or local authority policy on which users should take their own advice as appropriate.

DLRCC Noise Action Plan

The Dun Laoghaire Rathdown County Council Noise Action Plan 2018 – 2023 states:

"In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that Action Planning Authorities should examine the planning policy guidance notes issued in England titled, 'ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise'. This has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system…. "

An Acoustic Report should be prepared for all significant residential developments to comply with the requirements of this policy.

The Dun Laoghaire Rathdown County Council Noise Action Plan 2018-2023 has been published in order to address the requirements of the European Noise Directive 2002/49/EC. This NAP produced noise maps in order to determine the population exposure to undesirably high noise levels and also to identify areas with desirably low noise that should be preserved into the future. The NAP defines the following ranges for these descriptions:

- *Undesirably high external noise levels are defined as being above 55dB at night and/or above 70dB during the day, and;*
- *Desirably low external noise levels are defined as being below 50dB at night and/or below 55dB during the day.*

It is important to note that the NAP does not recommend that residential development be restricted within areas identified as having undesirably high noise levels. Rather it recommends a range of noise mitigation measures be required for new residential developments within these areas."

Initial Design

Noise Planning Overview

All relevant environmental issues should be considered at the initial project design stage and prior to commencing site works, following the methodology set out the ProPG: Planning & Noise; Professional Practice Guidance on Planning & Noise published by The Institute of Acoustics and other relevant guidance.

In Particular the following issues should be considered:

Implementation of good practice in relation to the layout and planning of new developments by;

- Demonstrating a Good Acoustic Design Process
- Observation of internal Noise Level Guidelines
- Undertaking an External Amenity Area Noise Assessment
- Consideration of other relevant local issues

Additional Notes

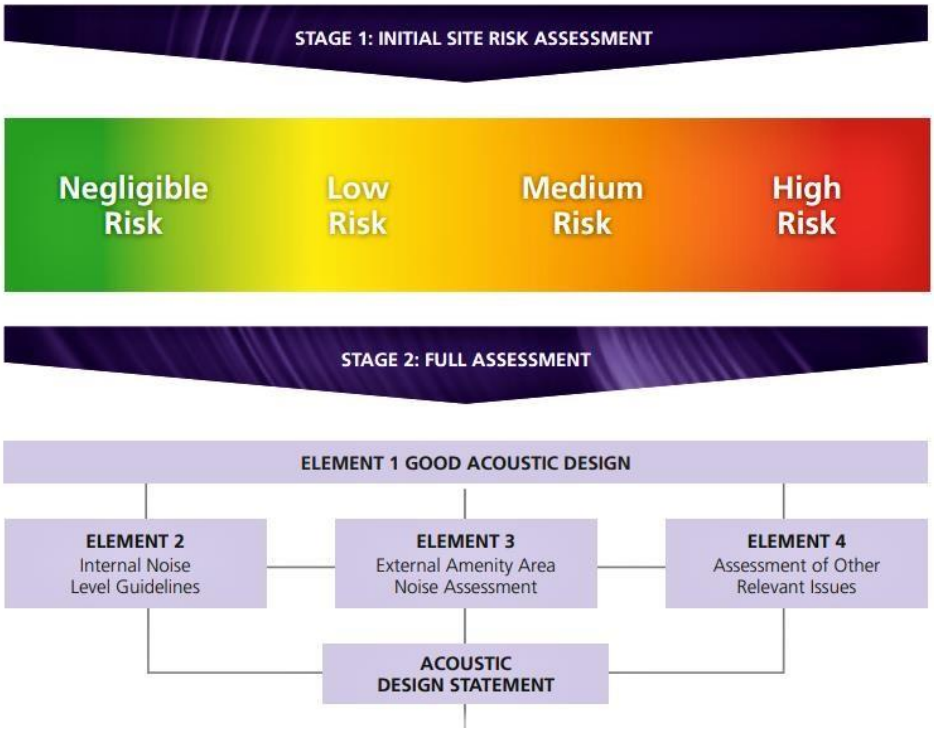
It is recommended that engagement with the local authority team responsible for environmental management is conducted at the earliest opportunity and ideally prior to submitting a pre-planning application.

All general queries should be sent to info@dlrcoco.ie or telephone 01 205 4700.

It is also recommended this guidance be read in conjunction with the following documents, or any revision thereof:

- Appendix 15.2: Noise & Vibration Guidance BS 8233: 2014: Guidance on Sound Insulation and Noise Reduction for Buildings (BS 8233:2014)
- Dún Laoghaire-Rathdown County Development Plan 2022-2028
- Project Ireland 2040 National Planning Framework
- DLR Guidance for Environmental Management of Construction Projects
- Directive 2002/49/EC relating to the assessment and management of environmental noise
- S.I. No. 549/2018 - European Communities (Environmental Noise) Regulations 2018
- Environmental Noise Guidelines for the European Region, published by the WHO Regional Office for Europe
- ProPG: Planning & Noise, Professional Practice Guidance on Planning & Noise for New Residential Developments, May 2017

Planning & Noise Process



This process outlines a systematic risk-based 2-stage approach for evaluating noise exposure on prospective sites for residential development.

Assessment Stages

The two sequential stages of the overall approach are:

- **Stage 1** – an initial noise risk assessment of the proposed development site considering either measured and or predicted noise levels
- **Stage 2** – a systematic consideration of four key elements;
  Element 1 – demonstrating a "Good Acoustic Design Process"
  Element 2 – observing internal"Noise Level Guidelines"
  Element 3 – undertaking an "External Amenity Area Noise Assessment
  Element 4 – consideration of "Other Relevant Issues".

A key component of the evaluation process is the preparation and delivery of an Acoustic Design Statement (ADS) which is intended for submission to the planning authority. This document is intended to clearly outline the methodology and findings of the Stage 1 and Stage 2 assessments, so as the planning authority can make an informed decision on the permission.

The transport noise sources that should be considered are should at least be those included in the latest strategic noise mapping, prepared in accordance with the Environmental Noise Regulations. Where the applicant is unsure of whether to consider the effects of a particular transport source on a proposed residential development then they should contact Dún Laoghaire-Rathdown County Council for clarification.

Stage 1 Initial Noise Risk Assessment

Stage 1 is an Initial Noise Risk Assessment for the site of the proposed residential development. It will provide an indication of the likely risk of adverse effects to occupants from transport noise (Negligible, Low, Medium or High noise risk, as set out in Appendix 1) without the consideration of any additional noise mitigation measurements than those already present. Noise levels for the determination of noise risk can be measured or predicted to estimate long-term day-time and night-time noise levels effecting the site.

As the noise risk increases the acoustic environment is likely to be more challenging and greater detail will be required to be submitted with the planning application to demonstrate how adverse impacts will be minimised and reduced and that significant adverse effects will be avoided across the completed development.

The planning application should as appropriate (may be an iterative process)

- 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.
- Check the feasibility of relocating, or reducing noise levels from relevant sources and 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.

Stage 2 Full Assessment

Where the Stage 1 assessment indicates that the noise risk is greater than Negligible at the site of the proposed development then a Stage 2 Full Assessment should be conducted by an acoustic engineer based on a combination of predicted and measured noise levels and an Acoustic Design Statement (ADS) prepared (see Appendix 1, Tables 1 and 2).

There are four key elements in the Stage 2 Full Assessment which should be carried out in tandem.

Element 1 is the over-arching element of good acoustic design, which should be used to achieve optimal noise conditions in both internal habitable rooms (e.g. living rooms, bedrooms) and in external amenity areas. 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. Any 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 discussed and agreed with the planning authority. It is recommended that planning applicants, developers and their acoustic engineers review any relevant local policies and engage with Dún Laoghaire-Rathdown County Council at an early stage to discuss any acoustic issues that are encountered.

Element 2 is an assessment of expected internal noise levels in the proposed buildings. Recommended guidance for target internal noise levels in noise sensitive rooms are set out in BS 8233:2014.

Table 1. Target internal noise levels for outlined in BS8233 and

Activity	**Location**	**07:00-23:00 hrs**	**23:00-07:00 hrs**
Resting	Living room	35dB $L_{Aeq16hr}$	
Dining	Dining area	40dB $L_{Aeq16hr}$	
Sleeping (daytime resting)		35dB $L_{Aeq16hr}$	35dB L_{Aeq8hr}

(additions in ProPG Fig.2 note 4 (night) 45 dB LAmax,F)

A series of notes accompany the tables in BS 8233:2014 and ProPG that should be given consideration. A detailed assessment should be carried out where this criteria may be exceeded. ProPG highlights that residents value the ability to “open windows at will” and so it is reiterated that it is recommended to investigate the feasibility of achieving optimal acoustic conditions with openable windows.

In difficult locations particular attention should be paid to the proposed location and orientation of structures combined with consideration of internal layout of buildings. Achieving internal noise levels by closing windows and having a suitably attenuated ventilation system can create possible design conflicts in achieving the required performance while also controlling overheating.

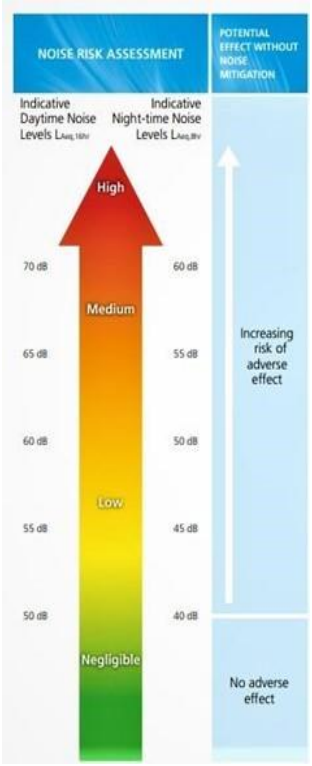
Element 3 is an assessment of noise levels in the external amenity areas of the proposed residential development. Cognisance should be given to recommended external amenity noise levels not to be exceeded in BS8233:2014 and the Guidelines for Community Noise (WHO).

Where it is agreed with the planning authority that desirable external noise levels cannot be achieved then evidence should be provided that all facets of good acoustic design have been applied and access is provided for those effected to a private amenity area with desirable amenity areas (e.g. a quiet balcony or roof area for residents where there is an apartment block in an urban area).

However, cognisance should be given to vulnerability of the proposed occupants of the development (e.g. residential care homes).

Element 4 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. The planning applicant and/or developer should contact the relevant planning authority to discuss any issues that arise.

Risk Levels



Acoustic Design Statement

An Acoustic Design Statement (ADS) should be provided with all planning applications for 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.

Typical issues that should be addressed in an ADS based on the noise risk identified from the Stage 1 assessment are highlighted in Appendix 1.

Applicants and developers seeking an acoustic engineer 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 relevant software.

Ventilation and Overheating

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. However, the provision of adequate ventilation will not necessarily provide thermal comfort for occupants and prevent overheating. Where it is agreed with the planning authority that closed windows are appropriate to achieve target internal noise levels then a ventilation and thermal cooling strategy should be prepared that assesses impacts on internal noise levels by both external transportation noise and any internal noise from any 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 energy.

The ventilation and thermal cooling strategies should be consistent with the strategy to achieve internal noise level guidelines to allow occupants to achieve optimal acoustic comfort, appropriate ventilation and thermal comfort simultaneously.

Appendix 1.

The suitability for a new residential development based on the noise risk determined from the Stage1:

Type of Development	Predicted Noise Leve	Noise Risk
• 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 developments • Commercial development where transportation noise has • the potential to disturb workers • Other potential noise sensitive buildings (e.g. schools, hospitals, care homes)	Generally >=55 dB Lden / >=45dB Lnight for road and railway noise based on strategic noise mapping, predictions and/or measurements. Generally >=45 dB Lden / >=40dB Lnight 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 Lden / >=50dB Lnight based on strategic noise mapping	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. As the noise risk increases to Medium then it is considered less likely the site will be suitable from a noise perspective. It is considered essential that good acoustic design demonstrates how adverse effects will be mitigated and minimised and also clearly demonstrates that significant adverse effects will be avoided. 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 require significant design consideration on noise grounds. This risk may be however reduced by following good acoustic design.
As above	Generally <55 dB Lden / <45dB Lnight for road and railway noise based on strategic noise mapping, predictions and/or measurements. Generally <45 dB Lden / <40dB L night for noise from major airports based on predictions and/or measurements.	Negligible Noise Risk

Appendix 2

Issues to be addressed in an Acoustic Design Statement (ADS) where noise risk is identified from the Stage 1: Initial Noise Risk Assessment.

TYPICAL ISSUES FOR LOW NOISE RISK SITES	ADDITIONAL ISSUES FOR MEDIUM/HIGH NOISE RISK SITES
Relevant noise sources identified	Multiple source contributions carefully quantified
Assess extent of noise risk for unmitigated site (current and foreseeable future, 15 years ahead)	Greater coverage across the site (all buildings, all relevant heights)
	Alternative site layouts considered
	Adequate non-sensitive use for screening
Opportunities to mitigate the noise source within the site	Opportunities to mitigate the noise source outside owned land Physical mitigation, operational management
Maximise separation	Existing topographical advantages Change site level
Noise barriers – screening opportunities	Barriers inside and outside the site
Site layout – protecting residential units	Design external amenity spaces (e.g. balconies) to reduce noise entering sensitive rooms
Site layout – protecting external amenity space	Access to quiet open space on or off-site
Non-sensitive elements as screens	Non-sensitive elements designed as screens
Building layout to self-screen sensitive rooms	Orientation of noise sensitive rooms away from the source of noise exposure i.e. quiet facades
Building treatment to screen openings	Consideration of alternative acoustic options
Window location & size on affected facades	Innovative facade and window designs e.g. plenum windows
	Façade insulation design
Ventilation – natural, from quiet facade	Acoustic performance of ventilation, thermal comfort
	Complete Acoustic Design Process throughout