Guidance Handbook for Local Authorities on the preparation of Noise Action Plans for Round 4

Developed to support implementation of the European Communities (Environmental Noise) Regulations 2018 (amended)

Final Working Draft April 2025

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Purpose and Scope of this Document

The objective of this guidance handbook is to provide practical information, advice and guidance to relevant Action Planning Authorities for the purpose of developing noise action plans for the noise sources required under the European Communities (Environmental Noise) Regulations 2018, S.I. No. 549 of 2018, (Regulations), as amended.

In the context of the Regulations, environmental noise is defined as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity[1]. Action plans are specific to the Regulations and mainly focus on transport noise, from roads, rail and airports, above specified thresholds, and to be designed for the purpose of managing noise issues and their effects, including noise reduction if necessary[2].

These designated Action Planning Authorities are the local authorities covering the agglomerations of Cork, Dublin and Limerick, and the local authorities outside these agglomerations where major roads, major railways and the one major airport are located.

This handbook updates, and replaces, the previous NAP guidance from 2009 and 2018. It has been developed in collaboration with the various stakeholders involved in the noise mapping and action planning process. This handbook is issued as applicable only to the development of noise action plans with reference to the Regulations.

Noise action plans are required for the functional areas of these local authorities and the main function of this handbook is to assist with this task, and to assist with achieving consistency of implementation of the regulations.

This handbook should not be considered as a legal document, nor does it purport to provide legal advice or guidance on all acoustical matters.

This handbook should not in any way be construed as national noise policy, which is within the remit of the Minister for Environment, Climate and Communications, or national planning guidance or policy, which is within the remit of Minister for Housing, Local Government and Heritage.

There are no statutory noise limits currently in place in Ireland and this guidance handbook document does not purport to establish such limits.

In line with the Regulations, the EPA recommend establishing “other relevant criteria” for Action Plan priorities for road traffic and rail traffic noise to be applied in the approach to identifying Important Areas, Most Important Areas and Priority Important Areas as a part of the evaluation and implementation of noise management and reduction actions within the area covered by the action plan as required, in the Regulations. These criteria should not be considered to indicate acceptable or unacceptable levels of noise exposure or be interpreted as indicating noise limit values.

A glossary of acoustic and technical terms used is set out in Appendix A.

[1] Regulation 2(1)
[2] Regulation 2(1)

Contents

1 Introduction

1.1 Background

The Environmental Noise Directive (END) is the main pan-European regulatory framework established to manage environmental noise, through harmonised procedures to assess levels of noise exposure, assess the impact on human health, and prepare noise action plans. The END is transposed into Irish law through the European Communities (Environmental Noise) Regulations 2018 (amended) (the Regulations).

This document should also be read in conjunction with the following:

- European Directives:
  - Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise, OJ L189/12-25, 18 July 2002[3];
  - Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC, OJ L168/1-823 of 1st July 2015;
  - Corrigendum to Commission Directive (EU) 2015/996, OJ L5/35-46 of 10th January 2018[4];
  - Directive (EU) 2020/367 of 4 March 2020 amending Annex III to Directive 2002/49/EC of the European Parliament and of the Council as regards the establishment of assessment methods for harmful effects of environmental noise, OJ L 67, 5 March 2020[5];Commission Delegated Directive (EU) 2021/1226 of 21.12.2020 amending, for the purpose of adapting to scientific and technical progress, Annex II of Directive 2002/49/EC of the European Parliament and the Council as regards common noise assessment methods, OJ L269/65-142 of 28th July 2021[6];
- And their transposition into Irish Regulations:
  - European Communities (Environmental Noise) Regulations 2018, S.I. No. 549 of 2018[7];
  - European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021[8].

The Regulations defines an "action plan" as a plan designed for the purpose of managing noise issues and their effects, including noise reduction if necessary[9]. Local Authorities are designated as Action Planning Authorities (APA) under the Regulations[10], and have a statutory responsibility to make noise action plans, consulting with the public[11], and report to the EPA

[3] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32002L0049 [Accessed December 2023]
[4] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L0996 [Accessed December 2023]
[5] Available at: https://eur-lex.europa.eu/eli/dir/2020/367/oj [Accessed December 2023]
[6] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021L1226 [Accessed December 2023]
[7] Available at: https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print [Accessed December 2023]
[8] Available at: https://www.irishstatutebook.ie/eli/2021/si/663/made/en/print [Accessed December 2023]
[9] Regulation 2(1)
[10] Regulation 7
[11] Regulation 12(5)

on all action taken under each action plan in the previous 12 months[12].

Within the framework of the Regulations, the END, and the context of sustainable development, the overall aim of managing environmental noise is to avoid, prevent and reduce the harmful effects due to long term exposure to environmental noise, which would in turn promote good health and a good quality of life.

Environmental noise is the second biggest environmental cause of health problems in the EU, after air pollution (the fine particulate matter in air), according to the World Health Organisation (WHO), and the European Environment Agency (EEA)[13]. Prolonged exposure to noise can lead to serious illnesses including: cardiovascular diseases; reduced cognitive performance in children; severe annoyance, which is a form of stress; and sleep disturbance.

The aims and objectives of the Directive state that the adoption of action plans, based upon noise-mapping results, should be concerned with:

> *"preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserving environmental noise quality where it is good."* [14]

This implies two scenarios which are to be addressed by the noise action plans (NAP):

- Reduction of existing environmental noise where necessary; and
- Protection of the future noise climate.

Under the Regulations, Action Planning Authorities (APA) are to determine the measures to be included within the noise action plans, and [15]:

> *"Each action plan or revision of an action plan shall address priorities which—*
>
> *(i) may be identified on the basis of exceedances of any relevant noise limit value or other relevant criteria established by the Agency in accordance with subparagraph (3), and*
>
> *(ii) shall, in the first instance, address the most important area or areas, as the case may be, established by strategic noise mapping."*

The noise actions plans are to be drawn up on the basis of the results of the strategic noise mapping of major roads, major railways, major airports and agglomerations as defined in the Regulations[16], which has previously been completed by the designated **Noise Mapping Bodies** (NMB)[17]. The strategic noise maps provide graphical and statistical data on the exposure of people, dwellings and areas to noise.

The Regulations require that "priorities"[18] and "the most important area or areas"[19] are to be addressed. Following consultation with the NMBs and APAs the EPA has developed relevant criteria for action plan priorities[20], recommended as a three-step approach to identify one or more of these priorities:

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[12] Regulation 12(10)
[13] European Environment Agency, Healthy environment, healthy lives: how the environment influences health and well-being in Europe, EEA Report No 21/2019, 2019. Available at: Healthy environment, healthy lives: how the environment influences health and well-being in Europe | European Environment Agency's home page]
[14] END Article 1
[15] Regulation 12(2)
[16] Regulation 11 and the Sixth Schedule
[17] Regulation 6
[18] Regulation 12(2)(b)
[19] Regulation 12(2)(b)(ii)
[20] Regulation 12(3)(a)

- **Step 1: Important Areas (IA)** – these are locations exposed to environmental noise which may be harmful to human health, such as high annoyance. For details on the methodology around how these are identified for use in developing the Noise Action Plan see Section 1.2 and Section 5 for details;
- **Step 2: Most Important Areas (MIA)** – these locations are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure levels and the number of people exposed to noise (see Section 5.2 for details);
- **Step 3: Priority Important Areas (PIA)** – where appropriate and relevant to the individual local authority between 5 and 10 MIAs, or groups of similarly affected MIAs, which are identified by the APAs as those which will be addressed during the implementation of the Noise Action Plan (NAP) (see Section 5.3 for details).

Additionally, it is recommended that noise action plans have regard to Policy Objective 65 from the National Planning Framework 2040[21], which 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."*

In May 2021 the EU launched the Zero Pollution Action Plan (ZPAP)[22] with a vision for 2050 that air, water and soil pollution is reduced to levels no longer harmful to health and natural ecosystems. The targets set to be achieved by 2030 include *"reducing the share of people chronically disturbed by transport noise by 30%"*, compared to 2017.

In support of ZPAP, the EU PHENOMENA[23] project was undertaken to identify cost-effective noise mitigation measures which may help competent authorities to achieve noise reductions across large parts of the exposed population. The aim of the revised approach recommends the identification of Priority Important Areas (PIAs), see Section 5. This approach is to support the aspirations of the ZPAP by providing noise reductions to larger numbers of exposed residents.

1.2 Overview of Noise Action Plans

To provide guidance on implementation of the Regulations, a recommended approach is set out below which is implemented in two stages.

1. The **first stage** is undertaken **during the development of the noise action plan**, where Important Areas (IA), Most Important Areas (MIA), and Priority Important Areas (PIA) (priorities) are identified based on recommended criteria and local factors. Priority Important Areas (PIA) are those which the APAs identify within their functional area as locations which they plan to assess during the implementation of the noise action plan. These PIAs are to be selected from the MIAs which have been identified using the criteria set out in Section 5.3 below. Candidate quiet areas (CQA) inside agglomerations may also be identified using the criteria set out in section 7 below.
2. The **second stage** is undertaken **during implementation of the NAP** (e.g.: Round 4 NAP: 2024 – 2028, Round 5 NAP: 2028 – 2033). For each of the Priority Important

[21] National Planning Framework 2040: http://www.gov.ie/en/project-ireland-2040/ [Accessed December 2023]
[22] Available at: https://environment.ec.europa.eu/strategy/zero-pollution-action-plan_en [Accessed December 2023]
[23] European Commission, Directorate-General for Environment, Kantor, E., Klebba, M., Richer, C. et al., Assessment of potential health benefits of noise abatement measures in the EU: Phenomena project, Publications Office, 2021. Available at: https://data.europa.eu/doi/10.2779/24566 [Accessed December 2023]

Areas, it is recommended that an assessment of cost-effective noise mitigation measures is undertaken during implementation of the NAP. It is recommended that these assessments include noise monitoring, noise modelling calculations, and cost-benefit analysis in line with the recommended approach set out below.

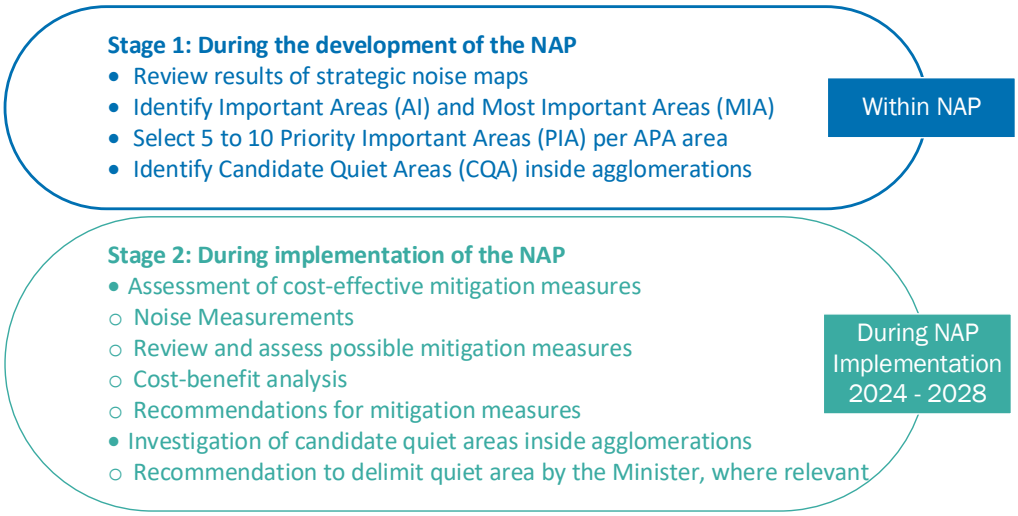


Figure 1.1: Overview of recommended approach to actions to be undertaken during development and implementation of the NAPs

The recommended approach for APAs to follow when determining actions to be undertaken at noise sensitive locations is outlined in Figure 1.1.

Further details of the recommended approach to noise action planning are set out in Section 2 below.

1.2.1 Identifying important areas, most important areas and priorities

Important Areas (IA), and Most Important Areas (MIA), may be identified using a process implemented in GIS, based on the results of the strategic noise mapping, which are the result of computer-based modelling and calculation. The recommended approach is set out in Sections 5 and 5.2 below.

Based upon the information available about each MIA, the APAs may then select the Priority Important Areas (PIA), and include them within the noise action plans. This process is explained in more detail in Section 5.3 of this guidance note.

1.2.2 Assessment of cost-effective noise mitigation measures

During the implementation of the noise action plans (e.g.: Round 4 NAP: 2024 – 2028, Round 5 NAP: 2028 – 2033), the first recommended step for each Priority Important Area (PIA) is to undertake on-site noise measurements around the PIA to confirm the extent of the noise exposure. During the measurement survey, the data within the strategic noise models may be compared with the real-world situation around the PIAs, for example road surface, traffic speeds, presence of barriers etc, and where relevant the noise calculation models may be refined to more closely reflect the on-site situation. The on-site measurements may then be used to validate the strategic noise models as a baseline for the assessment of noise mitigation measures. Further details are provided in section 6.1 below.

The next stage is to undertake a review of all feasible noise mitigation measures for the PIA.

From this review, a shortlist of practical measures is drawn up for inclusion within the assessment. All practical noise mitigation measures can be included within noise calculations to assess the potential noise reductions which could be attained, both individually and in combination, including the assessment of the estimated numbers of people benefitting from those measures, and the subsequent expected decrease in health effects. The calculations and assessments should follow Annex II and Annex III of EC Directive 2002/49/EC, as amended. Further details are set out in Sections 6.2 and 6.3 of this guidance.

For the cost benefit analysis of possible noise mitigation measures for each PIA, it is recommended that the calculated noise levels are used within available national or comparable international published guidance for determining monetary value of change in noise situation and the subsequent change in health effects. In this case it is recommended that the published UK Department of Transport's TAG workbooks[24] could be used to carry out this assessment, until such time as a suitable Irish methodology is available. Further details are provided in Section 6.4 below.

The most cost-effective noise mitigation measures, or combination of measures, which support the EU ZPAP target of reducing chronic noise disturbance, would then be recommended for implementation. Where funding is available and approved the recommended noise mitigation measures may be implemented, subject to any local authority, regulatory or statutory approval processes. See also Section 6.5 below.

Ideally, once the mitigation measures have been implemented, noise measurement surveys are conducted to confirm the predicted noise reduction.

Further guidance on the steps involved during the development of noise action plans are set out in Sections 4 and 5 below.

1.3 Noise and Effects on Health and Quality of Life

Noise can be characterised as "unwanted sound" or "sound that is loud, unpleasant or unexpected"[25] and that can eventually cause disturbance, impairment or damage to health.

In this Noise Action Plan guidance note, the term 'noise' will generally be used when describing the quantification, control or prediction of emissions from environmental pollution sources, such as transport and industry. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0 dB is nominally the "threshold of hearing" and 120 dB is nominally the "threshold of pain". One effect of using the decibel scale is that a doubling of the sound energy results in a 3 dB increase in the sound level, whilst a 10 dB increase is often described as a doubling in the perceived loudness of the sound level.

[24] Available at: https://www.gov.uk/government/publications/tag-environmental-impacts-worksheets [Accessed February 2024]

[25] 'Future Noise Policy - European Commission Green Paper', 1996. Available at: https://op.europa.eu/en/publication-detail/-/publication/8d243fb5-ec92-4eee-aac0-0ab194b9d4f3/language-en [Accessed December 2023]

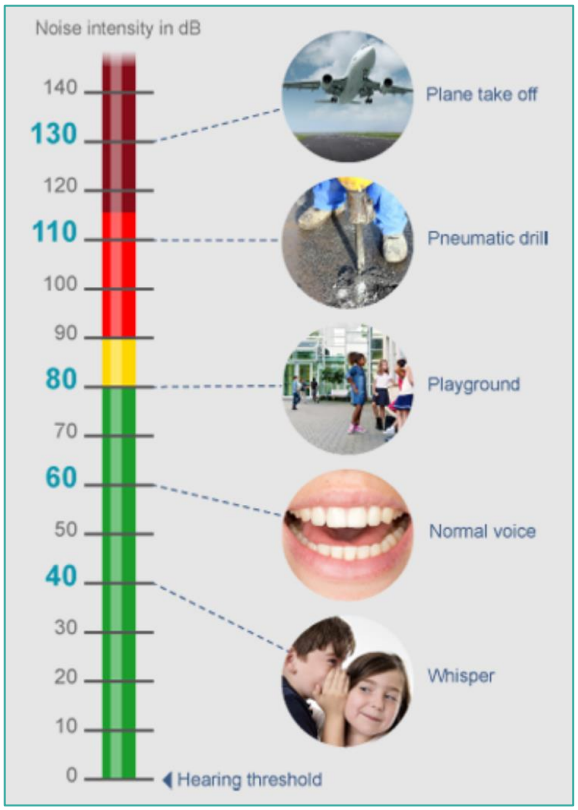


Figure 1.2: Levels of typical common sounds on the dB(A) Scale (cochlea.org)

1.4 Noise Limits

In general, **there are no national mandatory noise limits in force in Ireland**, and no obligatory sector-specific limits.

Other than IED/IPC and waste facilities regulated by the EPA, most facilities are controlled by Local Authorities, through planning permission and permits.

1.5 Noise Metrics and Indicators

There are a range of noise metrics that can be used to describe and manage environmental noise. It is universally recognised that there is not one single noise metric that can be used for assessing, describing and communicating noise effects completely.

Some of these noise metrics are used to help develop policies and describe overall exposure to noise, namely L_{eq} noise metrics. These noise metrics describe the 'equivalent continuous sound level' and are a measure of the average sound energy over time. Whilst these are often described as 'an average' it is important to note that these allow a comparison of the total amount of noise exposure in one location with that of another.

To provide a standardised approach to the description of long-term environmental noise, Article 6.2 of the END specifies the use of two noise level indicators when preparing environmental noise maps and action plans, the L_{den} and L_{night}.

- The L_{den} is a noise rating indicator, rather than a noise level, based upon the day, evening and night time noise levels, with weightings applied for the different periods.
- L_{night} is typically used to assess sleep disturbance.

Table 1.1: Noise level indicators used for Noise Maps

L_{den}	• Day-evening-night noise indicator • Representative of 24hr period • 5 dB penalty applied to evening levels and 10 dB penalty to night levels to reflect people's extra sensitivity to noise during these periods • Noise indicator for overall annoyance
L_{night}	• Night-time equivalent sound level • Representative of night period (2300 - 0700 hr) • Noise indicator for sleep disturbance

The long-term, annual average, day, evening and night values are determined and then combined to provide the indicated L_{den} yearly average. Penalties are applied to evening and night time periods during the assessment of L_{den} to take into account evidence showing that response to noise levels is not uniform throughout the 24-hour period. For example, a given indicated level of noise during the day may be deemed acceptable by the majority of people. However, that same level of noise at night may be deemed less acceptable. Other metrics relevant to environmental noise, all expressed in terms of dB, are listed in Table 2.1 below.

1.6 Research on Health Effects of Environmental Noise Exposure

Noise can have a significant and disruptive effect on everyday life. Since the implementation of the Environmental Noise Regulations, there have been extensive studies conducted on the links between environmental noise exposure and health. These studies have taken transportation noise sources including road, rail and aircraft into consideration, with responses differing depending on the source. This research has resulted in organisations such as the European Environment Agency (EEA) and the World Health Organisation (WHO) developing guidelines and advice based on reviews and meta-analysis. This research has shown evidence supporting the association of environmental noise with some or all of the following health conditions:

- Cardiovascular disease - including hypertension, coronary heart disease (CHD), acute myocardial infraction (AMI) and stroke;
- Cognitive impairment – including the impact on children's reading and education;
- Sleep disturbance – i.e., interference with sleep and awakenings;
- Annoyance – i.e., becoming or increasingly disturbed or bothered by noise; and
- Wellbeing – i.e., impacts on quality of life and mental health.

Research indicates that long-term exposure of people to daytime noise levels above 65 dB(A) can cause severe health problems[26]. In general, noise levels in cities can range between 60-70 dB(A), with suburban levels between 50-60 dB(A). The World Health Organisation (WHO) recommends guideline levels for annoyance due to road traffic noise below 53 dB(A), representing daytime levels below which a majority of the adult population will be protected from noise becoming a moderate or serious annoyance.

In 2009 the WHO European Regional Office published the *'Night Noise Guidelines for Europe'*

[26] OECD Fighting noise: strengthening noise abatement policies, 1986.

(2009)[27]. It presented evidence proving the damage to human health due to long-term night-time noise exposure and recommended threshold values that, if breached at night, would threaten health.

In 2011, the WHO European Regional Office published *'Burden of Disease from Environmental Noise'* (2011)[28] which suggests that there is overwhelming evidence that exposure to environmental noise has adverse effects on the health of the population.

In October 2018, the World Health Organisation published *'Environmental Noise Guidelines for the European Region'*[29]. The main purpose of the guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from various sources. They provide public health advice underpinned by evidence, which is essential to drive policy action that will help to protect communities from the adverse effects of noise.

The recommendations within the WHO 2018 guidelines indicate levels from different sources above which long term exposure to environmental noise is associated with adverse health effects and adverse effects on sleep, covering sources for Aircraft [45 dB L_{den}, 40 dB L_{night}), Railways (54 dB L_{den}, 44 dB L_{night}) and Roads (53 dB L_{den}, 45 dB Ln_{ight}), measured outside the dwellings at locations representative of the façade.

The WHO intend that their guidelines can provide policy makers with robust evidence on the long-term health effects of exposure to environmental noise in order for it to serve as the basis for a policy making process in which policy options, including the harmful effects, can be considered. The Implementation section of the 2018 WHO Guidelines recognises that its recommended values are <u>not limits</u> and that additional considerations and policy decisions are necessary:

> *"**In the policy decisions on reference values, such as noise limits for a possible standard or legislation, additional considerations – such as feasibility, costs, preferences and so on – feature in and can influence the ultimate value chosen as a noise limit**."*

There are no statutory noise limits currently in place in Ireland and this guidance handbook document does not purport to establish such limits.

The WHO guidelines 2018 were developed following an extensive review of scientific research on the effects of noise exposure on health, and they show that the onset of health effects can occur at 40 to 45 dB L_{night}, and that there is strong evidence that health effects occur above a range of 45 to 53 dB L_{den}, depending upon the noise source. The research underpinning the WHO guidelines also shows that the impact on health increases as long-term exposure to environmental noise increases, and that adverse health effects are likely to occur above approximately 53 dB L_{den} and 45 dB L_{night} for road traffic noise, and from aircraft noise exceeding 45 dB L_{den} and 40 dB L_{night}.

Noise caused by transport is considered to be the second most significant environmental cause of ill health in western Europe, after fine particulate matter pollution[30,31]. Transport-related

[27] WHO, Night noise guidelines for Europe. Available at: https://iris.who.int/handle/10665/326486 [Accessed June 2024]
[28] WHO, Burden of disease from environmental noise – Quantification of healthy life years lost in Europe. Available at: https://www.who.int/publications/i/item/9789289002295 [Accessed June 2024]
[29] WHO, Environmental Noise Guidelines for the European Region. Available at: https://www.who.int/europe/publications/i/item/9789289053563 [Accessed December 2023]
[30] Hänninen, O., et al., 2014, 'Environmental burden of disease in Europe: assessing nine risk factors in six countries', Environmental Health Perspectives 122(5), pp. 439-446
[31] WHO and JRC, 2011, Burden of disease from environmental noise — quantification of healthy life years lost in Europe, World Health Organization. Available at: https://www.who.int/publications/i/item/9789289002295 [Accessed June 2024]

environmental noise is the most widespread source of environmental noise exposure in Europe[32], causing most annoyance, sleep disturbance and public health concerns. Road traffic noise is the dominant source of environmental noise, with the EEA estimating that approximately 113 million European Union (EU) citizens are affected by long-term daily average noise levels of at least 55 dB L_{den} and 79 million people affected by night-time noise levels of at least 50 dB L_{night}. The major contributors to road traffic noise are passenger cars and lorries, with minor contributions from buses and motorcycles.

EEA report that railway noise is the second most significant source of transport related environmental noise in Europe, with approximately 22 million people exposed to levels above 55 dB L_{den}, and over 17 million people affected by night-time noise levels of at least 50 dB L_{night}. Railway noise arises from engine noise, rolling noise and aerodynamic noise.

In Europe, aircraft noise affects a much smaller portion of the population compared to rail and road traffic noise, with the EEA estimating that 4 million people are exposed above 55 dB L_{den} and approximately 1.3 million people affected by night-time noise levels of at least 50 dB L_{night}. However, aircraft noise is regarded as being more annoying than both rail and road traffic noise at the same exposure level, as illustrated by the dose response relationships presented in WHO 2018.

1.7 Wider Considerations

Any noise management measure in the Noise Action Plan should reflect the wider policy context and complement the objectives of other national and local plans, policies and strategies, including but not necessarily limited to, the following:

- Climate Action Plan;
- Project Ireland 2040 National Planning Framework;
- National Development Plan 2021-2030;
- Regional Spatial and Economic Strategies;
- EU Zero Pollution Action Plan;
- TII National Roads 2040 Strategy;
- Transport strategy for the greater Dublin area, 2022-2042;
- Noise abatement objective for Dublin airport;
- City and County Development Plans, including any noise, planning, infrastructure and public open space policy or objectives;
- Sustainable transport and sustainable urban mobility strategies;
- Local authority climate action plans;
- National Energy Security Framework;
- National Energy and Climate Plan 2021-2030; and
- Energy Security in Ireland to 2030.

Where possible, the synergies and conflicts presented are reviewed and discussed within the NAP.

[32] The European environment – state and outlook 2020, Chapter 11: Environmental noise, European Environment Agency, 2019. Available at: https://www.eea.europa.eu/publications/soer-2020 [Accessed February 2024

2 Process for Developing a Noise Action Plan

The aim of this section of the guidance is provide a route map through the process of developing a noise action plan. Table 2.1 provides an overview of the steps required to make, publish and report a noise action plan in line with the requirements of the Regulations. Links to other sections of this document are provided to where specific guidance can be found relating to that step in the process.

2.1 Round 4 Action Plan Timelines

Under the Regulations, the action planning authorities are to make fourth round noise action plans by 18th July 2024. Furthermore, within one month of the noise action plan being made, the action planning authority shall:

- Make the noise action plan available to the public; and
- Submit a summary of the NAP to the EPA

Once the Draft Noise Action Plan has been prepared by the APA, a formal public consultation exercise should be undertaken. Action Planning Authorities should allow a minimum of 6 weeks for online consultation, and a further 2 weeks for receipt of written submissions, for the general public to have adequate time to participate in this process.

Guidance Note 1:

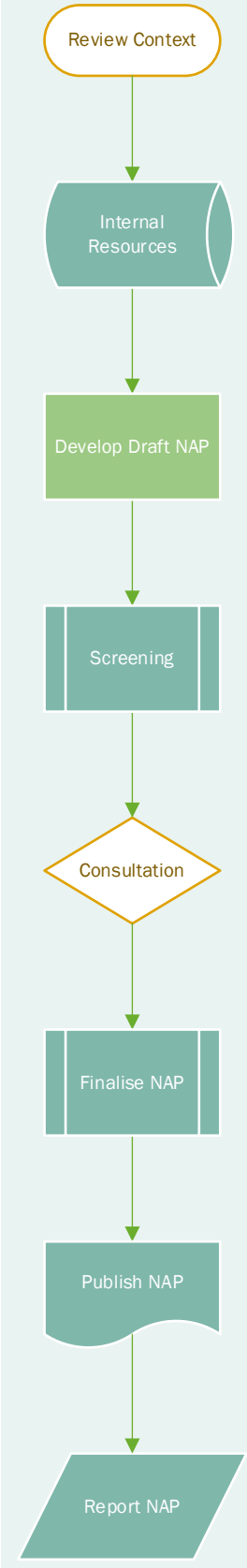
In view of these requirements, an indicative timeline for Round 4 noise actions plans could be:

- Q1 2024: APAs should Develop Draft Noise Action Plan;
- Q2 2024: APAs undertake a Public Consultation (6 – 8 weeks) on Draft Noise Action Plan;
- 18 July 2024: Latest date at which Noise Action Plans are to be made by APAs;
- 18 August 2024: Latest date for which Noise Action Plans are to be published by APAs;
- 18 August 2024: Latest date for which summaries of Noise Action Plans are to be submitted to the EPA by APAs; and
- 18 January 2025: Summary Noise Action Plans to be reported by EPA to EEA using Reportnet 3 – ENDRM DF7_10.

2.2 Internal Resources

As noise action plans are integrated and cross-departmental documents, their development typically requires a range of knowledge and responsibilities across several sections of the local authority.

Table 2.1: Overview of steps to make, publish and report noise action plans

	**Review Context:** • EPA Guidance, Regulations, Directive • Existing NAP, and annual NAP reports • LA Development Plan, Local Area Plans, Transport Strategies, Climate Action Plans, Air Quality Action Plans etc	
	Internal Resources: • Environment Directorate – re noise & complaints • GIS – mapping results and analysis • Transport & Traffic Sections • Road Maintenance • Planning Directorate • Public Health • Climate units	
	Develop Draft NAP: • Long-term strategy, noise abatement objective, or policy objective • Review existing NAP, including progress against action • Assess requirement to revise NAP • Review results of strategic noise mapping • Review analysis on Important Areas and Most Important Areas • Identify Priority Important Areas • Identify Candidate Quiet Areas • Propose actions to be undertaken during the implementation of the NAP • Review Draft NAP against action plan checklist	
	Screening: • Appropriate Assessment screening • Strategic Environmental Assessment screening	
	Consultation: • Internal – other directorates • External – TII, Irish Rail, daa, DECC, DoT, DHLGH, ANCA, An Taisce, EPA etc • Public – 6 to 8 weeks, including publicity, Elected Representatives and SPC	
	Finalise NAP: • Review submissions from public consultation • Revise draft NAP as necessary • Include results of consultation, and resultant changes to NAP	
	Publish NAP: • Publish and disseminate by any appropriate means	
	Report NAP: • NAP summary sent to EPA using reporting templates • Annual progress report on all actions taken under NAP sent to EPA each February	

Guidance Note 2:

It is recommended that the development of the noise action plans is undertaken through a collaborative working group including team members from across various departments, such as: Environment Directorate with knowledge of noise & complaints; GIS team for working with mapping results and analysis; Transport & Traffic Sections and Road Maintenance for input on existing, proposed and feasible noise mitigation measures; Public Health; and the Planning Directorate , particularly with regard to designation of Quiet Areas, and Climate Action units.

2.3 External Resources

In addition to the APAs internal resources, the public consultation process should include a range of external resources, including:

Statutory Consultees:

- Noise mapping bodies
    - Dublin Airport Authority
    - Irish Rail
    - Transport Infrastructure Ireland
    - National Transport Authority
    - Other Local Authorities
- Environmental Protection Agency

Other relevant consultees include:

- Department of the Environment, Climate and Communications
- Department of Transport
- Department of Housing, Local Government and Heritage
- Aircraft Noise Competent Authority
- Climate Change Advisory Council
- APAs for adjacent areas, and neighbouring Member States;
- Regional Assemblies;
- relevant Strategic Policy Committees (SPCs);
- NGOs and professional bodies; and
- Local and national citizens groups.

3 Regulatory Context

3.1 Environmental Noise Regulations

Directive 2002/49/EC of the European Parliament and of the Council relates to the assessment and management of environmental noise, and is commonly referred to as the Environmental Noise Directive or END[33] .

The END is transposed into law separately in each Member state of the EU. In Ireland, this Directive is transposed by the *European Communities (Environmental Noise) Regulations* 2018, S.I. No. 549 of 2018 (Regulations)[34], and this guidance makes specific reference to articles in these Regulations.

The regulations both revise and revoke the Environmental Noise Regulations 2006, S.I. 140/2006, & transpose Directive 2015/996. The 2018 Noise Regulations include the main explanatory text as well as:

- 1st Schedule - Noise Indicators;
- 2nd Schedule - Assessment Methods for Harmful Effects;
- 3rd Schedule - Min. Requirements for Strategic Noise Mapping;
- 4th Schedule - Min. Requirements for Action Plans;
- 5th Schedule - Data to Be Sent to The Commission; &
- 6th Schedule - Agglomerations.

This guidance is issued by the Environmental Protection Agency, pursuant to the Regulations[35].

The Regulations were amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021[36]. The amendment to the Regulations:

- Transposes Directive 2020/367 to the Second Schedule *"Assessment Methods for Harmful Effects"*;
- Transposes Commission Delegated Directive (EU) 2021/1226, amending Annex II of the END;
- Transposes EU Regulation 2019/1010 and the associated Commission Implementing Decision (EU) 2021/1967 relating to mandatory reporting under the END to the EEA Reportnet platform;
- The Sixth Schedule sets out revised definitions for the agglomerations of Cork, Dublin and Limerick, in light of urban developments over the last 15 years.

3.2 Designated Action Planning Authorities

The Regulations designated action planning authorities for the purpose of making and approving noise action plans.

- For the agglomeration of Cork:
  - Cork City Council; and
  - Cork County Council. [37]

[33] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32002L0049 [Accessed December 2023]
[34] Available at: https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print [Accessed December 2023]
[35] Regulation 5
[36] Available at: https://www.irishstatutebook.ie/eli/2021/si/663/made/en/print [Accessed December 2023]
[37] Regulation 7(a)

- For the agglomeration of Dublin:
  - Dublin City Council;
  - Dun Laoghaire / Rathdown County Council;
  - Fingal County Council;
  - South Dublin County Council;
  - Kildare County Council;
  - Wicklow County Council.[38]
- For the agglomeration of Limerick:
  - Limerick City and County Council; and
  - Clare County Council. [39]
- For major railways:
  - the local authority, or local authorities, within whose functional area or areas the railway is located. [40]
- For major roads:
  - the relevant local authority or local authorities within whose functional area or areas the road is located.[41]
- For major airports:
  - the local authority or local authorities within whose functional area the airport is located.[42]

An overview of the key designations is set out in Table 3.1.

The Regulations also assign the requirement to provide action plans on specified dates as a statutory function of an action planning authority in relation to environmental protection for the purposes of section 63 of the Environmental Protection Agency Act 1992[43].

The 31 Local Authorities are all designated as Action Planning Authorities under the Regulations. The Noise Action Plans (NAP) are to be made in consultation with the Agency, and the noise-mapping bodies.

Inside the three agglomerations, the Regulations require that several Local Authorities combine activities[44], covering the geographical area within their administrative boundaries, in order to make and approve the NAP for each agglomeration. The NAPs are to cover the whole of each agglomeration, and shall have regard of the results of the strategic noise mapping for aircraft, major aircraft, major industrial facilities, railways, major railways, roads and major roads, as appropriate.

Dublin airport is a major airport located within Fingal County, inside the Dublin agglomeration, where the noise exposure extends outside the agglomeration; for this reason, it is recommended that Fingal County Council as the designated APA prepares a separate noise action plan for Dublin airport.

Outside the agglomerations, the NAPs are to cover all the major railways and major roads (above the thresholds for vehicle and train passages set out in the regulations) within their functional area which were included within the noise maps. This was confirmed by a

[38] Regulation 7(b)
Note: Kildare County Council, and Wicklow County Council are omitted stated in Regulation 7 (b) of the 2018 Regulations, S.I. No. 549 of 2018, however they are included in the amended Sixth Schedule of the European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021.
[39] Regulation 7(c)
[40] Regulation 7(d)
[41] Regulation 7(e)
[42] Regulation 7(f)
[43] Regulation 5(4)
[44] Regulation 7

judgement of the European Court of Justice[45], which stated that action plans must be drawn up for all sources and regions covered within the strategic noise mapping, regardless of the level of population within that area, and also that the quality of the acoustic environment must be preserved, when it is good.

Table 3.1: Action Planning Authorities[46]

Organisation	Responsibility
All 31 Local Authorities	• Making and approving action plans for: ○ major railways; ○ major roads; or ○ major airports; located within their functional area.
Dublin City Council, Dun Laoghaire/Rathdown CC, Fingal CC, South Dublin CC, Kildare CC, and Wicklow CC.	• Making and approving action plans for the agglomeration of Dublin.
Cork City Council, and Cork County Council	• Making and approving action plans for the agglomeration of Cork.
Limerick City & County Council, and Clare CC	• Making and approving action plans for the agglomeration of Limerick.

Note: Action plans are to be made in consultation with the Agency and the noise-mapping body for the noise-map involved[47].

Appendix C of this guidance note sets out general guidelines on the possible contents of a noise action plan. Appendix D of this guidance note sets out a review checklist on the contents of a noise action plan.

3.3 Role of the EPA

The EPA is the designated national authority for the purposes of the Regulations and is to exercise general supervision over the functions and actions of noise mapping bodies and action planning authorities, and to provide guidance or advice, where necessary[48]. The Regulations confirm that the powers conferred on the EPA by section 63 of the EPA Act shall be exercised in relation to local authorities assigned as noise mapping bodies or action planning authorities[49].

The EPA has developed guidance for strategic noise mapping for Round 4 using the CNOSSOS-EU assessment methods, and has also published this revised guidance on noise action planning[50].

[45] Judgement of the Court (Eight Chamber) of 31 March 2022. European Commission v Portuguese Republic. Case C-687/20. Available at: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:62020CJ0687 [Accessed December 2023]
[46] Regulation 7
[47] Regulation 7
[48] Regulations 5(1) and 5(2)
[49] Regulations 5(3) and 5(4)
[50] Available at: https://www.epa.ie/our-services/monitoring--assessment/noise/noise-mapping-and-action-plans/ [Accessed December 2023]

The EPA supervision of Round 4 strategic noise mapping has been carried out through collaboration, including regular bi-lateral meetings with the different stakeholders involved in the noise mapping including; the Noise Mapping Bodies (NMB) (which are the Local Authorities, Transport Infrastructure Ireland, Irish Rail, Dublin Airport Authority), Road Management Office (RMO), National Transport Agency (NTA), County and City Management Association (CCMA), Aircraft Noise Competent Authority (ANCA) and Department of the Environment, Climate and Communications (DECC). These bilateral meetings with the stakeholders allow EPA to gauge progress and provide advice around the noise modelling and mapping work. The EPA also hosts quarterly meetings of a 'Noise Technical Working Group' that comprises the noise mapping bodies and the agglomeration local authorities.

An 'Agglomeration Project Steering Board' at director level was established by the local authorities for mapping and noise action planning work in Dublin, Cork and Limerick. The Board, through the 'Technical Support Division' of Dublin City Council, had overseen the noise mapping of the three cities and noise action planning.

Noise indicators, such as L_{den} and L_{night}, any supplementary noise indicators, and related data used by the noise mapping bodies shall be approved by the EPA[51]. Any data to be approved by the EPA will need to be less than three years old[52]. The EPA may decide to shorten the evening period by one or two hours, and may decide to change the start of the day, evening and night periods from their respective default values[53].

The EPA may establish particular requirements on exposure to environmental noise which apply to quiet areas in agglomerations[54], and may establish relevant criteria for the identification of priorities to be addressed by a noise action plan[55]. The EPA may lay down rules on the types and format of noise maps used to inform the general public[56], further details of the recommended colour scheme may be found in Appendix E of this guidance note. The EPA shall notify the Commission of any additions or changes to such criteria[57], where they would constitute a noise limit value under the mandatory EEA reporting mechanism.

The EPA is also required to submit national reporting data within six months of the data set out in Regulations 11 and 12 to the EEA using the mandatory reporting mechanism, Reportnet 3[58]. The EPA, following consultation with noise-mapping bodies, action planning authorities and the Minister, shall, no later than 30 June 2020, and not later than every five years thereafter, notify the Commission of all agglomerations, all major roads, all major railways and airports within the territory of the State.

Each year the EPA is to review reports from action planning authorities which include all actions taken under each noise action plan in the previous 12 months. The annual reports will be used to inform the EPA Local Authority Performance Framework review on noise as one of the National Enforcement Priorities (NEPs)[59].

3.4 Action Plan Timelines

Under the Regulations, the action planning authorities are to make fourth round noise action

[51] Regulations 8(2)
[52] Regulations 8(3)
[53] First Schedule of the Regulations
[54] Regulation 10(1)
[55] Regulations 12(2) and 12(3)
[56] Third Schedule of the Regulations
[57] Regulation 12(3)(b)
[58] Regulations 5(5) and Regulation 14
[59] Available at: https://www.epa.ie/our-services/compliance--enforcement/support-and-supervision-of-local-councils/la-performance/ [Accessed February 2024]

plans by 18th July 2024. For subsequent rounds, the noise action plans are to be made by 18th July 2028 and each 5 years thereafter.

Once the Draft Noise Action Plan has been prepared, a formal public consultation exercise should be undertaken. Action Planning Authorities should allow a minimum of 6 weeks for online consultation, and a further 2 weeks for receipt of written submissions, for the general public to have adequate time to participate in this process.

Furthermore, within one month of the noise action plan being made, the action planning authority shall:

- Make the noise action plan available to the public; and
- Submit a summary of the NAP to the EPA

In view of these requirements, indicative timelines for Round 4 and 5 noise actions plans are shown in Table 3.2.

Table 3.2: Indicative timelines for Round 4 and 5 action plans

Activity	Round 4	Round 5
Develop draft noise action plan	Q1 2024	Q3 2027
Public consultation (6-8 weeks)	Q2 2024	Q1 2028
Noise action plans are to be made before	18 July 2024	18 July 2028
Noise action plans are to be published before	18 August 2024	18 August 2028
Summaries of noise action plans are to be submitted to EPA	18 August 2024	18 August 2028
Noise action plans to be reported to EEA by EPA	18 January 2025	18 January 2029

Further guidance on public consultation, publishing the NAP and submitting summaries of NAPs to the EPA is set out in Section 9 of this document.

Guidance Note 3:

Regulation (EU) 2019/1010 on the alignment of report obligations postponed Round 4 noise action plans from 18 July 2023 to 18 July 2024 (Article 2 (2)). The five yearly cycles set out in Directive 2002/49/EC will then resume from Round 5.

This means that the Round 4 NAPs have a 4-year implementation period, rather than the usual 5-year period.

3.5 EU Legal and Policy Framework

The legal and policy framework relating to the management and control of environmental noise is enacted through International, European, national and local legislation, regulation and guidance.

European Union directives and regulations seek to define common policies across Europe. Those which are most relevant to noise are set out below. European Directives need to be implemented in each Member State via national primary legislation. EU Regulations are directly applicable in all Member States without the need for national primary legislation,

however there will often need to be a related piece of national legislation to establish or designate the relevant competent authorities and assign any powers necessary to the role.

An overview of the EU context related to the END is set out below, Appendix F of this guidance note provides an overview of related elements within EU and Irish legislation and guidance outside the scope of the END, but related to wider aspects associated with management of environmental noise.

3.5.1 EC Directive 2002/49/EC – Environmental Noise Directive

Directive 2002/49/EC of the European Parliament and of the Council relates to the assessment and management of environmental noise, and is commonly referred to as the Environmental Noise Directive or END[60] .

The aim of the Directive 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".*

Figure 3.1: Integrated noise management process within the END.

And to that end an integrated noise management process is set out in three stages:

- Undertake strategic noise mapping to determine exposure to environmental noise;
- Ensure information on environmental noise and its effects is made available to the public;
- Adopt action plans, based upon the noise-mapping results, with a view to preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserving environmental noise quality where it is good.

[60] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02002L0049-20210729 [Accessed December 2023]

The Directive defines noise mapping, strategic noise maps and action plans as:

- ***'noise mapping'*** shall mean the presentation of data on an existing or predicted noise situation in terms of a noise indicator, indicating breaches of any relevant limit value in force, the number of people affected in a certain area, or the number of dwellings exposed to certain values of a noise indicator in a certain area;
- **'strategic noise map'** shall mean a map designed for the global assessment of noise exposure in a given area due to different noise sources or for overall predictions for such an area;
- ***'action plans'*** shall mean plans designed to manage noise issues and effects, including noise reduction if necessary.

The END requires Member States to conduct the three stages of the process each five years.

Strategic noise maps (SNM) are to be made or revised showing the situation in the preceding calendar year in 2007, 2012, 2017, 2022, 2027 etc[61].

Noise action plans (NAP) are to be drawn up, and designed to manage noise issues and effects, including noise reduction, if necessary, in 2008, 2013, 2018, 2024, 2028 etc. The public are to be consulted about proposals for action plans[62].

Strategic noise maps and noise action plans are to be made available to the public and disseminated in accordance with relevant Community legislation. This information shall be clear, comprehensible and accessible[63].

In addition to the main explanatory articles the Directive includes:

- Annex I – Noise Indicators
- Annex II – Assessment Methods for the Noise Indicators
- Annex III – Assessment Methods for Harmful Effects
- Annex IV - Minimum Requirements for Strategic Noise Mapping
- Annex V - Minimum Requirements for Action Plans
- Annex VI - Data to be Sent to the Commission

3.5.2 EU Directive 2015/996 – CNOSSOS-EU

In July 2015 the Commission published Directive 2015/996 establishing common noise assessment methods according to Directive 2002/49/EC of the European Parliament and of the Council. This replaced Annex II of the END, removed the recommended Interim Methods, and established the common noise assessment methods.

The Directive sets out the noise calculation methods (CNOSSOS-EU) in the Annex, and some guidance on aircraft modelling, and database tables of input data for roads, railways and aircraft in a series of Appendices. The Directive is an EC legal document which was to be transposed into law within each Member State by 31 December 2018. The CNOSSOS-EU methods set out within the Directive are to be used for strategic noise maps under the END from 31 December 2018.

The CNOSSOS-EU methodologies within Directive 2015/996 may be summarised as follows:

- Road traffic source

[61] END Article 7
[62] END Article 8, as amended by Regulation (EU) 2019/1010
[63] END Article 9

- Railway traffic source
- Industrial noise sources
- Propagation model for road, railway and industrial sources
- Aircraft
- Exposure assessment

European Communities (Environmental Noise) Regulations 2018[64] (S.I. 549/2018) transposed Commission Directive (EU) 2015/996 into Irish law.

3.5.3 Corrigendum to CNOSSOS-EU 2018

Shortly after Directive 2015/996 was published in 2015, a number of typographical and formatting errors were identified. The majority of these related to the railway source model, and particularly the railway source database tables in Appendix G.

These errors were addressed within the Corrigendum[65] published in January 2018.

3.5.4 EU Directive 2020/367 – Assessment Methods for Harmful Effects of Environmental Noise

Directive 2020/367[66] amending Annex III of the END and establishing health impact assessment methods. EU Directive 2020/367 was transposed into the Second Schedule of the regulations through European Communities (Environmental Noise) (Amendment) Regulations 2021.

In 2020, Ireland fully transposed the revised Annex III of the END. Directive 2020/637 establishes assessment methods for the harmful effects of environmental noise based on the dose-response relationship established in the WHO ENG 2018[67]. The health impacts to be assessed and reported are: number of people Highly Annoyed (HA) & number of people Highly Sleep Disturbed (HSD) for roads, railways and aircraft; and instances of Ischemic Heart Disease (IHD) for roads. These are required for agglomerations and major sources.

3.5.5 Commission Delegated Directive (EU) 2021/1226 – Amending CNOSSOS-EU

Following the publication of Directive 2015/996, and the Corrigendum of 2018, work continued across Europe on the implementation of the CNOSSOS-EU methodology. Through this work a number of amendments and adaptations were identified, which along with the publication of a new version of the European Civil Aviation Conference (ECAC) noise calculation method, called ECAC Doc 29 4th version.

Commission Delegated Directive 2021/1226[68] was published in December 2020, and published in the Official Journal on 28th July 2021. This introduces a number of amendments to CNOSSOS-EU (Annex II of the END), including the alignment of the aircraft noise section with ECAC Doc. 29 4th Edition. Commission Delegated Directive 2021/1226 was transposed into the regulations through European Communities (Environmental Noise) (Amendment) Regulations 2021.

Within this guidance note, the consolidated version of Directive 2015/996, including the 2018

[64] Available at: https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print [Accessed December 2023]
[65] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L0996R%2801%29 [Accessed December 2023]
[66] Available at: https://eur-lex.europa.eu/eli/dir/2020/367/oj [Accessed December 2023]
[67] WHO, Environmental Noise Guidelines for the European Region. Available at: https://www.who.int/europe/publications/i/item/9789289053563 [Accessed December 2023]
[68] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021L1226 [Accessed December 2023]

Corrigendum and the 2021 Delegated Directive, is referred to as CNOSSOS-EU, whereas any reference to the original version is denoted by CNOSSOS-EU:2015.

3.5.6 EC Directive 2010/75/EU – Industrial Emissions Directive

Directive 2010/75/EU[69] on industrial emissions (Integrated Pollution Prevention and Control) is the main EU instrument regulating pollutant emissions, including noise from industrial installations. The Industrial Emissions Directive (IED) aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques (BAT). Around 50,000 installations undertaking the industrial activities listed in Annex I of the IED are required to operate in accordance with a permit (granted by the authorities in the Member States). This permit should contain conditions set in accordance with the principles and provisions of the IED.

In Ireland, Directive 2010/75/EU is transposed under European Union (Industrial Emissions) Regulations 2013, S.I. No. 138/2013[70], with the EPA designated as the competent authority for permitting under the Regulations. Monitoring data is available online through the EPA LEAP online portal[71].

3.5.7 EU Regulation 598/2014 – Noise-Related Operating Restrictions at Union Airports within a Balanced Approach

Regulation EU No.598/2014[72] establishes rules and procedures with regard to the introduction of noise-related operating restrictions at EU airports within the International Civil Aviation Organisation (ICAO) Balanced approach. This legislation applies to aircraft movements at Dublin International Airport.

A fundamental requirement of the ICAO Balanced Approach as implemented within EU Regulation 598/2014 is that in determining the most appropriate combination of noise mitigation measures for a given airport, operating restrictions should only be introduced after consideration of the other following three elements of the ICAO Balanced Approach.

The ICAO framework was adopted at the 37th Session of the ICAO Assembly in 2010, and contains a process for implementing the concept of the 'Balanced Approach' to manage aircraft noise at airports. ICAO Document 9829 *'Guidance on the Balanced Approach to Aircraft Noise Management'* Second Edition, 2008[73] (the 'Balanced Approach') contains advice and practical information ICAO Contracting States might need in implementing a Balanced Approach to noise management. The ICAO Balanced Approach was established as a recommended approach to managing noise from aircraft in the vicinity of the airfield to support the long-term sustainability of the balance between the airport and the surrounding areas.

The Balanced Approach guidance recommends identifying noise issues associated with an airport and then considering the measures available to reduce noise impact, namely with appropriate consideration of the following elements:

[69] Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:en:PDF [Accessed December 2023]
[70] Available at: https://www.irishstatutebook.ie/eli/2013/si/138/made/en/pdf [Accessed December 2023]
[71] Available at: https://www.epa.ie/our-services/compliance--enforcement/whats-happening/leap-online/ [Accessed February 2024]
[72] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0598 [Accessed December 2023]
[73] Available from: https://store.icao.int/en/guidance-on-the-balanced-approach-to-aircraft-noise-management-doc-9829 [Accessed December 2023]

- The reduction of noise at source, such as quieter aircraft
- Use of land planning and management
- Noise abatement operational procedures, such as noise preferential routes
- Operating restrictions, only after consideration of the other preceding measures, and may include air traffic movement caps and noise quotas.

The ICAO Balanced Approach is international best practice for noise management at airports within Contracting States. Regulation 598/2014 enshrines the ICAO Balanced Approach within legislation which applies to all airports in Europe with more than 50,000 movements, take-offs or landings, per year[74]. This is the same threshold used within Directive 2002/49/EC to define a "major airport". In Ireland Dublin International Airport is currently the only airport with more than 50,000 movements per year, it is designated as a major airport under the END, and is within the scope of Regulation 598/2014.

The Aircraft Noise (Dublin Airport) Regulation Act 2019, No. 12 of 2019[75] (the Act of 2019), gives further effect to the Regulation, and establishes Fingal County Council as the competent authority for the purposes of the Regulation with exclusive competence in relation to operating restrictions at Dublin Airport. The Aircraft Noise Competent Authority (ANCA) was established as an independent authority within Fingal County Council for this purpose with a remit to monitor and, where appropriate, make regulations for the management of aircraft noise at Dublin Airport through the application of the Balanced Approach. ANCA publishes annual monitoring reports on its website together with noise contour maps that display the evolving aircraft noise impact in the communities around Dublin Airport.

3.5.8 Zero Pollution Action Plan

In May 2021 the EU launched the Zero Pollution Action Plan[76] (ZPAP) with a vision for 2050 that air, water and soil pollution is reduced to levels no longer harmful to health and natural ecosystems. The targets by 2030 include *"reducing the share of people chronically disturbed by transport noise by 30%"*, compared to 2017. The ZPAP sets out a policy ambition at European level and has no legislative footing for individual member states.

The first integrated Zero Pollution Monitoring and Outlook Report[77] from the Commission to the European Parliament was published in December 2022, and estimated that the number of people chronically disturbed by road transport noise is unlikely to decline by more than 19% by 2030 (i.e. well below the 30% reduction target set in the zero pollution action plan) unless a substantial set of additional measures is taken at national, regional and local level and unless reinforced EU action across relevant sectors delivers significant further reduction in noise pollution.

In support of the ZPAP noise target for 2030 ZPAP, the EU PHENOMENA[78] project was undertaken to identify cost-effective noise mitigation measures which may help competent authorities to achieve noise reductions across large parts of the exposed population.

[74] Calculated on the basis of an average over three years
[75] Available at: https://www.irishstatutebook.ie/eli/2019/act/12/enacted/en/pdf [Accessed December 2023]
[76] https://environment.ec.europa.eu/strategy/zero-pollution-action-plan_en [accessed October 2022]
[77] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0674 [Accessed December 2023]
[78] European Commission, Directorate-General for Environment, Kantor, E., Klebba, M., Richer, C. et al., Assessment of potential health benefits of noise abatement measures in the EU: Phenomena project, Publications Office, 2021. Available at: https://data.europa.eu/doi/10.2779/24566 , 2021. [Accessed December 2023]

3.6 National Legal and Policy Framework

The legal and policy framework relating to the management and control of environmental noise is enacted through International, European, national and local legislation, regulation and guidance.

3.6.1 Environmental Noise Regulations 2018

The END is transposed into law separately in each Member state of the EU. In Ireland, this Directive is transposed by the European Communities (Environmental Noise) Regulations 2018 (as amended), S.I. No. 549 of 2018 (Regulations), and this guidance makes specific reference to articles in these Regulations.

The regulations both revise and revoke the Environmental Noise Regulations 2006, S.I. 140/2006, & transpose Directive 2015/996. The 2018 Noise Regulations include the main explanatory text as well as:

- 1st Schedule - Noise Indicators;
- 2nd Schedule - Assessment Methods for Harmful Effects;
- 3rd Schedule - Min. Requirements for Strategic Noise Mapping;
- 4th Schedule - Min. Requirements for Action Plans;
- 5th Schedule - Data to Be Sent to The Commission; and
- 6th Schedule - Agglomerations.

This guidance is issued by the Environmental Protection Agency, pursuant to the Regulations.

The Regulations were amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021. The amendment to the Regulations:

- Transposes Directive 2020/367 to the Second Schedule "Assessment Methods for Harmful Effects";
- Transposes Commission Delegated Directive (EU) 2021/1226, amending Annex II of the END;
- Transposes EU Regulation 2019/1010 and the associated Commission Implementing Decision (EU) 2021/1967 relating to mandatory reporting under the END to the EEA Reportnet platform;
- The Sixth Schedule sets out revised definitions for the agglomerations of Cork, Dublin and Limerick, in light of urban developments over the last 15 years.

3.6.2 IED/IPC Licensing

Certain activities that are required to be licensed under the IED/IPPC regulations may be subject to noise conditions. The relevant guidance is set out in the EPA publication *Guidance Note for Noise in Relation to Scheduled Activities (NG4)*[79].

This document contains suggested general noise limits of 55 dB(A) $L_{Ar,T}$ for daytime, 50 dB(A) $L_{Ar,T}$ for evening, and 45dB(A) $L_{Aeq,T}$ for night-time; with lower noise limit criteria suggested for areas of low background noise, and quiet areas.

[79] Available at: https://www.epa.ie/publications/monitoring--assessment/noise/NG4-Guidance-Note-(January-2016-Update).pdf [Accessed December 2023]

3.6.3 Project Ireland 2040 – National Planning Framework, 2018

In 2018, the Government published the National Planning Framework 2040[80], which includes - Policy Objective 65 to:

> *"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."*

The National Planning Framework and the three Regional Spatial and Economic Strategies should be considered by the LAs when developing their noise action plans. In addition to the above, the NPF sets out overarching strategy for the sustainable urban and rural growth of the State, including significant population growth in existing urban centres which is supported by a wide range of National Policy Objectives (NPOs). NPO 65 must be considered in the context of the overall vision for growth and development within this high level strategic plan.

3.7 Regional and Local Policy

In additional to EU Regulations, national legislation and policy, it will also be necessary to consider Regional and Local policies and strategies which relate to noise management, or may affect local noise management, see Section 1.7 above around the need to consider environmental noise within a broader integrated framework of other environmental and policy measures.

Guidance Note 4:

It is recommended that the NAPs include a review of relevant Regional and Local policy or guidance on the management of environmental noise, in addition to the EU and National legislation and guidance, see Section 1.4 above.

Where relevant these should be included within the overview on environmental noise management present in the NAP, and may, for example, include the following:

- Regional Spatial and Economic Strategy;
- Climate Action Plan
- Development plan; and
- Local authority noise abatement policy.

[80] Available at: https://www.npf.ie/project-ireland-2040-national-planning-framework/ [Access December 2023]

4 Requirements for Noise Action Plans

4.1 Scope of the Action Plans

The Regulations set out to:

> *"provide an implementation in Ireland of a common approach within the European Community intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise."*[81]

Action plans are to be designed for the purpose of managing transport noise issues and their effects, including noise reduction if necessary[82].

The measures within the plans are at the discretion of the competent authorities, but should notably address priorities which may be identified by the exceeding of any relevant criteria chosen by the Member States and apply in particular to the priority important areas as established by strategic noise mapping. When identifying possible action areas and developing action plans, account should be taken of the principles that already exist in current legislation and guidance.

APAs shall ensure that the public is consulted about proposals for action plans, given early and effective opportunities to participate in the preparation and review of the action plans, that the results of that participation are taken into account and that the public is informed on the decisions taken. Reasonable time-frames shall be provided allowing sufficient time for each stage of public participation.

The Regulations are to apply to environmental noise to which people are exposed, in particular in built up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, near hospitals, and near other noise-sensitive buildings and areas[83]. The Regulations shall not apply to noise caused by the individual person exposed to noise, noise from domestic activities, noise created by neighbours, noise at work places, noise inside means of transport, or noise due to military activities in military areas[84]. In the context of the Regulations, environmental noise is defined as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity[85].

Action Plans are to cover areas affected by environmental noise, as identified by the strategic noise mapping, for each of the following areas[86]:

(a) (i) the agglomeration of Cork;
    (ii) the agglomeration of Dublin;
    (iii) the agglomeration of Limerick;
(b) places near a major road;
(c) places near a major railway; and
(d) places near a major airport.

Under the Regulations there is to be one NAP for each of the agglomerations of Cork, Dublin and Limerick, and one NAP for 'places near a major airport'.

[81] Regulation 4(1)
[82] Regulation 2(1)
[83] Regulation 4(2)
[84] Regulation 4(3)
[85] Regulation 2(1)
[86] Regulation 12(1)

During implementation of the NAP:

(a) an assessment of cost-effective mitigation measures: and
(b) in agglomerations, an investigation of candidate quiet areas

should be undertaken in consultation with the EPA and noise mapping bodies. The responsibility for the management of noise from road, railway and aircraft sources lies with various authorities including the Department for Transport and the relevant transport authorities.

Guidance Note 5:

There are a number of designated APAs responsible for each agglomeration NAP. Each agglomeration NAP could include separate sections for each Local Authority (LA) administrative area, as each of the LAs will ideally have their own policy on noise management, as well as their own internal resources and procedures. There should preferably be a consistent approach to noise from strategic infrastructure which is common to several LAs in each agglomeration, such as Irish Rail, Luas lines, National Roads and regulated industrial facilities. The objective is to ensure cooperation between authorities in addressing noise pollution, but should not result in competing designation of responsibilities, which means that for any specific noise source, e.g., section of road, or section of rail line, or industrial facility, is addressed by only one competent authority.

The various sections in the agglomeration noise action plans for each LA should have no overlap, and the key stakeholders such as TII and Irish Rail should be actively involved in the plan development process. It could be beneficial to have specific sections on National Roads, Luas and Irish Rail lines, as relevant, which document the SNM results, existing measures, and any programmes in place from the key stakeholders. Ideally, the infrastructure operators should be closely involved in agreeing the proposed actions within the NAP with the LAs. Other sections would cover industry and Regional/Local roads in their County, along with individual policy requirements, approach to action planning, available resources, detailed programmes, and contact details etc.

Guidance Note 6:

As required under Regulation 7(f) the NAP for Dublin airport is to be made and approved by Fingal County Council, as the airport is located within their functional area, however it should cover all *'places near a major airport'*, as required under Regulation 12(1)(d), affected by aircraft noise as shown from the results of the strategic noise mapping. The adjacent LAs (Meath County, South Dublin County, and Dublin City) should therefore be consulted during the development of the NAP, as well as the relevant airport authority daa.

It is recommended that the NAP has due regard to the noise abatement objective (NAO) for the airport, relevant planning conditions at the airport, any Regulatory Decision made under the Act of 2019, and the National Planning Framework.

Where a noise problem is identified at the airport ANCA are to ensure that the ICAO Balanced Approach is adopted in respect of aircraft noise management ANCA was established as an independent authority within Fingal County Council for this purpose with a remit to monitor and, where appropriate, make regulations for the management of aircraft noise at Dublin Airport through the application of the Balanced Approach.

Guidance Note 7:

It is recommended that "places near a major (road, railway or airport)" means areas affected by noise from the major roads, railways and airports, as shown from the results of the strategic noise mapping, are to be included within the NAPs drawn up by the local authorities.

Where the results of the strategic noise mapping show that the noise exposure from relevant major roads, railways or airports located within a neighbouring local authority extend into the County across the boundary, the noise exposure at locations within the County may be addressed through mitigation at the noise sensitive receivers for sources located outside the county. This would also apply for sources located outside any agglomeration boundary, which affects locations inside the agglomeration, and vice versa. Where sources are located outside the county, mitigation at source is the responsibility of the relevant adjacent APA, who may wish to include the effects beyond the county boundary when undertaking the assessment of cost-effective noise mitigation measures recommended in Section 6 of this guidance note.

4.2 Requirements of Action Planning Authorities

The European Communities (Environmental Noise Regulations 2018 (as amended) set out a series of requirements to be met by action planning authorities.

Under the Regulations, action planning authorities:

- Shall be responsible for making of action plans and the review and, where necessary, revision of action plans[87];
- Make, or review, or revise[88], and approve action plans, in consultation with the EPA and the noise-mapping body for the relevant strategic noise maps[89];
- Shall review and, if necessary, revise an action plan[90]:
    - In the event of a material change in environmental noise in the area concerned;
    - If requested by the EPA;
    - Not later than five years after the date on which it was made or last reviewed.
- Shall co-operate as appropriate with their counterparts in neighbouring States with regard to making or review of action plans for border areas[91];
- Shall determine the measures to be included in an action plan or a revision of an action plan[92];
- May delimit quiet areas in agglomerations where particular requirements on exposure to environmental noise shall apply[93];
- May delimit quiet areas in open country that are undisturbed by noise from traffic, industry or recreational activities;

[87] Regulation 12(7)(a)
[88] Regulation 12(1)
[89] Regulation 7
[90] Regulation 12(7)(b)
[91] Regulation 12(8)
[92] Regulation 12(2)(a)
[93] Regulation 10(1)

- Shall ensure that[94]:
  - The public are consulted on action plans, including reviews and revisions;
  - The public are given early and effective opportunities to participate in the making and revisions of action plans;
  - The results of the public participation are taken into account in finalising action plans or revisions of action plans;
  - Reasonable time-frames are adopted for each stage of public participation.
- Shall ensure that a summary of each action plan or revised action plan is sent to the EPA within one month of being made[95]; and
- Shall report annually to the EPA on all action taken under each action plan or revised action plan in the previous year[96].

Further information and guidance on these requirements are provided in other sections of this guidance, where appropriate. For example, see:

- Section 4.5 Review of Action Plans;
- Section 6 Noise Mitigation Measures
- Section 7 Quiet Areas
- Section 9 Public Consultation
- Section 10 Reporting

4.3 General Requirements for Noise Action Plans

Under the Regulations, the Noise Action Plan must at least include:

- Priorities which are to be addressed[97];
- The minimum requirements set out in the Fourth Schedule of the Regulations[98];
- An assessment against the minimum requirements set out in the Fourth Schedule[99];
- An objective of protecting quiet areas in an agglomeration and quiet areas in open country[100];
- An estimate of the expected reduction in the harmful effects of noise exposure to the population as a result of the mitigation measures contained in the action plan[101];
- A record of public participation, and the decisions taken in relation to action plans[102];
- A review of the implementation of the previous noise action plan, where applicable[103].

Further information and guidance on these requirements are provided in other sections of this guidance, where appropriate. For example, see:

- Section 5 Identifying Priorities;
- Section 9 Public Consultation;

[94] Regulation 12(5)
[95] Regulation 12(9)
[96] Regulation 12(10)
[97] Regulation 12(2)(b)
[98] Fourth Schedule of the Regulations
[99] Regulation 12(4)(a)
[100] Regulation 12(4)(b)
[101] Regulation 9(2)
[102] Regulation 12(5)
[103] Regulation 7(a)

- Section 10 Reporting;
- Appendix D Review Checklist

4.4 Fourth Schedule of the Regulations

The Fourth Schedule of the Regulations sets out the minimum requirements for Action Plans. These minimum requirements are shown in Box 1.

Box 1
Minimum Requirements for Noise Action Plans

1. An action plan must at least include the following elements:
   - a description of the agglomeration, the major roads, the major railways or major airports and other noise sources taken into account,

Guidance Note 8:

This information will form part of the output from the strategic noise mapping.

- the authority responsible,

Guidance Note 9:

This is the name and contact details of the designated APA for preparing the Action Plan, as defined in the Regulations.

- the legal context,

Guidance Note 10:

This should reference the relevant provisions within the Regulations relating to noise action plans. Action plans should also include an overview of the existing EU, national, regional and local regulatory framework for the management of environmental noise (see Section 3 of this guidance note).

- any statutory limit values in place,

Guidance Note 11:

There are **no statutory noise limits currently in place in Ireland.** Under the Regulations, the EPA recommend other criteria used for the evaluation and implementation of noise management and reduction actions within the area covered by the action plan, specifically the approach to identifying IAs, MIAs and PIAs.

- a summary of the results of the noise mapping,

Guidance Note 12:

The designated noise mapping bodies (NMB) have undertaken the strategic noise mapping, published the results, and reported to the EPA. The published results of the strategic noise mapping should be summarised within the NAP. For each source, for each indicator, and for each 5 dB noise band, the following should be included:

- Area;
- Dwellings;
- School buildings;

Box 1
Minimum Requirements for Noise Action Plans

- Hospital buildings.

Graphical noise maps should also be presented, and information on access to where digital versions of the maps have been published should also be provided.

The aim of this requirement is to provide a description of the current noise impact of the noise source on its surroundings.

- an evaluation of the estimated number of people exposed to noise, identification of problems, and situations that need to be improved,

Guidance Note 13:

The published results of the strategic noise mapping, prepared by the NMBs, in terms of the number of people exposed to noise, for each indicator, for each 5 dB noise level band, should be summarised.

A summary of the results of the assessment of harmful effects should also be provided, in terms of number of people highly annoyed, highly sleep disturbed and cases of ischemic heart disease.

Noise problems may be identified via MIAs, whilst PIAs may be identified as situations that need to be improved (see Section 5).

- a record of the public consultations organised in accordance with Regulation 12(5),

Guidance Note 14:

The action planning process requires formal public consultation to occur regarding the proposed Draft Action Plan. The process should be documented within the final NAP (see Section 10).

- any noise-reduction measures already in force and any projects in preparation,

Guidance Note 15:

As a result of actions undertaken by local authorities, or noise mapping bodies, on foot of previous noise action plans, or within the context of development through the planning process, there may be existing mitigation measures in place to manage and mitigate noise impacts.

These existing mitigation measures may include outcomes from development projects, noise complaint handling protocols, noise insulation schemes, noise barrier construction projects, low noise road surfaces, speed reductions, quiet area designations etc.

Where information is available, this should be documented as noise-reduction measures already in place, or in preparation should the development or implementation not be completed at the time of the NAP.

- actions which the action planning authorities intend to take in the next five years, including any measures to preserve quiet areas,

Guidance Note 16:

It is recommended that the NAP contains an outline timetable of activities to be undertaken during the implementation of the NAP over the next 5 years (4 years for Round 4). It is

Box 1
Minimum Requirements for Noise Action Plans

recommended that this includes as a minimum: assessment of possible noise mitigation measures for the PIAs; delimiting quiet areas, where applicable; monitoring and annual reporting of progress to the EPA; collecting and collating data ahead of the next round of noise mapping; and review of the NAP ahead of making or revising the NAP for the next round.

- long-term strategy,

Guidance Note 17:

Action Planning Authorities should set out a strategic objective for the management of environmental noise, this may be considered as a long-term strategy or noise abatement objective. It may be beneficial to accompany the long-term strategy with additional information to provide explanation to the strategy. In addition, it may be worth considering whether the strategy could include measurable criteria, expected outcomes and a means of monitoring progress.

Additionally, it is recommended that APAs consider proposing actions which may be considered beneficial to the noise environment in the long term, such as: public awareness raising; integration with land use planning and building design; introducing noise criteria into maintenance programmes; promoting modal shift to less noisy transport modes; influencing driver behaviour; and enhancing complaint management.

- financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment,

Guidance Note 18:

Where available, information on costs and benefits related to noise mitigation measures already in place, or proposed, should be included within the NAP.

- provisions envisaged for evaluating the implementation and the results of the action plan.

Guidance Note 19:

The NAP must show how the implementation of the actions set out within the NAP will be monitored and evaluated. This process may form the basis for the annual NAP progress report to the EPA.

2. The actions which the action planning authorities intend to take in the fields within their competence may for example include:
   - Traffic planning,
   - Land-use planning,
   - Technical measures at noise sources,
   - Selection of quieter sources,
   - Reduction of sound transmission,
   - Regulatory or economic measures or incentives.

Guidance Note 20:

It is recommended that the NAP contains an outline timetable of activities to be undertaken during the implementation of the NAP over the next 5 years (4 years for Round 4).

Box 1 Minimum Requirements for Noise Action Plans
It is recommended that actions within the local authorities' competence are clearly identified, which those which may require collaboration and cooperation from a third part are also clearly noted.
3. Each action plan should contain estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other).
Guidance Note 21: Information on the reduction of the number of people affected by noise related to noise mitigation measures already in place, or proposed, should be included within the NAP. For example, in terms of the reduction in the number of people as identified by the noise mapping, or in terms of the reduction in the number of people affected as identified by the assessment of health effects (Second Schedule of the Regulations).

Appendix C of this guidance note provides an indicative table of contents for noise action plans.

Appendix D of this guidance note provides review checklist which may be used to confirm that the noise action plan meets the requirements of the Regulations.

4.5 Review of Noise Action Plans

Under the Regulations, action planning authorities have a designated responsibility to make, review and, where necessary, revision of action plans, in consultation with the EPA and relevant noise mapping bodies.

The review and, if necessary, revise an action plan can be triggered by three possible events as specified in Regulation 12(7) of the Regulations:

1. Within five years after the date on which it was made or last reviewed, in line with the timetable of the Regulations and Directive;[104]
2. If requested by the EPA[105]; or
3. A material change in environmental noise in the area concerned[106].

The first criterion is the regular 5-yearly cycle of noise mapping and action planning under the Regulations and Directive. The Regulations clarify that the previous NAP is to be reviewed, and revised, if necessary, as part of the process of noise management under the END.

The second criterion provides the EPA the powers to require an APA to review the NAP should it be considered necessary under the requirements of the Regulations.

The third criterion requires the APAs to have an understanding of the evolution of the noise environment on an ongoing basis within the 5-yearly cycle set out under the Regulations. The APA would need to be able to form the view as to whether there had been a *"material change in environmental noise in the area concerned"*, or *"when a major development occurs affecting the existing noise situation"* in the words of the Directive[107].

If the APA comes to this view, following a major transport noise source development occurring

[104] Regulation 12(7)(b)(iii)
[105] Regulation 12(7)(b)(ii)
[106] Regulation 12(7)(b)(i)
[107] END, Article 8(5)

or closing which has affected the pre-existing noise situation, it must begin the process of reviewing the noise action plan. Some situations which could have resulted in a material change in the pre-existing environmental noise in the area concerned, resulting in a significant change in the number of Highly Annoyed or Highly Sleep Disturbed due to noise within the NAP may include transport infrastructure that meet the criteria for a major road, major rail or major airport, such as the opening or closing of a substantial new national road or motorway[108]; the opening or closing of a substantial new rail or light rail line[109]; or the opening or closing of a new runway, or substantial change to operations, at an airport[110].

The Regulations also state that as a minimum, the review should include:

- An assessment against the minimum requirements set out in the Fourth Schedule; and
- A review of the implementation of the previous noise action plan, where applicable.

Any direct comparison of the Round 4 versus Round 3 strategic noise mapping results should be carefully considered, as changes to the calculation methods to the common European CNOSSOS-EU methods may have a significant effect on the results. Additionally, the datasets used to the develop the noise models have changed significantly since Round 3, particularly with regards to the terrain model and the road network included within the agglomerations.

The noise maps are the product of assimilating a collection of digital datasets, and over the past 10 years, Tailte Eireann (Ordnance Survey Ireland), Transport Infrastructure Ireland (TII) & the LAs etc. have invested heavily in significant improvements to the quality of the digital datasets describing the natural and built environment in Ireland. This has led to the strategic noise models being based on increasingly detailed and accurate data, which has in turn has led to more reliable noise results with much less tendency to over predict the impact.

Guidance Note 22:

Where a material change in the pre-existing environmental noise in the area concerned has occurred, the APA should review the noise action plan in consultation with the EPA, and revise it (such a revision may require a reassessment of the strategic noise maps and the population exposure assessment, including the harmful effects) if results indicate a significant change in exposure to noise within the NAP.

Guidance Note 23:

In addition to the minimum requirements, it is recommended that the review of the previous action plan includes: details on how the review was undertaken; a description of how the new noise situation was assessed, the conclusions drawn; and the subsequent actions undertaken.

The review could include aspects such as: progress against timetable; changes in noise situation and exposure; details of actions undertaken; costs; dates and numbers of people affected or benefited by actions.

[108] Regulation 2(1)
[109] Regulation 2(1)
[110] Regulation 2(1)

Guidance Note 24:

It is recommended that APAs utilise the review checklist provided in Appendix D of this guidance note when undertaking a review of a noise action plan.

The checklist covers all the mandatory and optional requirements of an action plan set out within the regulations; plus, recommended aspects discussed within the EPA guidelines.

The checklist is also provided to enable APAs to self-screen draft NAPs prior to stakeholder engagement and public consultation.

5 Identifying Priorities for Reduction of Environmental Noise

Action planning authorities will primarily have two pieces of information available to them for action planning. These are:

- The current noise exposure levels as shown by the results of the strategic noise mapping[111,112,113]; and
- The current noise control measures which are in place.

Based upon the information available, it is recommended to follow a three-step approach to identifying priorities:

- **Step 1: Important Areas (IA)** – these are locations exposed to environmental noise which may be harmful to human health, such as high annoyance, as indicated by WHO guidance;
- **Step 2: Most Important Areas (MIA)** – these locations are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure levels and the number of people exposed to noise;
- **Step 3: Priority Important Areas (PIA)** – where appropriate and relevant to the individual local authority between 5 and 10 MIAs, or groups of similarly affected MIAs, which are identified by the APAs as those which will be addressed during the implementation of the Noise Action Plan (NAP).

Guidance on the recommended approach to the three-step approach is set out below.

The IAs, MIAs and PIAs are identified with respect to noise from roads and railways. For the identification of areas to be subject to noise management activities due to noise from airports and major industrial activities, reference is made to the roles of the designated authorities, as summarised below.

Guidance Note 25:

It is recommended that the APAs use the three-step approach, see Sections 5.1, 5.2 and 5.3 below, to identify PIAs prior to going out to public consultation on the draft noise action plan. It is recommended that the Draft NAP includes the MIAs identified, along with the criteria used to select the PIAs.

Based on the results of the Round 4 strategic noise mapping, the IA, PIA and MIAs for Round 4 noise action plans have been identified. A centralised GIS process has been used to identify IAs and PIAs, which were then used by each APA to identify MIAs.

The Aircraft Noise Competent Authority (ANCA) at Fingal County Council (FCC) is the designated competent authority for the purpose of aircraft noise regulation at Dublin airport. It is recommended that the identification of priorities at Dublin Airport is undertaken in line with the noise abatement object (NAO) for the airport, relevant planning conditions at the airport, and any Regulatory Decision made under the Act of 2019.

[111] EPA Maps. Available at: https://gis.epa.ie/EPAMaps/ [Accessed December 2023]
[112] TII Strategic Noise Mapping 2022. Available at: https://experience.arcgis.com/experience/411d8841d56a43e5ab9b885eb4680e2e [Accessed December 2023]
[113] Action planning authorities will need to form a view on whether the results of the noise mapping are typical and indicate whether there were any unusual circumstances in the assessment year.

Cork airport does not have a designated competent authority for the purpose of the aircraft noise regulation as it is below the threshold for this regulation and is also not a designated as a major airport under the END thresholds. Cork Airport is within the Cork agglomeration and is therefore subject to strategic noise mapping and the noise action plan. Daa undertook noise mapping of Cork airport, the results have been reported to EEA, and the NAP will include the airport. While not directly applicable in this case, international best practice that may be considered as useful background information around the management of noise at designated airports is the guidance in the ICAO *Balanced Approach to Aircraft Noise Management*[114].

The Environmental Protection Agency is responsible for issuing licenses for the designated industrial facilities under the IED/IPC Regulations. These licences contain strict conditions on how an activity must operate so as to protect the environment from pollution that might otherwise arise. Where the results of the strategic noise mapping indicate that exposure to industrial noise may require mitigation, it is recommended that the APAs liaise with the EPA Office of Environmental Enforcement over the license conditions in place and the current approach to noise management at the facility.

5.1 Background to Annex III and Harmful Effects

The objective of the Regulations is to "avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise"[115]. Where environmental noise is "unwanted or harmful outdoor sound created by human activities"[116].

The results of the strategic noise mapping provide information on the assessed noise levels at all noise sensitive properties within the assessment area, along with an estimate of the number of inhabitants. The NMBs *"shall calculate the harmful effects in accordance with the Second Schedule"* of the Regulations[117]. Meanwhile, the APAs *"shall estimate the expected reduction in the harmful effects of noise exposure to the population as a result of the mitigation measures contained in their Noise Action Plans"*[118]. The Second Schedule of the Regulations sets out a mandatory assessment of the harmful effects of environmental noise using the dose-response relationships set out in **Commission Directive (EU) 2020/367 and transposed under S.I. 663/2021**, replacing Annex III of the END.

The results of the strategic noise mapping, including the harmful effects, may then be used to identify IAs where long term noise exposure to noise from transport infrastructure is likely to produce negative health effects on the exposed population. This would be all areas exposed above the outdoor noise levels set out within WHO guidance.

Information on END Annex III and links to WHO Guidance

The European Commission, on its Environmental Noise Directive webpage, outlines that the harmful effects assessment methods in 'Annex III of the Environmental Noise Directive describes the methods for calculating the burden of disease caused by exposure to specific noise levels. The methods include dose-effect relations for a set of health endpoints such as cardiovascular disease, annoyance and sleep disturbance. Annex III was revised in 2020 following the latest scientific review of the health effects of noise that is being performed

[114] Guidance on the Balanced Approach to Aircraft Noise Management, Doc 9829 AN/451, ICAO 2008. Available at: https://www.icao.int/environmental-protection/pages/noise.aspx [accessed December 2023]
[115] Regulation 4(1)
[116] Regulation 2(1)
[117] Regulation 9(2)
[118] Regulation 9(2)

by the WHO.' [119] The joint WHO and EEA briefing on 'Uptake and impact of the WHO Environmental noise guidelines for the European Region: experiences from member states' in Box 2 'Impact of the Guidelines at EU level' provides details on the where Annex III originated from and its links to WHO guidelines.[120].

The adverse effects of noise on health are now better understood following publication of the 2018 WHO *Environmental Noise Guidelines for the European Region*[121], to supplement the previously published *"Community Noise Guidelines"* (CNG) from 1999[122], and *"Night Noise Guidelines for Europe"* (NNG) from 2009[123]. The main purpose of the guidelines is to provide recommendations for protecting human health from exposure to environmental noise originating from various sources including: transportation (road traffic, railway and aircraft) noise. They provide public health advice underpinned by evidence, which is essential to drive policy action to protect communities from the adverse effects of noise. The significant health impacts of noise are most likely to be underestimated, with WHO evidence demonstrating effects from noise levels below the thresholds that countries report against under the Environmental Noise Directive[124].

The WHO ENG 2018 guidelines formulated recommendations based on the available evidence, and exposure values based on a relevant risk increase of adverse health effects. Thus, the 2018 guideline values define an exposure level at which effects certainly occur. Furthermore, the WHO developed dose-response relationships for the assessment of health effects due to chronic long-term exposure to environmental noise from roads, railways and aircraft. These dose-response relationships have subsequently been adopted by the EU as Annex III of the END as set out in the Second Schedule of the Regulations, which sets out methodologies to be used for the assessment of three harmful effects:

- Ischaemic heart disease due to road traffic noise, and
- High annoyance and high sleep disturbance due to road, railway and aircraft noise.

The WHO definition of health is "a state of complete mental, physical and social well-being". In addition, noise annoyance in this field means a feeling of displeasure, nuisance, disturbance or irritation caused by a specific sound, and in the context of the WHO guidelines and END it refers to long-term (chronic) noise annoyance, rather than just a temporary irritation. The WHO acknowledge that there are uncertainties in the quantification of health impacts from a range of factors, including: in their own recommendations; the modelling of noise exposure; transferability of exposure response functions to locations beyond where they were studied. However, they concluded that the recommended values provide an acceptable estimate of the average response to certain noise levels in Europe.

[119] https://environment.ec.europa.eu/topics/noise/environmental-noise-directive_en [Accessed December 2023]
[120] https://www.who.int/europe/publications/i/item/WHO-EURO-2023-7658-47425-69687 [accessed December 2023]
[121] Environmental noise guidelines for the European Region, WHO 2019. Available at: https://www.who.int/europe/publications/i/item/9789289053563 [Accessed December 2023]
[122] Guidelines for community noise, WHO 1999. Available at: https://www.who.int/publications/i/item/a68672 [Accessed December 2023]
[123] Night noise guidelines for Europe, WHO 2009. Available at: https://apps.who.int/iris/handle/10665/326486 [Accessed December 2023]
[124] Directive 2002/49/EC. Available at: https://www.eea.europa.eu/publications/zero-pollution/health/noise-pollution [Accessed June 2024]

Guidance Note 26:

In the context of the END and the EU Zero Pollution Action Plan aim to reduce the harmful effects of environmental noise on human health, and to manage noise where it is likely to have significant adverse impacts on health. It is considered appropriate that noise action plans consider locations (for road and railways) with areas of population density and associated high annoyance levels and which are above the relevant thresholds with reference to the WHO 2018 guidelines on road and railway noise, as Important Areas (IAs).

5.2 Identifying Most Important Areas (MIAs) – Roads and Railways

The following section sets out the recommended methodology and approach to identifying the Most Important Areas.

The END requires that:

*"The measures within the plans are at the discretion of the competent authorities, but should notably **address priorities** which may be identified by the **exceeding of any relevant limit value or by other criteria** chosen by the Member States and **apply in particular to the most important areas** as established by strategic noise mapping."*

While the below method sounds complex, it can be automated in a few steps within modern GIS (geographical information system) software, resulting in a graphical map which effectively shows the relative number of people highly annoyed due to noise, as shown in Figure 5.1 below.

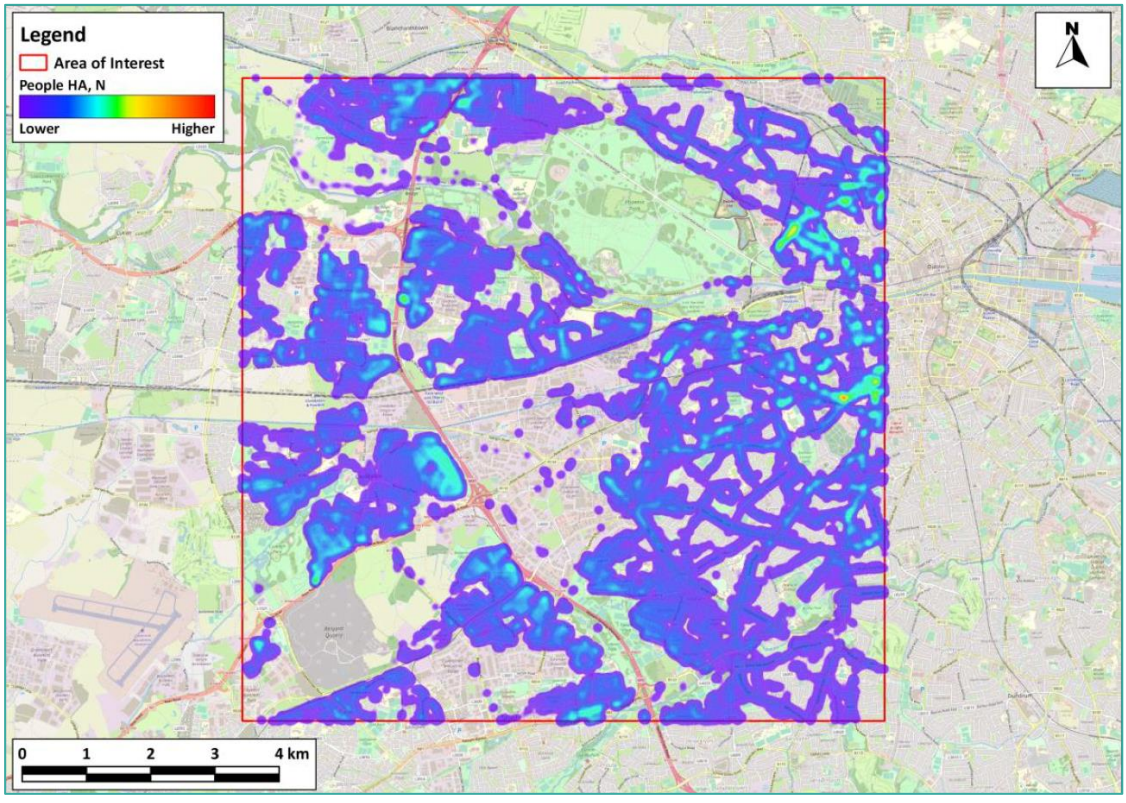


Figure 5.1: Heat map of density of people highly annoyed due to road traffic noise above 53 dB L_{den}

Identifying Important Areas using new ENDs data assessments

New assessment methods for harmful effects including high annoyance are set out in the amended noise regulations, that have links back to work by WHO. The harmful effects assessment methods in Annex III of the Environmental Noise Directive describes the methods for calculating the burden of disease caused by exposure to specific noise levels. The methods include dose-effect relations for a set of health endpoints such as cardiovascular disease, annoyance and sleep disturbance.

Annex III was revised in 2020 following the latest scientific review of the health effects of noise from the WHO. The joint WHO and EEA briefing on 'Uptake and impact of the WHO Environmental noise guidelines for the European Region' outlines the experiences from member states on the impact of the Guidelines at EU level and provides details on the where Annex III originated from and its links to WHO guidelines.

The results of the Round 4 strategic noise mapping provide information on the assessed noise levels at all noise sensitive properties within the assessment area, along with an estimate of the number of inhabitants.

To develop the NAPs, Important Areas (IAs) were considered to be locations exposed to environmental noise which may be harmful to human health, such as high annoyance based on the new assessment methods.

The results of the strategic noise mapping, now includes the harmful effects data, and this may then be used to identify Important Area (IAs) where long term noise exposure to noise from infrastructure is likely to produce negative health effects on the exposed population.

The results of the strategic noise mapping include noise levels calculated around the facades of noise sensitive buildings, and an estimate of the number of dwellings and people in dwellings within each residential building, derived from GeoDirectory and Census population statistics.

The assignment of population to the calculated noise levels is set out within Annex II of the END (CNOSSOS-EU) and provides building level statistics across the assessment area. Following the method in Annex II of the END, the harmful effects due to noise may also be statistically assessed at the centre point of each building location. For example, the number of people highly annoyed, due to road traffic noise. It is important to note that this is a statistical approach across the whole population covered by the noise maps and should not be considered to be an accurate assessment of the possible health effects at any specific building. The WHO recommended dose-response curves were derived from meta-analysis of a large number of studies and are considered representative across the overall population within the study.

The point dataset of the number of people highly annoyed is then interpolated to generate a raster heatmap, using a quadratic weighted circular neighbourhood around each point. The heatmap process only includes important areas above the criteria set out in Section 5.1 above, and is generated on a 100m radius, which generates 100m^2 raster cells.

From the heatmap it is then possible to identify the MIAs, those IAs with the largest concentration of people highly annoyed due to noise. This aims to identify locations where noise mitigation measures may have a positive effect on the quality of life for a large number of people. Using a criterion of 15 or more people highly annoyed per 100m^2, the MIAs (delineated as polygons) for an example area are shown in Figure 5.2 below.

Guidance Note 27:

The criterion of 15 or more people per 100m^2 has been found to be appropriate in the main urban areas within agglomerations. For edge of urban, or rural, locations it may be found that very few MIAs are identified based on this criterion. In this situation it is recommended that the criterion is reduced to 10, or even 7.5, in order to ideally identify at least 15 to 20 MIAs within the region covered by strategic noise mapping.

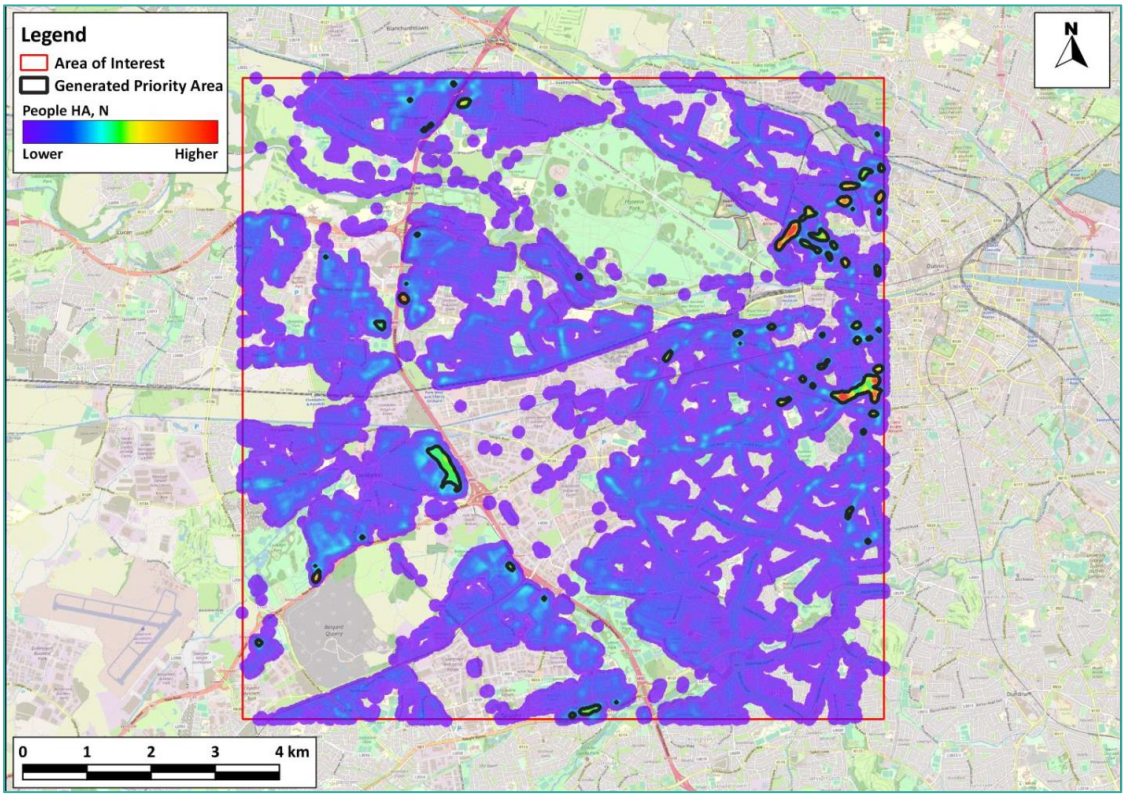


Figure 5.2: Most Important Areas (MIAs) highlighted (15 people per 100m^2 criterion)

Guidance Note 28:

The recommended process aims to identify areas with high levels of health impact, due to both noise exposure levels and population density. This is designed to support aims of the EU Zero Pollution Action Plan and provide noise reduction, and associated reductions in health effects, for groups of the population.

It is accepted that this may result in some locations with similar or even higher noise exposure levels and lower levels of population density not being identified as MIAs. It is within the discretion of the APAs to identify specific locations with ongoing noise problems as MIAs, or PIAs, if the automated process does not identify them, but this alternative method of designating PIA must be backed with well-grounded evidence in order that comparisons can be made at a Regional/National Level.

Guidance Note 29:

When considering the selection of PIAs to address under the action plan, it is recommended that the APAs consider the following aspects for each of the MIAs:

- Number of people exposed to noise, and the health effects
- Level of noise exposure
- Potential for grouping adjacent MIAs into a larger PIA
- The main source of transport noise
- Competent body to carry out any proposed mitigation measures
- History of complaints
- Planned road maintenance and resurfacing programme
- Planned speed or traffic calming measures
- Planned nearby developments
- Existing noise reduction measures
- Proposed noise reduction measures
- Options available for noise reduction measures, if available

5.3 Identifying Priority Important Areas (PIAs)

The recommended process described in Section 5.2 above is expected to identify a range of most important areas (MIAs), and there are likely to be more identified than it would be possible to address within the current noise action plan lifecycle. It is therefore the task of each Local Authority to select Priority Important Areas (PIAs), informed by the list of most import areas.

The MIAs are described as areas within the map, and the GIS may be used to develop a series of statistics about each of these MIAs, for example:

- Noise source identifying the Most Important Area, i.e., railways or roads
- Area (m^2)
- Total population
- Number of people highly annoyed (HA)
- Number of people highly sleep disturbed (HSD)
- Population increased risk to ischaemic heart disease (IHD)
- Number of dwellings
- Population noise exposure above END threshold values:
    - road traffic noise exposure in 5 dB bands (L_{den} 55 - >75 dB, L_{night} 50 – >70 dB)
    - railway noise exposure in 5 dB bands (L_{den} 55 - >75 dB, L_{night} 50 – >70 dB).

Guidance Note 30:

Based upon all the information available, where necessary, it is recommended that APAs identify at least 5 and up to 10 Priority Important Areas (PIAs) which will be included within the noise action plan, with a plan to undertake an assessment of noise mitigation measures for each PIA within the life cycle of the noise action plan (e.g.: 2024-2028, 2028-33, 2033-38).

The selection of the PIAs from the MIAs is be documented within the NAP, including a rationale for each PIA selected.

Guidance Note 31:

Progress on activities associated with noise mitigation measures for PIAs within the noise action plan will be tracked through the annual progress report to be submitted to the EPA on actions taken under each action plan, as required under the Regulations.

6 Assessment of Cost-Effective Noise Mitigation Measures for Reduction of Environmental Noise for PIAs

Following the identification of PIAs as set out above, the following section sets out the recommended process to assess cost-effective noise mitigation measures.

This second stage of the overall process is undertaken during implementation of the NAP (e.g.: 2024 – 2028, 2028 – 2033). For each of the Priority Important Areas, an assessment of cost-effective noise mitigation measures is undertaken during implementation of the NAP. It is recommended that this assessment includes:

- noise monitoring,
- noise modelling calculations, and
- cost-benefit analysis

In line with the recommended approach set out below.

Guidance Note 32:
The assessment of cost-effective noise mitigation measures is undertaken for each PIA identified within the NAP during implementation of the noise action plan (e.g., 2024-2028).

6.1 Confirm Noise Levels

As the Priority Important Areas (PIA) have been based on the results of the strategic noise mapping, which are the result of a modelling and calculation process, the next recommended step for each PIA is to undertake on-site noise measurements to confirm the extent of the noise exposure.

For each PIA this is undertaken as two complementary tasks:

- Undertake ambient noise monitoring at representative locations within the Priority Important Area; and
- Review and refine the noise model, where necessary, against the local situation at the Priority Important Area.

6.1.1 Ambient noise monitoring

It is recommended that for each Priority Important Area, ambient noise monitoring is undertaken at an appropriate number of locations, based on the size of the Priority Important Area, and the noise source(s). The measurements will be used to confirm that the noise exposure correlates with that assessed by the strategic noise maps, and help validate the calculation model baseline scenario for the assessment of mitigation measures.

Measurements should be undertaken when the operation of the noise source is representative of the long-term annual average, for example measurements during public holidays, roadworks, maintenance closures etc may affect the robustness of the assessment.

If possible, it would be very beneficial for validating the models if road or rail traffic flow data was also captured near the measurement locations during the survey period.

Measurement results should be reviewed, and any spurious noise events, periods of rain, or

excessive wind speeds, removed from the average levels. The long-term average L_{day}, $L_{evening}$, L_{night} and L_{den}, measured levels may then be compared with calculated results.

Guidance Note 33:

It is recommended that long-term noise monitoring is:

- Undertaken in line with ISO 1996:2017 Acoustics – Description, measurement and assessment of environmental noise;
- For at least two weeks at each location;
- Accompanied by meteorological measurements; and
- Measured at a height of 4.0m above local ground, to replicate the assessment height of the strategic noise mapping used for first floor level of residential dwellings.

6.1.2 Review strategic noise model

In order to undertake the assessment, the strategic noise models for the area around the PIA will be required, along with noise calculation software. For the Round 4 strategic noise mapping of roads and railways the models and calculations were undertaken using Predictor-LimA, predominantly LimA inside the three agglomerations, and Predictor outside the agglomerations. Other suitable software which implements CNOSSOS-EU self-certified to ISO 17534-4 may also be used following migration of the model data, for example iNoise, CadnaA, SoundPlan, NoiseMap, NoiseModelling.

It is recommended that the noise models for the PIAs and the surrounding area are reviewed and refined, based upon information captured through field survey work, with particular attention being paid to aspects such as:

- Road surface type;
- Railhead roughness;
- Traffic speed;
- Traffic volume and compositions;
- Location and height of any noise barriers; and
- Any other noise mitigation measures present on site.

Guidance Note 34:

Where any differences are found between the strategic noise models and the situation identified through the field surveys, it is recommended that the noise models are updated in the vicinity of the Priority Important Area to more closely align with the real-world situation. The updated model should then be used for the assessment of mitigation measures.

6.1.3 Review Possible Mitigation Measures for PIAs

Once the extent of the existing noise exposure levels has been confirmed for a PIA, the potential noise mitigations measures may be investigated, and a cost benefit analysis

undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action.

There are a range of actions which may be feasible, some may need to be implemented on or directly alongside the sources, others may be in the region between the roads and the dwellings, and others may be at the noise sensitive locations.

In the EU PHENOMENA study, the following are an indication of the types of measures which may be relevant to consider for noise sensitive locations exposed to noise from railways or road sources:

- Earthworks, such as earth bunds, mounds or cuttings;
- Coverage, including baffles or tunnels;
- Acoustic windows or secondary glazing;
- Acoustics ventilation, passive or active; and
- Chimney caps and dampers.

The following additional types of measures may be relevant to consider for exposure to railway traffic noise:

- Railhead grinding;
- Wheel smoothing;
- Fleet renewal;
- Electrification of lines;
- Replacement of tread brakes with disk brakes;
- Vehicle speed management; and
- Railside noise barriers and screening measures.

The following additional types of measures may be relevant to consider for exposure to road traffic noise:

- Re-surface roads with 10mm stone mastic asphalt (SMA);
- Re-surface roads with low noise road surfaces, or thin surface treatments;
- Vehicle speed management, or speed limit reductions;
- Traffic management – routes and HGVs;
- New road construction (bypass); and
- Roadside noise barriers and screening measures.

For example, the PHENOMENA project selected a number of noise abatement measures for each transport mode to assess their overall potential impact in terms of health benefits, using the year 2017 as a baseline in support of the EU Zero Pollution Action Plan (ZPAP).

For road traffic noise the most cost-effective scenarios, combining set of complementary noise mitigation measures were:

1) more quiet roads, quieter tyres and specific lower vehicle sound limits
2) as 1) with the addition of increased electrification of the road vehicle fleet
3) speed restriction, car-free zones, quiet facades, and dwelling insulation

For railway traffic noise the most cost-effective scenarios, combining set of complementary noise mitigation measures were:

1) smoother wheels and smoother rails, e.g., using wheel and rail grinding;

2) quieter vehicles and quieter tracks, e.g., using wheel and track dampers;
3) smoother and quieter vehicles and tracks
4) more barriers and traffic management
5) planning conditions mitigating noise and reconstruction, and more facade insulation

The Regulations specify that actions which the action planning authorities could take in the fields within their competence may for example include[125]:

- traffic planning;
- land-use planning;
- technical measures at noise sources;
- selection of quieter sources;
- reduction of sound transmission; or
- regulatory or economic measures or incentives.

Within the EU PHENOMENA study the following were shown to offer the most cost-effective noise mitigation measures in the context of the ZPAP target of a 30% reduction in the number of people chronically exposed to environmental noise by 2030:

- Road traffic noise:
  - Reducing the road traffic noise through road resurfacing and low noise road surfaces;
  - Speed restriction or speed limit reductions;
  - Car-free zones;
  - Dwelling façade insulation, either new build or retrofit; and
  - Planning new developments with quiet facades where possible.
- Railway traffic noise:
  - Railhead grinding
  - Quieter vehicles, e.g., disk brakes and electric locos
  - Dwelling façade insulation, either new build or retrofit; and
  - Planning new developments with quiet facades where possible.

There are many additional means available which be used to help avoid, prevent or reduce environmental noise levels. Appendix A provides a list of "Other relevant documents" which may be useful in this regard, with the following examples being some of those which may highlight some other possible mitigation measures which may be considered, and provide some information on best-effectiveness:

- Assessment of potential health benefits of noise abatement measures in the EU, PHENOMENA project[126];
- Low Noise Road Surfaces - Factsheet, European Climate, Infrastructure and Environment Executive Agency (CINEA), 2024[127];
- Technical Report 2017-02, State of the art in managing road traffic noise: noise

[125] Regulations Fourth Schedule. Minimum Requirements for Action Plans
[126] Available at: https://op.europa.eu/en/publication-detail/-/publication/f4cd7465-a95d-11eb-9585-01aa75ed71a1 [Accessed December 2023]
[127] Available at: https://cinea.ec.europa.eu/publications/low-noise-road-surfaces-factsheet_en [Accessed November 2024]

barriers, CEDR[128];

- ProPG: Planning & Noise, Professional Practice Guidance on Planning & Noise, New Residential Development, May 2017[129];
- Noise insulation scheme, National Highways[130];
- Residential Noise Insulation Scheme, Condition 7, North Runway, daa[131];
- Quiet City Transport, QCity[132];
- Progress report on measures on rail traffic noise in the EU, EPA Network, June 2014[133];
- Progress report on measures on road traffic noise in the EU, EPA Network, March 2012[134]; and
- Practitioner Handbook for Local Noise Action Plans, SILENCE[135].

Guidance Note 35:

For the Priority Important Area being assessed, all possible mitigation measures should be considered, and a shortlist of feasible and practical measures drawn up for detailed scenario analysis to quantify the potential for reduction in the population noise exposure as part of the cost-benefit analysis.

It is a statutory requirement that Action Planning Authorities (APAs) liaise and consult with the relevant noise mapping bodies, for example TII & Irish Rail, when selecting feasible noise mitigation measures for detailed assessment.

6.2 Assess Practical Noise Mitigation Measures for PIAs

Following on the review of possible noise mitigation measures, a shortlist of practical noise mitigation measures which could be implemented for the PIA is drawn up. The next step is to undertake an assessment of the potential noise mitigation which the measures could provide, both on their own, and in combination with others.

After the strategic noise maps have been reviewed by the APAs and amended as necessary, as discussed above in Section 5.1, they may be considered as the existing situation for the purpose of the Cost-Benefit Analysis (CBA). These may be compared to the levels measured during the ambient noise survey, and any systematic under or over calculations adjusted to validate the models. This approach helps to establish a validated baseline model for the assessment.

[128] Available at: https://www.cedr.eu/download/Publications/2017/CEDR-TR2017-02-noise-barriers.pdf [Accessed December 2023]
[129] Available at: https://www.ioa.org.uk/publications/propg [Accessed December 2023]
[130] Available at: https://nationalhighways.co.uk/our-work/environment/air-quality-and-noise/noise/noise-insulation-scheme/ [Accessed December 2023]
[131] Available at: https://www.dublinairport.com/docs/default-source/meeting-documentation/proposed-residential-noise-insulation-scheme-presentation.pdf?sfvrsn=72b21b20_2&sfvrsn=0 [Accessed December 2023]
[132] Available at: http://www.qcity.org/ [Accessed December 2023]
[133] Available at: https://epanet.eea.europa.eu/reports-letters/reports-and-letters/ig-noise_railway-noise.pdf/view [Accessed December 2023]
[134] Available at: https://epanet.eea.europa.eu/reports-letters/reports-and-letters/ig-noise_measures-on-road-traffic-noise.pdf/view [Accessed December 2023]
[135] Available at: https://www.polisnetwork.eu/wp-content/uploads/2019/06/silence_handbook_local-noise-action-plans-2.pdf [Accessed December 2023]

Until an alternative Irish approach is available, it is recommended that the appraisal of monetised benefits to health is undertaken using the UK TAG workbooks. These require calculated noise levels for four scenarios:

1. Opening year – without scheme (do-minimum)
2. Opening year – with scheme/mitigation measures
3. Forecast year (typically 15 years from opening) – without scheme (do-minimum)
4. Forecast year (typically 15 years from opening) – with scheme/mitigation measures

The strategic noise models would need to be amended to take into account the proposed noise mitigation measures, but also the forecast change in road traffic flows for both the opening year and forecast year.

For each noise mitigation scenario, the four sets of noise level calculations above are required for the same area. It is recommended that the assessment area includes all noise sensitive premises within the PIA, and all other noise sensitive premises within 600m of the proposed noise mitigation measures.

For each scenario calculated, the $L_{Aeq,16hr}$ and L_{night} results will be required for the TAG worksheets. It may also be informative for decision making to assess the number of people exposed to noise for each of the scenarios in line with Annex II of the END, and the health effects in line with Annex III of the END.

Note: Each action plan should contain estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other). Following implementation on noise mitigation measures through the action planning process, the health effects must be assessed[136], and reported in the annual NAP progress report, and in the Noise Action Plan when next revised.

Guidance Note 36:

Calculated noise levels are required with and without the proposed noise mitigation measures, for the proposed opening year of the scheme including mitigation measures, and the forecast year, typically 15 years after opening.

Road traffic flow forecast data will be required for the opening year and forecast year. These forecasts should take into account any other planned developments or strategies which may affect traffic flows on the roads in the models.

The calculations should be undertaken for all noise sensitive premises within the PIA, and all other noise sensitive premises within 600m of the proposed noise mitigation measures.

6.3 Cost Benefit Analysis

With the list of potential mitigation measures in place, it is next recommended to undertake a cost-benefit analysis in order to identify the most cost-effective approach. This process is undertaken in three stages:

1. Appraisal of monetised benefits to health;
2. Estimate of costs for implementing and maintaining noise mitigation works; and
3. Comparison of monetised health benefits against cost of mitigation.

[136] Regulation 9(2)

It is recommended that the cost-benefit analysis addresses lifetime construction and maintenance costs against noise reduction benefit to health, and that assessment of noise benefits involves the use of the strategic noise models to undertake scenario testing to estimate the noise reduction from identified design options.

6.4.1 Appraisal of monetised benefits to health

At present there is no recommended Irish methodology for the assessment of the monetised benefits to health of noise mitigation. For the interim until such a method is developed, it is recommended to use the UK environmental impact appraisal methodology within the English Department for Transport, *Transport Analysis Guidance* (TAG)[137] . The noise workbook[138] enables the noise impact of a proposed scheme to be monetised to support a cost benefit assessment. The valuation of the change in noise level due to the proposed noise mitigation scheme considers the long-term effects on sleep disturbance, amenity (annoyance), AMI (acute myocardial infarction), stroke, and dementia during the daytime, and sleep disturbance at night. The assessment requires noise calculation results for all the dwellings within 600m of the scheme, for the opening year, and forecast year (typically 15 years after opening), both with and without the proposed noise mitigation measures.

Three steps are required to calculate the noise impacts:

1. The TAG noise workbook requires noise data to be in 3 dB bands.
    a. These bands are <45, 45-47.9, 48-50.9, 51-53.9, 54-56.9, 57-59.9, 60-62.9, 63-65.9, 66-68.9, 69-71.9, 72-74.9, 7577.9, 78-80.9 and >81 dB in terms of $L_{Aeq,16hr}$ and $L_{Aeq,8hr}$.
    b. Noise levels estimated for all residential properties within 600m of the transport infrastructure concerned.
2. The number of households within these noise bands estimated.
3. The monetary value related to the change in noise levels as a result of the mitigation measure (i.e., the do something scenario compared to do nothing) is calculated in the workbook.

The TAG workbook for noise uses market prices based on a standard year, 2010, to determine the cost benefits of proposed mitigation in the future, and expresses them in 'real terms' (i.e., today's general price level). The effect of expected inflation in the general price level is removed by applying deflation. The UK Government's inflation target of 2.5% is the measure of prices used for deflation. The workbooks also use discounting to compare cost and benefits that occur at different times. It is a separate concept to inflation and is based on the concept that people prefer to receive goods or services now rather than later. It can be measured by the interest rate on money lent or borrowed. The discount rate is used to convert all costs and benefits to 'present values' so that they can be compared. The UK recommended discount rate 3.5% is used in the first 30 years of the economic appraisal for the TAG noise workbook, however it is recommended to use specific figures for Ireland as outlined below. Reduced discount rates for an appraisal period greater than 30 years are used in the workbook. The TAG workbook assesses the health benefit to residents over 60 years.

When using the TAG workbooks for noise in Ireland, it is recommended to make two changes to the default workbook:

[137] Available at: https://www.gov.uk/government/publications/tag-unit-a3-environmental-impact-appraisal [Accessed December 2023]
[138] Available at: https://www.gov.uk/government/publications/tag-environmental-impacts-worksheets [Accessed December 2023]

1) The "Assumed average household size" is changed to the actual average number of people per dwelling within the assessment area, as derived from GeoDirectory and CSO Small Area Population Statistics (SAPS) data, following the methodology set out within the EPA *Guidance Note on Strategic Noise Mapping*, 2023[139].
2) The test discount rate is amended from 2.5% to 4.0%, in line with Irish Government guidance[140] on cost-benefit analysis for public sector projects.

The results of the appraisal set out the net present value for the change in noise level due to the mitigation scheme assessed in Sterling, which will need to be converted to Euro based on the current exchange rate. These may then be compared to estimated costs for implementing the measures.

Guidance Note 37:

When using the TAG workbooks it is recommended to:

1) Change the "Assumed average household size" to a value derived from the CSO SAPS population data for the assessment area.
2) Amend the discount rate from 2.5% to 4.0%.

6.4.2 Cost of mitigation options

For each of the proposed noise mitigation measures, or combination of measures, the estimated cost of implementing the mitigation for a 60 years appraisal period is required.

For example, the costs associated with the installation of a roadside noise barrier include:

- Supply, delivery, installation and testing where required of noise barrier, including steel posts and concrete gravel boards;
- Clearance of vegetation where necessary;
- Supply, delivery, installation and testing where required of a vehicle restraint system (VRS);
- Whole life costs for a 60 years appraisal period to include operation and maintenance costs, barrier replacement, waste disposal etc.;
- Engineering consultancy costs associated with the detailed design of the environmental noise barriers including structural and foundation design;
- Proposed noise barriers must be designed to meet the requirements of current standards i.e., EN 14388 Road Traffic Noise Reducing Devices, and EN 1793 and I.S. EN 1794;
- Costs associated with barriers for the 60 years appraisal period are typically based on a design life of 30 years i.e., the replacement of the barrier once. The foundations of the barriers are typically continuous reinforced concrete ground beam with a design life of 120 years. Replacement of the ground beams does not need to be included in the cost estimates.

[139] Guidance Note for Strategic Noise Mapping, Part 2: Calculation Methodology & Noise Modelling, Version 3, EPA, 2023. Available at: https://www.epa.ie/our-services/monitoring--assessment/noise/noise-mapping-and-action-plans/ [Accessed January 2024]
[140] Available at: https://www.gov.ie/en/policy-information/1a0dcb-project-discount-inflation-rates/ [Accessed December 2023]

Over the 60-year appraisal period, 4m high noise barriers could cost in the region of €2,350 to €3,250[141] per linear metre, or €1,820 to €2,150 per linear metre[142], depending respectively on whether it is absorptive or reflective.

The costs associated with replacing old hot rolled asphalt (HRA) with low noise road surface, for example, include:

- Supply, delivery, installation and testing associated with the replacement of the existing HRA with stone mastic asphalt (SMA);
- Whole life costs for a 60 years appraisal period to include operation and maintenance costs associated with SMA pavement replacement, waste disposal etc., including the offset against the same whole life costs for a HRA pavement;
- Road marking and stud replacement costs;
- Engineering consultancy costs associated with the detailed design of the SMA pavement replacement;
- For the purposes of the cost estimates the low noise road surface can be assumed to be 45 mm thick bituminous pavement layer of SMA material designation 10 surf PMB 65/105 – 60, with a 15-year design life assumed i.e., replacement of the pavement on three occasions;
- The whole life cost for the SMA pavement replacement, approximately every 20 years, can be offset by any cost that would have been incurred by the replacement HRA twice, approximately every 30 years, during the 60 year appraisal period.

Over the 60 year appraisal period, four lanes of low noise road surface SMA 10 could cost in the region of €1,140 to €1,300[17], or €1,140 to €1,370[18], per linear metre in addition to the 60 year cost of HRA.

There is emerging evidence that low noise roads, due to smoother surfaces, have a lower rolling resistance, which in turn leads to a reduction in vehicle energy consumption. It is currently estimated that a 3 dB reduction in road surface noise saves in the region of 1% of energy[143]. It is also likely there will be a reduction in tyre abrasion, and particulate emissions from ICE vehicles. It may be relevant to consider these additional factors in the cost-effectiveness assessment, as well as in any related carbon/climate change assessment.

Estimating the 60 year appraisal period costs associated with other proposed noise mitigation measures will follow a similar approach, to ensure that all relevant technical and practical requirements are captured within the cost estimates.

6.4.3 Comparison of benefits to health versus cost of mitigation

The final step is to draw up a comparison of the monetised value of the benefit to health, based on the TAG approach, versus the cost estimates for each of the noise mitigation options under review for the PIA. The difference in estimated costs is presented alongside the cost benefit ratio (the ratio of cost over benefit).

A cost benefit ratio of less than 1.0 indicates that the monetised health benefits outweigh the costs, the lower the value the stronger the cost benefit.

[141] Noise Assessment Report for the Ballycummin Hotspot: Cost Benefit Analysis of Noise Mitigation Options along the M20 Motorway, Limerick City and County Council, September 2021.
[142] Noise Assessment Report for the Castletroy/Monaleen Hotspot: Cost Benefit Analysis of Noise Mitigation Options along the M7 Motorway, Limerick City and County Council, September 2021.
[143] A new method for measuring noise pollution in real life from a passenger cat, T. Antoine, UNECE TF-VS Meeting, July 2023. Available at: https://wiki.unece.org/pages/viewpage.action?pageId=198675224 [Accessed December 2023]

6.4 Recommend Noise Mitigation Measures for Priority Important Areas

Following the cost-benefit analysis, those noise mitigation measures, or combination of measures, with cost benefit ratios below 1.0 are assessed to provide greater monetised health benefits than the 60 year appraised costs. The result of the cost-benefit analysis will enable all noise mitigation scenarios to be compared with each other.

It is recommended that the most cost-effective noise mitigation measures, or combination of measures, are proposed to the relevant departments, organisations and fund holders to be incorporated within their future work plans, even if the cost-benefit ratio is not less than 1.0 the overall health benefit of the noise reduction may be considered for implementation. Where funding is available and approved, the recommended noise mitigation measures may be implemented. Ideally, once the mitigation measures have been implemented, post-completion noise measurement surveys are conducted to confirm the predicted noise reduction, in line with Section 6.1.1 above.

7 Quiet Areas

The Regulations also require that noise action plans aim to avoid and prevent the harmful effects due to long-term exposure to environmental noise. This section presents the recommended approach for noise action plans in helping to avoid and prevent harmful effects of environment noise in the future, and, where supported by location-specific evidence and research, to preserve quiet areas, in support of these objectives. Under the Regulations an Action Planning Authority (APA), may (but are not obliged to) delimit quiet areas within agglomerations[144], following consultation with the Agency and subject to the approval of the Minister.

7.1 Quiet Areas Inside Agglomerations

Under the Regulations an Action Planning Authority (APA), may (but are not obliged to) delimit quiet areas within agglomerations[145], following consultation with the Agency and subject to the approval of the Minister.

The strategic noise maps developed under the Regulations provide an assessment of environmental noise levels across the whole of the agglomeration for roads, railways, industrial and air traffic noise sources; and therefore, may assist with the identification of quiet areas. At present there is no universally accepted definition of what constitutes a Quiet Area within an agglomeration, and thus a policy approach and some form of definition needs to be developed by the APAs and set out within the Action Plan.

Across Europe there have been a number of methods developed for defining quiet areas within agglomerations[146], including, but not limited to:

- Noise related criteria, based on the results of the strategic noise mapping or measurements;
- Land-use;
- Local amenity value;
- Accessibility;
- User and visitor experience, including soundwalks; and
- Stakeholder engagement, including workshops.

Where an APA is considering to delimit a quiet area, it is recommended that candidate quiet areas are first identified within the scope of developing the NAP, followed by a second stage to quantify and confirm quiet areas for agreement with the EPA with subsequent approval by the Minister during implementation of the NAP.

Given the divergence of approaches to the identification of quiet areas across Member States, the identification and evaluation of quiet areas within agglomerations in Ireland could benefit from a consistent approach and clear definition.

The EPA Research Programme is a Government of Ireland initiative funded by the Department of the Environment, Climate and Communications. EPA Research Reports have aims including improving the health and wellbeing of everyone in Ireland, and several research projects have focused on the identified evidence for direct positive relationships between the presence of green and blue spaces with health indicators including self-reported health, mortality and

[144] Regulation 10(1)
[145] Regulation 10(1)
[146] European Environment Agency, Good practice guide on quiet areas, EEA Technical report, No 4/ 2014. Available at: https://www.eea.europa.eu/publications/good-practice-guide-on-quiet-areas [Accessed December 2023]

disability.

The EPA Research and other Reports that could also be relevant to considerations around delimiting quite areas are available as follows:

- GBI-Health Project: *Research 264: Green and Blue Spaces and Health: A Health-led Approach*[147]
- Eco-Health Project: *Research 328: Eco-Health: Ecosystem Benefits of Greenspace for Health*[148]
- Near-Health Project:
    - *Research 348: Nature and Environment to Attain and Restore Health (NEAR Health)*[149]
    - *NEAR Health Toolkit*[150]
- EPA-HSE ESRI project: Evaluating health benefits derived from Green and Blue spaces using a choice experiment survey - *Research 295: Research on Aspects of Ireland's Environment, Consumer Behaviour and Health: ESRI Environment Research Programme 2016–2018*[151]
- Urban green space, public health, and environmental justice: the challenge of making cities 'just green enough', Wolch et al., 2014[152]
- Quiet areas, soundscaping and urban sound planning, EPA Network, February 2022[153].

Based on the above references, within the context of defining quiet areas within agglomerations under the Environmental Noise Regulations and for the purposes of developing the NAPs, it is recommended that green and blue spaces may be defined as follows:

Definition: Green Space

The term green space is used to refer to all terrestrial outdoor, natural or semi-natural surfaces or settings or features with potential for the promotion of human health and wellbeing. Within urban areas, public green space includes parks and reserves, sporting fields, riparian areas such as streams and riverbanks, greenways and trails, community gardens, street trees and nature conservation areas, as well as less conventional spaces such as green walls, green alleyways and cemeteries. Private green space includes private backyards, communal grounds of apartment buildings and corporate campuses (Wolch et al., 2014). Within the rural environment, green spaces may be more extensive, including greenways, blueways (e.g., river corridors, coastal paths), peatways, forests/woodlands and accessible trails (e.g., rights of way). Green spaces provide essential ecosystem services and are components of green infrastructure.

[147] Available at: https://www.epa.ie/pubs/reports/research/health/research264.html [Accessed December 2023]
[148] Available at: https://www.epa.ie/pubs/reports/research/health/research328.html [Accessed December 2023]
[149] Available at: https://www.epa.ie/pubs/reports/research/health/research348.html [Accessed December 2023]
[150] Available at: https://www.epa.ie/pubs/reports/research/health/nearhealth-toolkit.html [December August 2023]
[151] Available at: https://www.epa.ie/pubs/reports/research/health/research295.html [Accessed December 2023]
[152] Available at: https://www.sciencedirect.com/science/article/abs/pii/S0169204614000310 [Accessed December 2023]
[153] Available at: https://epanet.eea.europa.eu/reports-letters/reports-and-letters/interest-group-noise_quiet-areas-soundscaping-and-urban-sound-planning.pdf/view [Accessed December 2023]

Definition: Blue Space

The term blue space is used to refer to all visible, outdoor, natural surface waters (e.g., rivers, lakes, coasts, sea) with potential for the promotion of human health and wellbeing.

The relationship between green and blue spaces in the context of quiet areas is the identification of those areas that fall under the remit of the State. These are primarily areas which are public open spaces, including:

- Recreational areas;
- Playing fields;
- Playgrounds;
- Public parks and gardens;
- Beaches;
- Nature reserves;
- Cemeteries;
- River banks; and
- Canals.

It is also worth noting that under the Regulations[154] some sensitive areas are highlighted for noise protection and that:

> *"These Regulations shall apply to environmental noise to which people are exposed, in particular in built up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, near hospitals and near other noise-sensitive buildings and areas."*

There is currently no single spatial data source in Ireland that comprehensively delimits all areas meeting the primary and other area descriptions listed above. APAs will be required to interrogate available datasets and identify those which are deemed to meet the descriptions. Example spatial data sources available to APAs, include but are not limited to:

- National Land Cover Map for Ireland, 2022[155];
- OSi Prime2 data;
- Corine Land Cover and Land Use Data 2020;
- Urban Atlas 2018;
- GeoDirectory;
- Department of Education open data; and
- HSE open data.

The areas identified as meeting the primary and other areas descriptions are Potential

[154] Regulation 4(2)

[155] Available at: https://www.epa.ie/our-services/monitoring--assessment/assessment/mapping/national-land-cover-map/ [Accessed December 2023]

Candidate Quiet Areas (PCQAs). In many instances, high numbers of PCQAs may be identified through this process. Where necessary, it will be the responsibility of the APAs to prioritise evaluations of those PCQAs more likely to be of significant community benefit, with the aim of creating urban oases, and with the aim that a large share of the population has access to quiet areas, for instance, Parks. In general, areas greater than 1 hectare may be considered of greater benefit for example.

As with the identification and assessment of PIAs for noise mitigation, it is recommended that, where they are being considered, quiet areas within agglomerations are addressed in a two stage process:

1. The first stage is undertaken during the development of the noise action plan, where Candidate Quiet Areas (CQAs) are identified based on analysis of the PCQAs using recommended criteria and local factors. CQAs are those which the APAs identify within the noise action plans as locations which they will commit to address during the implementation of the noise action plan. These CQAs are to be selected using the criteria set out below.
2. For each of the CQAs, an investigation of the area is undertaken during implementation of the NAP. It is recommended that this assessment includes noise monitoring, an assessment of the acoustic environment and a review of the amenity value of the area in line with the recommended approach set out below.

Based on the outcome of the investigation, the CQA may then be considered by the APA as a recommended area to be delimited as a Quiet Area following agreement with the EPA, with subsequent approval by the Minister.

Based on the results of the Round 4 strategic noise mapping across the three agglomerations, a centralised GIS process has been used to identify PCQAs, which were then passed to the agglomeration APAs who identified the CQAs for inclusion within the NAPs.

7.2 Candidate Quiet Areas (CQAs) within Agglomerations

It is relevant to consider that some public open spaces, which an APA may wish to protect through designation as quiet areas, may currently have low levels of environmental noise as indicated by the strategic noise mapping, yet have much higher existing noise levels due to other noise sources not considered within the scope of the mapping, such as recreation, entertainment or neighbourhood noise. Similarly, there may be other areas which an APA may wish to designate as quiet areas, due to usage and utility, despite having a reasonably high level of environmental noise as indicated by the strategic noise mapping.

For these reasons, it is proposed that CQAs may be considered to be either:

- **Absolute quiet areas:** where environmental noise levels are low and aim to be preserved; or
- **Relative quiet areas:** where environmental noise levels are relatively low in comparison to levels of noise exposure within nearby residential areas.

A PCQA can also be determined to be a CQA where the APA identifies it to be an area which it would like to protect through designation due to other considerations, such as levels of public usage and/or importance as a community asset. These PCQAs are referred to as ‘other’ CQA.

The process for identifying CQAs is relatively complex but can be automated in a few steps within modern GIS (geographical information system) software, see Figure 7.1 below, resulting in a graphical map showing CQAs.

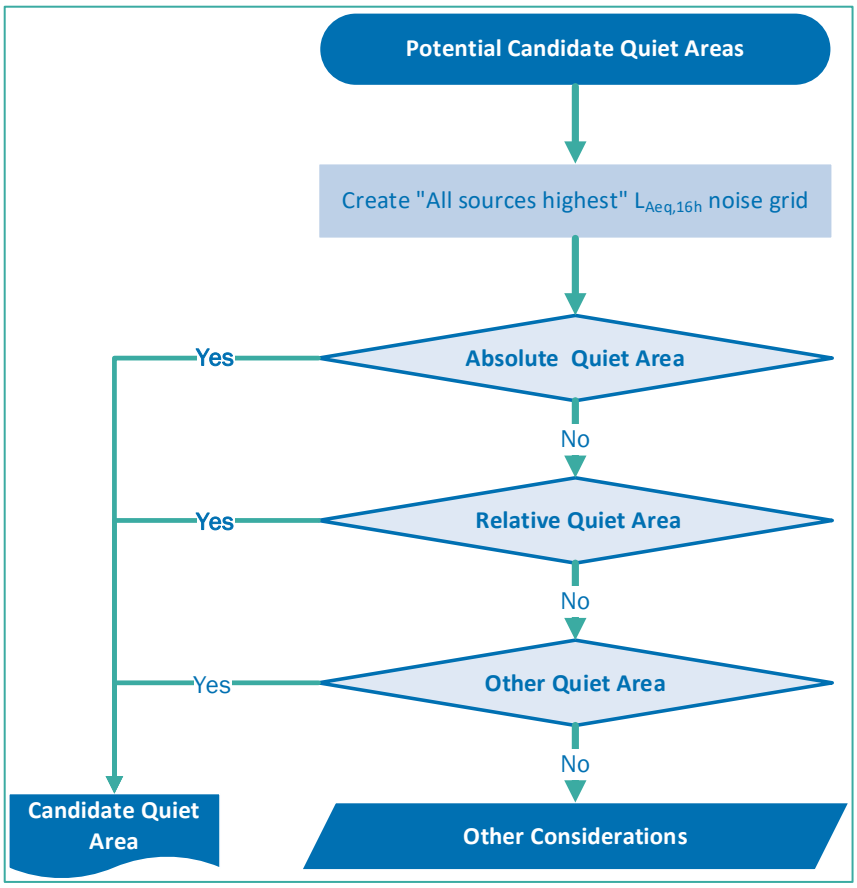


Figure 7.1: Process for Candidate Quiet Area Identification

7.2.1 Absolute quiet areas within Agglomerations

Absolute quiet areas are those where environmental noise levels are low. The identification of absolute quiet areas within agglomerations in previous rounds of strategic noise mapping has been limited by the lack of available noise data below 55 dB L_{den}. This is the threshold for mandatory reporting under Annex VI of the END, and therefore Member States are not legally obliged to report at levels below this.

The fourth round strategic noise mapping has enabled the determination of transport and industrial noise levels within agglomerations to lower levels than in previous rounds of strategic noise mapping. This will be beneficial in identifying absolute quiet areas in agglomerations.

Due to the +10 dB(A) weighting of the L_{night} level when calculating the L_{den} indicator level, there is the potential for the L_{den} to be strongly affected by the weighted night-time noise level, therefore the $L_{Aeq,16hr}$ noise metric, which encompasses the daytime and evening periods, is recommended as being an appropriate noise indicator to identify public open spaces with low environmental noise levels.

Table 7.1 summarises the perceived acoustic quality of a space based, on its sound-pressure level in $L_{Aeq,16hr}$. It shows that a threshold of around 50 dB(A) equates to approximately 50 % of

visitors perceiving the acoustic quality as good.[156], but the European Environment Agency, *Quiet areas in Europe*, guidance highlights that the capacity of a noise to induce annoyance depends not only on the sound pressure level but upon all its physical characteristics including spectral characteristics and variations of these properties over time.

Table 7.1: Sound-pressure levels related to perceived acoustic quality / appreciation[157]

Sound-pressure levels (L_{Aeq}, L_{day})	Perceived acoustic quality / appreciation (*)
< 45 dB	~100% of visitors perceive acoustic quality as good
45 – 55 dB	~50% of visitors perceive acoustic quality as good
> 55 dB	% of visitors perceiving acoustic quality as good falling rapidly with rising sound-pressure levels
Note: (*) Besides sound-pressure levels, the score depends on other area qualities (e.g., visual quality, air quality and perceived types of sounds: human, nature and technology) as well as on the correlation of theses with the users' activities and expectations.	

7.2.2 Relatively quiet areas in Agglomerations

Within large urban agglomerations there are many accessible public open green and/or blue spaces which are exposed to environmental noise levels above 50 dB $L_{Aeq,16hr}$, which would not be identified as candidate quiet areas based on the absolute sound level threshold. However, the research previously identified has found that they do provide potential benefits to people's physical and mental health and wellbeing, for this reason it is proposed to use a second criteria to identify relatively quiet areas, which are exposed to lower levels of noise than the nearby residential areas.

It is recommended that the area within 1,000m radius around each accessible public open space is assessed, as this approximately represents a 10-minute walk, and therefore provides an indicator for a community asset.

Similar to the approach for the absolute quiet areas, the relatively quiet areas would be characterised by the 'representative quiet area noise level', which is compared with the noise exposure experienced by people living within 1000m of that area.

Guidance Note 38: Absolute Quiet Area within agglomerations – Threshold Criteria

Potential Candidate Quiet Areas (PCQAs) identified as Candidate Quiet Areas (CQAs) are those where the highest noise levels from the separate transportation and industrial sound sources considered under the Regulations has a spatially determined median noise level less than 50 dB $L_{Aeq, 16hr}$. This is referred to as a the 'representative quiet area noise level'.

[156] WHO, 1999, Guidelines for Community Noise, Berglund, B., Lindvall, T. and Schwela, D.H. (eds), World Health Organization, Geneva.

[157] European Environment Agency, Quiet areas in Europe, EEA Technical report, No 14/ 2016, Table 3.2. Available at: https://www.eea.europa.eu/publications/quiet-areas-in-europe [Accessed December 2023]

Guidance Note 39: Relatively Quiet Area within agglomerations – Population and noise levels

The assessment of the estimated number of people in dwellings within 1,000m of each Potential Candidate Quiet Area (PCQA) should be determined using the population distribution data assigned to buildings in line with the methodology described in in Annex II of the END, and the guidance provided in the *EPA Guidance Note for Strategic Noise Mapping – Part 2: Calculation Methodology and Noise Modelling* (2024).

The level of noise exposure experienced by this population may be assessed based on the calculated façade receiver levels from the strategic noise mapping in line with Annex II of the END.

7.2.3 Quiet Areas in Agglomerations - Investigations during NAP Implementation

For each of the CQAs, it is recommended that an investigation of the area is undertaken during implementation of the NAP. It is recommended that the investigation could include aspects such as those set out below.

When undertaking the investigation with a view to delimit a quiet area, it is worthwhile reviewing the following reports and guidelines:

- Potential quiet areas in END agglomerations, ETC/ATNI[158];
- Quiet areas, soundscaping and urban sound planning, EPA Nework[159]; and
- Good practice guide on quiet areas, European Environment Agency[160].

Guidance Note 40: Relatively Quiet Area within agglomerations – Threshold Criteria

The Potential Candidate Quiet Area (PCQA) identified as Candidate Quiet Areas (CQAs) are those where more than 25% of the population within 1,000m have a noise exposure which is more than 10 dB greater than the assessed representative quiet area noise level.

A reduction in 10 dB represents a 10-fold decrease in sound intensity, and a halving in loudness, and therefore a contributing factor to relative perceived quiet.

It is recommended that the investigation prior to proposed designation of a quiet area within an agglomeration could consider the following aspects:

- Population within 1,000m;
- Area (m^2);

[158] *Potential quiet areas in END agglomerations. Population accessibility to quiet green urban areas using road and air traffic noise contour maps and Urban Atlas 2018*, ETC/ATNI Report 4/2021. Available at: https://www.eionet.europa.eu/etcs/etc-atni/products/etc-atni-reports/etc-atni-report-4-2021-potential-quiet-areas-in-end-agglomerations-population-accessibility-to-quiet-green-urban-areas-using-road-and-air-traffic-noise-contour-maps-and-urban-atlas-2018 [Accessed December 2023]

[159] *Quiet areas, soundscaping and urban sound planning*, European Network of the Heads of Environment Protection Agencies, M+P, December 2021. Available at: https://epanet.eea.europa.eu/reports-letters/reports-and-letters/interest-group-noise_quiet-areas-soundscaping-and-urban-sound-planning.pdf/view [Accessed December 2023]

[160] Good practice guide on quiet areas. EEA Technical report No 4/2014. Available at: https://www.eea.europa.eu/publications/good-practice-guide-on-quiet-areas [Accessed December 2023]

- Area (m^2), and % area <45 dB $L_{Aeq,16hr}$;
- Stakeholder engagement;
- Sound pressure measurements;
- Visitor experience;
- Expert assessments; and
- Other local community evaluation criteria.

In order to assess some of these aspects, such as visitor experience and stakeholder engagement, and to greater understand the value of the area to the local community, it may be worthwhile undertaking engagement within the area, or evaluate the soundscape[161] through organised soundwalks[162], or promote the use of the Hush City[163] app. There are also other initiatives such as nominating the proposed quiet area as a Quiet Park[164] that might be of interest to APA's.

Following the consultation process, the final proposal for delimiting as a quiet area may be drawn up for consultation with the EPA and is subject to the approval of the Minister[165].

Guidance Note 41:

Following the investigation of the CQA and a recommendation to delimit as a quiet area, it is recommended to take the proposal to consultation with the public, the EPA, DECC, DHLGH and other relevant stakeholders. Note that delimiting quiet areas is subject to the approval of the Minister.

Guidance Note 42:

Once the Quiet Area within an agglomeration has been proposed for delimiting, an accompanying statement could be proposed setting out how the Local Authority may help to protect the quiet area. It may be appropriate that draft versions of any statement, and associated measures, could form part of the consultation process.

7.3 Quiet Areas in Open Country and Research Needs

Under the Regulations APAs may (but are not obliged to) identify areas to delimit as quiet areas in the open country further to detailed research, evidence and analysis[166], subject to consultation with the Agency and with the approval of the Minister. The regulations describe this as an area is that it is "*undisturbed by noise from traffic, industry or recreational activities*.

[161] See ISO 12913 Acoustics – Soundscape series of standards.
[162] *A citizen science and soundscape approach to the investigation of quiet areas for Limerick City*, S. Jennings et al., Forum Acusticum 2023.
[163] Available at: https://map.opensourcesoundscapes.org/view-area [Accessed December 2023]
[164] Available at: https://www.quietparks.org/about [Accessed December 2023]
[165] Regulation 10 (1)
[166] Regulation 10 (2)

As background on this topic of quiet areas in open countryside there is research into rural quiet areas such as that by Waugh and Durucan[167] and Symonds Group[168]. Also, the topic of quiet areas in the open countryside is potentially an area for further research in the Irish context to gather data that might be useful for policy decisions under these regulations. In the context of the scope of the Environmental Noise Regulations it can be seen that extent of the strategic noise mapping under the Regulations will not provide the necessary data and mapping resource which could be used to help identify quiet areas in open country. Actions to identify quiet areas within the open countryside will need to be supported by research and an evidence base prior to being potentially delimited as quiet areas in open country as set out within the Regulations.

Guidance Note 43:

In the context of the Regulations and the section covering the possibility to delimit quiet areas in open countryside in consultation with the Agency and subject to approval of the Minister, further research is needed prior to considering the delimiting of such areas.

Both reports mentioned above recommend that a programme of further research should be instigated for the purpose of providing effective guidance in relation to the identification and management of Quiet Areas in open countryside including:

(i) Investigations into the Public Attitudes and Expectations of Quiet Areas, both rural and urban.

(ii) Cost benefit analysis of quiet areas

(iii) Investigation into the health and other benefits of quiet areas.

(iv) Investigation into the possible means of quantifying the noise climate of rural quiet area especially the means of measuring and predicting the number of noise incursions.

(v) Development of the means for lucid and simple descriptions of the noise climate of relatively quiet areas.

(vi) Investigations into appropriate and reliable means of mapping quiet areas

[167] Environmental Protection Agency, Environmental Quality Objectives – Noise in Quiet Areas (2000-MS-14-M1), Environmental RTDI Programme 2000 – 2006. (Authors Waugh, D., Durucan, et. al.), 2003.

[168] Symonds Group Ltd. *Report on the definition, identification and preservation of urban and rural quiet areas*. Final Report 4E 59492, 2003. Symonds Group Ltd, East Grinstead, UK.

8 Other Considerations for Local Authorities

Under the Regulations covering action plans it is recognised that local authorities should cover aspects which they intend to take in the fields within their competence [169].

The information in this section is for background information, and those developing the plans in the local authority should engage directly with their planning directorate around these broader aspects covering for example traffic planning and land-use management.

APAs should develop an integrated approach around noise and engage with their planning directorate around covering any guidance considered appropriate for management of noise. Some local authorities have developed their own internal procedures and guidance on noise and planning aspects that might be a relevant consideration at a local level.

In addition to noise reduction, the END aims to avoid and prevent the harmful effects due to exposure to environmental noise. This for example can be achieved through a combination of the existing noise control measures, outlined within the Action Plan, and any further actions proposed as part of the Action Plan. Those developing the noise action plans could collaborate and consult with colleagues in the planning directorate around broader noise management, development and planning aspects and any related work around avoiding and preventing the harmful effects due to long-term exposure to environmental noise from transport sources covered by the directive.

Outside of these regulations local authorities also have separate planning roles to consider around the potential noise impact of a proposed future development in the context of the existing ambient noise levels from transport sources covered by the directive and have opportunities to liaise with the relevant planning or roads directorate around any relevant guidance on control of noise exposure from these transport sources for noise sensitive premises. In the majority of cases, it would be expected that this would be addressed through relevant provisions of the planning process, including existing requirements for Environmental Impact Assessments where necessary, but may also include the provision of licenses for some regulated industrial operations in the agglomerations. It is important to recall that environmental noise impact may not be assessed in isolation, rather taken into consideration and balanced with other relevant factors including sustainability, economic and social benefits etc.

In the broader context there are two main scenarios relevant to local noise management where noise could be viewed as a pressure in the context of considering noise action areas.

The first is bringing people to noise such as new housing, hospital, school, nursing home etc developments near to existing road, rail, airport or industrial noise; and noise levels outside the façade, in gardens, in public open spaces, and noise levels inside the building. The second is bringing noise to people such as new or altered roads, railways, airports or industrial sites which would alter the noise environment in the vicinity of noise sensitive locations. Experience in other EU countries suggests that the guidance and/or limit values for the two types of scenarios are not necessarily the same, and that extent of change may be as relevant to the consideration of impact as the actual level of noise.

The action plan could where appropriate and in collaboration with the planning directorate outline some of the main noise elements that are relevant to implementing the aims of the END that would need to be considered to avoid, prevent or reduce the harmful effects due to environmental noise exposure such as demonstrating a good acoustic design process, observing internal noise level guidelines, and undertaking an external amenity area noise

[169] Fourth Schedule

assessment.

Transport Infrastructure Ireland (TII) is involved in the Conference of European Directors of Roads (CEDR) Noise Group which have produced a number of technical roads reports[170] that could be of interest for traffic planning and action plans, including:

- SOPRANOISE Project Final Report, CR 2022/09, November 2022;
- ON-AIR Guidance Book on the Integration of Noise in Road Planning, CR 2017/03, December 2017;
- State of the art in managing road traffic noise: noise-reducing pavements, TR 2017/01, January 2017;
- Technical Report 2017-02: State of the art in managing road traffic noise: noise barriers, TR 2017/02, January 2017;
- Technical Report 2017-03: State of the art in managing road traffic noise: cost-benefit analysis and cost-effectiveness analysis, TR 2017/03, January 2017.

TII is also developing a series of environmental guidelines to facilitate further the integration of various environmental issues into national road scheme planning[171].

Local Authorities in the broader context should also be aware of that in 2018, the Government published the National Planning Framework 2040[172] (NPF 2040), as the overall spatial planning and development strategy for Ireland. It sets out a range of high-level national policies and objectives, essential to achieving proper planning and sustainable development, with a clear vision to guide future development and investment decisions in the State. These national objectives cover a wide variety of policy areas relevant to the proper planning of the built and natural environment in conjunction with National Policy Objective 65, which seeks to:

> *"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."*

The NPF 2040 is currently being revised and the APAs should also engage with the planning directorate around any changes regarding noise.

This policy objective is only one of a range of policies that must be carefully balanced and considered in order to ensure that the objectives of the National Planning Framework can be met. The full suite of objectives of the National Planning Framework, therefore, in addition to those of the three Regional Spatial and Economic Strategies that flow from it, should be considered by the LAs when developing their noise action plans.

There is international guidance on the broader understanding of these noise aspects and for information around integrating noise actions with other areas, such as climate measures and energy efficiency projects. For example, further to publishing ProPG[173] in 2017, in Association of Noise Consultants (ANC) and Institute of Acoustics (IOA) jointly published *Acoustic Ventilation and Overheating, Residential design Guide*[174] *(AVO)* in 2020 which provides an approach as to how the competing aspects of thermal and acoustic comfort can be managed, which is particularly important in situations where acoustic requirement may call for closed

[170] Available at: https://www.cedr.eu/publications#!?keyword=noise [Accessed December 2023]
[171] Available at: https://www.tii.ie/technical-services/environment/planning/ [Accessed December 2023]
[172] Available at: https://www.npf.ie/project-ireland-2040-national-planning-framework/ [Access December 2023]
[173] ProPG: Planning and Noise, ANC, IOA and CIEH. Available at: https://www.association-of-noise-consultants.co.uk/propg/ [Accessed December 2023]
[174] Available at: https://www.association-of-noise-consultants.co.uk/wp-content/uploads/2019/12/ANC-AVO-Residential-Design-Guide-January-2020-v1.1-1.pdf [Accessed December 2023]

windows. The AVO guidance is designed to be used after reasonably practicable attempts to use Good Acoustic Design to achieve the internal target levels recommended by the ProPG have been exhausted[175]. ProPG applies to the planning system in England and **there is currently no national planning guidance in Ireland**.

Background Case Study: ProPG Planning and Noise Guidance

In May 2017, the UK Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) issued the practical ProPG planning and noise guidance note (https://www.association-of-noise-consultants.co.uk/propg/). The CIEH, IOA and ANC worked together to produce this guidance 'which encourages better acoustic design for new residential development and aims to protect people from the harmful effects of noise'.

This UK Guidance has been produced to provide practitioners with guidance on a approach to the management of noise within the planning system in England, and it encourages improved standards of design. This approach provides opportunities to incorporate effective design interventions for noise that will enable residential development to proceed in areas that might otherwise have been considered unsuitable. For those situations where it is not appropriate to build new dwellings, the guidance assists as it encourages early identification of the risk of refusal and supports early decision making – thereby avoiding unnecessary development and design costs.

Under the Regulations, the action plans may also cover actions which the action planning authorities intend to take in the fields within their competence around for example technical measures at noise sources, selection of quieter sources and reduction of sound transmission. Where appropriate and where such information is available, it may be stated how many persons live in buildings that have special insulation against noise[176], or in buildings with a quiet facade. Therefore, this is an area of environmental noise management which the APAs may consider appropriate for discussion within the NAP having regard to their broader remit as local authorities covering planning etc.

Some background information and noise management topics that might be covered at this building scale level includes aspects around aiming to achieve target internal noise levels within noise sensitive rooms such as living rooms and bedrooms, due to noise break-in from existing external sources, such as roads or railway lines, also considering any technical standards that provide guidance on suitable internal noise levels within residential properties[177], whilst further guidance on suitable internal levels in other noise sensitive premises are available from the WHO and others[178]. When aiming to achieve target internal noise levels, supporting evidence in respect of the façade's resistance to sound transmission for example is used, which could be in the form of suitable certified test results or

[175] Joint statement regarding ProPG (Professional Practice Guidance: Planning & Noise) and AVO (Acoustics, Ventilation & Overheating) Guide, IOA, ANC, CIEH, January 2022. Available at: https://www.ioa.org.uk/news/joint-statement-regarding-propg-professional-practice-guidance-planning-noise-and-avo-acoustics [Accessed December 2023]

[176] Fifth Schedule of the Regulations, 1.5

[177] For example, BS 8233:2014. Guidance on sound insulation and noise reduction for buildings. British Standards Institution (BSI), London 2014.

[178] WHO Guideline values 2000, BS 8233:2014 and CIRIA/BRE (Miller, J, *Sound control for homes (R127M)*, CIRIA/BRE, 1993.)

calculations[179].

When considering noise at the receptor and building level, another important noise management aspect is the layout of the development and the façade orientation, location of noise sensitive rooms within the building and location of amenity open spaces. A number of approaches to building design and site layout are discussed in published international reports[180] [181] [182] and more recently within ProPG. These types of approaches may result is "quiet facades" not directly exposed to environmental noise when the other side of the building may be. It is typical in such cases to place amenity spaces, such as living rooms and bedrooms, on the quiet façade, and noise insensitive rooms on the other, such as bathrooms, kitchens etc. As indicated above the APAs should aim to develop a collaborative approach and engage with their planning directorate around any aspects considered appropriate for management of the noise from sources covered under the regulations.

Guidance Note 44:

It is recommended that those developing the NAP consult with colleagues in other relevant departments/directorates around any existing local planning policies or national planning guidance or policy (when such is developed) relating to the management of environmental noise and that these are discussed as relevant in the plan and their effectiveness reviewed, within the context of considering actions related to traffic planning and land-use planning in the field of competence of the APAs.

[179] Using the methodology within BS 8233 or BS EN 12354-3. BS 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, London 2017.

[180] Mayor of London, *Sounder City – The Mayor's Ambient Noise Strategy*, March 2004. Available at: https://www.london.gov.uk/sites/default/files/mayors_noise_strategy.pdf [Accessed December 2023]

[181] Higgitt, J., Whitfield, A. and Groves, R., *Quiet Homes for London: Review of Options an Initial Scoping Study – Final Report*, Prepared for Greater London Authority, July 2004.

[182] Available at: https://www.polisnetwork.eu/wp-content/uploads/2019/06/silence_handbook_local-noise-action-plans-2.pdf [Accessed December 2023]

9 SEA and AA

Noise action plans may be considered to fall within the scope of plans and programmes within the context of the EU Directive on Strategic Environmental Assessment, and Appropriate Assessment. An overview is provided below to assist APAs in understanding their obligations under the legislation.

9.1 Strategic Environmental Assessment (SEA)

Strategic Environmental Assessment (SEA) is a process for the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme, before a decision is made to adopt the plan or programme.

The purpose of the SEA process is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.

Strategic Environmental Assessment (SEA) of plans and programmes is required by European Directive 2001/42/EC[183] ('the SEA Directive'). For a specific range of land-use plans, this Directive is transposed into Irish law by the Planning and Development (Strategic Environmental Assessment) Regulations 2004), S.I. No. 436 of 2004[184], as amended by the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011, S.I. No. 201 of 2011[185].

For all other plans and programmes in Ireland (including other types of plans in the land-use planning sector), the SEA Directive is transposed into Irish law by the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004[186], as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011, S.I. No. 200 of 2011[187]. SEA is undertaken by a wide range of public authorities who are responsible for preparing plans and programmes.

Article 3 of the Directive states that an environmental assessment shall be carried out for all plans and programmes:

(a) which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 2011/92/EU (the EIA Directive)[188], or

[183] Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042 [Accessed December 2023]
[184] Planning and Development (Strategic Environmental Assessment) Regulations 2004, S.I. No. 436/2004. Available at: https://www.irishstatutebook.ie/eli/2004/si/436/made/en/print [Accessed December 2023]
[185] Planning and development (Strategic Environmental assessment) (Amendment) Regulations 2011, S.I. No. 201 pf 2011. Available at: https://www.irishstatutebook.ie/eli/2011/si/201/made/en/pdf [Accessed December 2023]
[186] European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004. Available at: https://www.irishstatutebook.ie/eli/2004/si/435/made/en/print [Accessed December 2023]
[187] European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011, S.I. No. 200 of 2011. Available at: https://www.irishstatutebook.ie/eli/2011/si/200/made/en/print [Accessed December 2023]
[188] Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, 13 December 2011, as amended by Directive 2014/52/EU, 16 April 2014. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02011L0092-20140515 [Accessed December 2023]

(b) which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC[189] (the Habitats Directive).

Article 2 of the Directive states that 'plans and programmes' shall mean plans and programmes, including those co-financed by the European Community, as well as any modifications to them:

- which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and
- which are required by legislative, regulatory or administrative provisions.

The SEA process includes provision for formal screening, scoping and assessment, where relevant.

It is noted that Noise Action Plans are considered to be a form of 'Transport' sectoral plan. Therefore, if an SEA is required for NAPs, they would fall under the remit of **S.I. 435**, as amended, and not S.I. 436 of 2004. Guidance on pre-screening checks may be found in Task 1.1 of the EPA report *Synthesis Report on Developing a Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland* [190]. An SEA decision tree can also be consulted in the EPA's Good Practice Guidance on SEA Screening (EPA, 2021) [191,].

Requirements for mandatory consultations with relevant environmental authorities are set out in S.I. 435 of 2004, as amended. The EPA's website has contact details for the relevant Environmental Authorities[192].

This SEA pre-screening process will assist the competent authority (plan making authority) to determine whether 'SEA' is required for Noise Action Plans. A copy of any decision regarding the pre-screening determination should be made available for public inspection at the relevant LA office, on the LA website, and it should also be notified to any Environmental Authorities already consulted.

The EPA has published *Good Practice Guidance for Strategic Environmental Assessment (SEA) Screening* (EPA, 2021)[193] which provides specific stand-alone guidance to assist plan or programme makers and SEA practitioners. It focuses primarily on plans/programmes in the non-land use sector in Ireland, and includes an elaboration of the steps needed for screening, the legislative landscape underpinning SEA screening, and step-by-step process and templates to assist in preparing the required documentation.

The SEA Directive and S.I. 435 of 2004, as amended by S.I. 200 of 2011, require a single public consultation process as part of the assessment of the draft plan (to be accompanied by an Environment Report). If 'full' SEA is required, the public consultation on the NAPs could be coordinated with the SEA public consultation to ensure integration between the two

[189] Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, 21 May 1992, as amended 1997, 2003, 2006 & 2013. Consolidated version available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701 [Accessed December 2023]

[190] Synthesis Report on Developing a Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland, EPA 2003. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/development-of-sea-methodologies-for-plans-and-programmes-in-ireland-.php [Accessed December 2023]

[191] https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/SEA_Screening_GoodPractice_2021.pdf [Accessed August 2024]

[192] Available at: www.epa.ie/monitoringassessment/assessment/sea/contacts/ [Accessed December 2023]

[193] Good Practice Guidance on SEA Screening, EPA 2021. Available at: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-screening-good-practice-2021.php [Accessed December 2023]

consultation processes.

An SEA decision tree can also be consulted in the EPA's Good Practice Guidance on SEA Screening (EPA, 2021) [194].

Guidance Note 45:

Where there are several LAs involved, such as in agglomerations, it may be advisable that the final agglomeration noise action plan is pre-screened (rather than each LA carrying out their own pre-screenings). The finalised agglomeration noise action plan would then be adopted by each LA.

It is recommended that each LA engages with the relevant SEA lead in their respective LAs to incorporate their SEA knowledge and experience. The NAPs may inform land use plans and associated zoning, measures and actions, however it should be noted that the statutory land use plan is the relevant document for decision making on planning applications.

If one or more of the agglomeration LAs decide that 'SEA' or 'AA' will be required following SEA pre-screening, then it is likely that there will be some implications for the adjoining agglomeration LAs. In this situation, the relevant LAs would then need to get some independent advice as to what, if any, the implications might be.

9.2 Appropriate Assessment (AA)

The National Parks & Wildlife Service (NPWS) provided revised guidance on *Appropriate Assessment of Plans and Projects for Planning Authorities* in 2010[195]. This guidance has been produced with reference to statutory planning processes. However, it is also of relevance to non-spatial/town planning land use plans.

The Guidance notes that the EU Birds and Habitats Directives set out various procedures and obligations in relation to nature conservation management in Member States in general, and of the Natura 2000 sites and their habitats and species in particular. A key protection mechanism, and the subject of this guidance, is the requirement to consider the possible nature conservation implications of any **plan or project** on the Natura 2000 site network **before any decision is made** to allow that plan or project to proceed.

Every new plan or project is captured by this requirement and each plan or project, when being considered for approval at any stage, must take into consideration the possible effects it may have in combination with other plans and projects when going through the process known as appropriate assessment. The concept of plan and project is extremely broad and is not limited to development planning and development management, covered by the Planning and Development Acts 2000, as amended. The obligation to undertake appropriate assessment derives from Article 6(3) and 6(4) of the Habitats Directive, and both involve several steps and tests that need to be applied in sequential order. Article 6(3) is concerned with the strict protection of sites, while Article 6(4) is the procedure for allowing derogation from this strict protection in certain restricted circumstances. The European Commission has also published guidance on Article 6 of the Habitats Directive, including on Appropriate Assessment

[194] https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/SEA_Screening_GoodPractice_2021.pdf [Accessed August 2024]

[195] Guidance on Appropriate Assessment for Planning Authorities, National Parks & Wildlife Service 2010. Available at: https://www.npws.ie/protected-sites/guidance-appropriate-assessment-planning-authorities [Accessed December 2023]

Screening[196].

Guidance Note 46:

The first test is to establish whether, in relation to a plan or project, that appropriate assessment (AA) is required. This is termed AA screening. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives. The need to apply the precautionary principle in making any key decisions in relation to the tests of AA has been confirmed by European Court of Justice case law. Therefore, where significant effects are likely, uncertain or unknown at screening stage, AA will be required.

Having regard to the considerations set out in the SEA section, it is also advisable that AA screening checks are carried out with reference to the NPWS Guidance.

[196] Available at: https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites_en [Accessed December 2023]

10 Public Consultation, Publication and Reporting

When the NAP, or revised NAP, or review of the NAP, has been made under the Regulations, it is required to consult with the public, and finalise the NAP following the consultation.

The finalised NAP should then be approved by the APA and published. Guidance on these two aspects is provided below.

10.1 Public Consultation

When the NAP, or revised NAP, or review of the NAP, has been made, under the Regulations, the action planning authorities shall ensure that[197]:

- The public are consulted on action plans, including reviews and revisions;
- The public are given early and effective opportunities to participate in the making and revisions of action plans;
- The results of the public participation are taken into account in finalising action plans or revisions of action plans;
- Reasonable time-frames are adopted for each stage of public participation.
- If the public participation process is simultaneous with any other European act, APAs may provide joint procedures[198].

Once the Draft NAP, draft revised NAP, or draft NAP review, has been prepared, a formal public consultation exercise should be undertaken. The Draft NAP needs to be issued for Public Consultation to all relevant stakeholders, and should include prominently displayed wording identifying them as a draft subject to the outcome of the Public Consultation process.

The Department of the Public Expenditure and Reform *Consultation Principles & Guidance*[199], 2016. The guidelines adopt a principles-based approach to public consultation, and aim is to improve transparency, responsiveness and accessibility of consultations. The key principles adopted in the guidelines are;

- Consultation with citizens must be genuine, meaningful, timely, balanced and with the ultimate objective of leading to better outcomes and greater understanding by all involved of the benefits and consequences of proceeding with a policy or legislation proposals.
- Consultation should be targeted at and easily accessible to those with a clear interest in the policy in question.

Guidance Note 47:

It is recommended that, where possible, the consultation process is planned and undertaken with regard to the Department of the Public Expenditure and Reform *Consultation Principles & Guidance.*

[197] Regulation 12(5)
[198] Regulation 12(6)
[199] Available at: https://www.gov.ie/en/publication/e9b052-consultation-principles-and-guidance/ [Accessed December 2023]

Guidance Note 48:
Action Planning Authorities should allow a minimum of 6 weeks for online consultation, and a further 2 weeks for receipt of written submissions, for the general public to have adequate time to participate in this process.
It is also recommended that in parallel to the wider public consultation, the APAs proactively seek consultation from relevant stakeholders such as:

- Department of the Environment, Climate and Communications;
- Department of Transport
- Department of Housing, Local Government and Heritage;
- Environmental Protection Agency;
- APAs for adjacent areas, and neighbouring Member States;
- NMBs, such as: TII; Irish Rail; and daa;
- Local and regional authorities;
- relevant Special Policy Committees (SPCs);
- NGOs and professional bodies; and
- Local and national citizens groups.

Following the public consultation process the finalised NAP must contain a record of public participation, and the decisions taken in relation to action plans[200].

Guidance Note 49:
The APAs should examine and reflect upon the comments received, and complete the Noise Action Plan, including a description of the comments received during the consultation process, and a reasoned justification for the response to the issues raised summarised in an Appendix to the Noise Action Plan.

10.2 Publication

Within the context of the Regulations, and the Directive, the action plans are to serve as a public statement delivering the central tenet of the Directive to communicate to the public the effects of environmental noise, the extent to which environmental noise currently affects the area covered by the action plan, the proposed approach to managing noise issues and noise reduction where necessary.

The approval of the draft Noise Action Plan (NAP) is an Executive function of a local authority, noting that it is not listed as a reserved function under any of the Local Government Acts 1925 -2023. In the case of Limerick City and County Council however, the approval of a Noise Action Plan (NAP) is a function vested in the Mayor of Limerick under the Local Government (Mayor of Limerick) and Miscellaneous Provisions Act 2024. It is also advised that the draft NAP should also be presented to the relevant Special Policy Committees (SPCs) as part of the consultation process, and the complete plan can be brought to the full Council via the relevant SPCs for information purposes.

To this end information for the public on noise action plans, and their summaries, should be

[200] Regulation 12(5)

clear and comprehensible, and include a summary setting out the most important points[201].

Finalised NAPs, revised NAPs or NAP reviews, should be made available to the public within one month of the date they are finalised[202]. Dissemination to the public should be via any appropriate means, including through the use of available information technologies[203].

The publication and dissemination of the final NAP should follow the requirements of the European Communities (Access to Information on the Environment) Regulations 2007 to 2014 (S.I. No. 133 of 2007[204], S.I. No. 662 of 2011[205], S.I. 615 of 2014[206] and S.I. 309 of 2018[207]) (AIE Regulations), and the related guidance notes issued by the DECC[208], and the Ministerial guidelines on the implementation of the AIE Regulations[209].

Interactive versions of the Round 4 strategic noise maps may be found at:

- EPA Maps: https://gis.epa.ie/EPAMaps/
- TII noise maps: https://www.tii.ie/technical-services/environment/noise-maps/
- FCC ANCA: https://www.fingal.ie/news/2022-aircraft-noise-exposure-contour-maps-now-available

Guidance Note 50:

It is recommended that the final NAP, revised NAP or NAP review, is made available on the APAs website in electronic format, and in printed format at the APAs offices. The electronic version should be accompanied by:

- a clear summary of the NAP;
- information of the health effects of long-term exposure to environmental noise;
- copies of the strategic noise maps, and
- details of where interactive versions of the strategic noise maps may be found.

10.3 Reporting

10.1.1 Summary noise action plans

The APAs shall ensure that each action plan, revised action plan or action plan review, is submitted to the EPA using the templates from the EEA mandatory reporting mechanism,

[201] Regulation 13(2)
[202] Regulation 13(3)
[203] Regulation 13(1)
[204] Available at: https://www.irishstatutebook.ie/eli/2007/si/133/made/en/print [Accessed December 2023]
[205] Available at: https://www.irishstatutebook.ie/eli/2011/si/662/made/en/print [Accessed December 2023]
[206] Available at: https://www.irishstatutebook.ie/eli/2014/si/615/made/en/print [Accessed December 2023]
[207] Available at: https://www.irishstatutebook.ie/eli/2018/si/309/made/en/print [Accessed December 2023]
[208] Available at: https://www.gov.ie/en/organisation-information/1e52cb-access-to-information-on-the-environment-aie/ [Accessed December 2023]
[209] Available here: https://www.ocei.ie/Resources/ [Accessed December 2023]

Reportnet 3[210] [211] [212], or other templates provided by the EPA, along with metadata, within one month of being made[213]. Reportnet 3 is an electronic reporting mechanism that combines the requirements of the END and INSPIRE. Fundamentally it is a data model documentation of a series of related datasets. Additional guidance on reporting the summary noise action plans in line with EEA Reportnet 3 to the EPA will be provided as necessary.

The EEA have provided extensive documentation, templates, examples and training videos to support Round 4 reporting under the new Reportnet 3 platform. The primary format for the reporting of noise action plans will be GeoPackages and spreadsheets under Dataflow DF7_10. The GeoPackage encoding standard is an open format developed by the Open Geospatial Consortium (OGC)[214], and a GeoPackage is a SQLite container for the GeoPackage encoding standard, and may contain vector data, tables of attribute data, raster maps and extensions all within one package.

The Agency is to report the results of the strategic noise maps to the Commission within 6 months of the dates set out in Regulation 12[215] using the mandatory EEA Reportnet 3 data repository. In the event that the Agency wants to update information available to the data repository, it shall describe the differences between the updated and original information and the reasons for the update when making the updated information available to the data repository.

Regulation 2019/1010[216] on alignment of reporting obligations in the field of legislation related to the environment, and amending Directive 2002/49/EC. EU Regulation 2019/1010 was given full effect in Ireland through European Communities (Environmental Noise) (Amendment) Regulations 2021.

10.1.2 Annual progress report

Under the regulations, APAs are required to report annually to the EPA on all actions taken under each action plan or revised action plan in the previous year[217].

The annual NAP progress report is to be submitted by each APA to the EPA by 28th February each year[218], reporting action undertaken, and progress against the activities set out within the NAP during the previous calendar year. The EPA will issue a reporting template, or revised reporting template, for the annual report in advance.

The Environmental Noise Directive (ENDs) is currently one of the National Enforcement Priorities (NEPs) under the Air and Noise thematic area in the EPA Local Authority

[210] EEA Eionet Portal – Noise. Available at: https://www.eionet.europa.eu/reportnet/docs/noise [Accessed December 2023]
[211] Regulation 2019/1010[211] on alignment of reporting obligations in the field of legislation related to the environment, and amending Directive 2002/49/EC. EU Regulation 2019/1010 was given full effect in Ireland through European Communities (Environmental Noise) (Amendment) Regulations 2021.
[212] Commission Implementing Decisions (EU) 2021/1967[212] setting up a mandatory data repository and a mandatory digital information exchange mechanism in accordance with Directive 2002/49/EC, fulfils the requirement under Regulation 2019/1010 for an implementing act to establish mandatory reporting under the END to the EEA Reportnet platform. Commission Implementing Decision (EU) 2021/1967 is given full effect in the regulations through European Communities (Environmental Noise) (Amendment) Regulations 2021.
[213] Regulation 12 (9)
[214] Open Geospatial Consortium (OGC), GeoPackage. Available at: https://www.geopackage.org/ [Accessed January 2023]
[215] Regulation 14 (1)
[216] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R1010 [Accessed December 2023]
[217] Regulation 12 (10)
[218] Note; The 2024 summary NAP reports (Feb 25) will overlap between the end of Round 3 and the start of the Round 4 NAP process.

Environmental Enforcement Performance Framework[219]. The annual NAP Progress Reports will be assessed according to the Local Authority Environmental Enforcement Performance Framework Assessment Methodology and summarised in a report published by the EPA each year.

[219] Available at: https://www.epa.ie/our-services/compliance--enforcement/support-and-supervision-of-local-councils/la-performance/ [Accessed December 2023]

Appendix A: Glossary of Acoustic and Technical Terms

Term	Definition
AA	Appropriate Assessment
Absolute quiet area	Where environmental noise levels are low and aim to be preserved.
Agglomeration	Major Continuous Urban Area as set out within the Regulations
AMI	Acute Myocardial Infraction
ANCA	Airport Noise Competent Authority
APA	Action Planning Authority
Attribute Data	A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height
CBA	Cost Benefit Analysis
CHD	Coronary Heart Disease
CNG	WHO Community Noise Guidelines 1999
CNOSSOS-EU	Common Noise Assessment Methods for Europe, Directive 996/2015
CQA	Candidate Quiet Area
Data	Data comprises information required to generate the outputs specified, and the results specified
dB	Decibel
DECC	Department
EC	European Commission
ECAC	European Civil Aviation Conference
EEA	European Environment Agency
END	Environmental Noise Directive (2002/49/EC)
ENG	WHO Environmental Noise Guidelines for the European Region 2018
EU	European Union
GIS	Geographic Information System
HA	High Annoyance; means a feeling of displeasure, nuisance, disturbance or irritation caused by a specific sound, and in the context of the WHO guidelines and END it refers to long-term (chronic) noise annoyance
IA	Important Areas
ICAO	International Civil Aviation Organisation
IED	Industrial Emissions Directive 2010/75/EU on Industrial Emissions (Integrated Pollution Prevention and Control)
ISO	International Standards Organisation
LA	Local Authority
Metadata	Descriptive information summarising data
MIA	Most Important Areas
NAO	Noise Abatement Object
NAP	Noise Action Plan
NNG	WHO Night Noise Guidelines for Europe 2009
NMB	Noise Mapping Body
Noise Bands	Areas lying between contours of the following levels (dB): L_{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥75 L_d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥75 L_e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥75 L_n <45, 45-49, 50 – 54, 55 – 59, 60 – 64, 65 – 69, ≥70 Notes: It is recommended that class boundaries be at .00, e.g. 55 to 59 is actually 55.00 to 59.99 The assessment and reporting of the 45 – 49 dB band for L_{night} is optional under the Regulations

Term	Definition
Noise Levels	Free-field values of L_{den}, L_d, L_e, L_n, and $L_{Aeq,16h}$ at a height of 4m above local ground level
Noise Level - L_d - Daytime	L_d (or L_{day}) = $L_{Aeq,12h}$ (07:00 to 19:00)
Noise Level - L_e - Evening	L_e (or $L_{evening}$) = $L_{Aeq,4h}$ (19:00 to 23:00)
Noise Level - L_n - Night	L_n (or L_{night}) = $L_{Aeq,8h}$ (23:00 to 07:00)
Noise Level - L_{den} – Day/Evening/Night	A combination of L_d. L_e and L_n as follows: L_{den} = 10 * log 1/24 {12 * 10^((L_{day})/10) + 4 * 10^(($L_{evening}$+5)/10) + 8 * 10^((L_{night}+10)/10)}
Noise Mapping (Input) Data	Two broad categories: (1) Spatial (e.g. road centre lines, building outlines). (2) Attribute (e.g. vehicle flow, building height – assigned to specific spatial data)
Noise Mapping Software	Computer program that calculates required noise levels based on relevant input data
Noise Model	All the input data collated and held within a computer program to enable noise levels to be calculated.
Noise Model File	The (proprietary software specific) project file(s) comprising the noise model
NSAI	National Standards Authority of Ireland
NTA	National Transport Agency
OCQA	Other Candidate Quiet Area
ORM	Office of Radiation Protection and Environmental Monitoring
OSI	Ordnance Survey for Ireland (now under Tailte Eireann)
Output Data	The noise outputs generated by the noise model
PCQA	Potential Candidate Quiet Area
PIA	Priority Important Areas
Processing Data	Any form of manipulation, correction, adjustment factoring, or other adjustment of data to make it fit for purpose. (Includes operations sometimes referred to as 'cleaning' of data)
QA	Quiet Area
Raster Heat Map	A raster heat map shows the relative density of values at points using a colour scheme to indicate density value. In this case the value used is the number of people highly annoyed per $100m^2$.
Relative Quiet Area	Where environmental noise levels are relatively low in comparison to levels of noise exposure within nearby residential areas
RESPF	Renewable Electricity Spatial Policy Framework
RMO	Road Management Office
RSA	Road Safety Authority
SEA	Strategic Environmental Assessment
SMA	Stone mastic asphalt
SNM	Strategic Noise Map
Spatial (Input) Data	Information about the location, shape, and relationships among geographic features, for example road centre lines and buildings.
TAG	English Department for Transport, Transport Analysis Guidance
TII	Transport Infrastructure Ireland
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organisation
ZPAP	Zero Pollution Action Plan

Appendix B: Bibliography and References

EU Legislation

Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, 21 May 1992, as amended 1997, 2003, 2006 & 2013.

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, 27 June 2001.

Directive 2002/49/EC relating to the assessment and management of environmental noise, OJ L189/12-25, 18 July 2002.

Directive 2003/4/EC on public access to environmental information, 28 January 2003.

Directive 2006/93/EC on the regulation of the operation of aeroplanes covered by Part II, Chapter 3, Volume 1 of Annex 16 to the Convention on International Civil Aviation, second edition (1988), 12 December 2006.

Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE), 14 March 2007.

Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control), 24 November 2010.

Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, 13 December 2011, as amended by Directive 2014/52/EU, 16 April 2014.

Regulation (EU) No 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles, 15 January 2013.

Regulation (EU) No 167/2013 on the approval and market surveillance of agricultural and forestry vehicles, 5 February 2013.

Directive 2014/45/EU on periodic roadworthiness tests for motor vehicles and their trailers and repealing Directive 2009/40/EC, 3 April 2014.

Directive 2014/47/EU on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Union and repealing Directive 2000/30/EC, 3 April 2014.

Regulation (EU) No 540/2014 on the sound level of motor vehicles and of replacement silencing systems, and amending Directive 2007/46/EC and repealing Directive 70/157/EEC, 16 April 2014.

Regulation (EU) No 598/2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach and repealing Directive 2002/30/EC, 16 April 2014.

Directive (EU) 2015/996 of 19 May 2015 establishing common noise assessment methods according to Directive 2002/49/EC, OJ L168/1-823, 1 July 2015.

Regulation (EU) 2016/1628 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC, 14 September 2016.

Delegated Regulation (EU) 2017/1576 amending Regulation (EU) No 540/2014 of the European Parliament and of the Council as regards the Acoustic Vehicle Alerting System requirements for vehicle EU-type approval, 26 June 2017.

Corrigendum to Commission Directive (EU) 2015/996, OJ L5/35-46, 10 January 2018.

Regulation (EU) 2018/858 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles, amending Regulations (EC), No 715/2007 and (EC) No 595/2009 and repealing Directive 2007/46/EC, 30 May 2018.

Delegated Regulation (EU) 2019/839 amending Regulation (EU) No 540/2014 of the European Parliament and of the Council on the sound level of motor vehicles and of replacement silencing systems, 7 March 2019

Regulation 2019/1010 on alignment of reporting obligations in the field of legislation related to the environment, and amending Directive 2002/49/EC, OJ L 170, of 25 June 2019.
Regulation (EU) 2019/2144 of the European Parliament and of the Council of 27 November 2019 on type-approval requirements for motor vehicles and their trailers, and systems, components and separate technical units intended for such vehicles, as regards their general safety and the protection of vehicle occupants and vulnerable road users, amending Regulation (EU) 2018/858 of the European Parliament and of the Council and repealing Regulations (EC) No 78/2009, (EC) No 79/2009 and (EC) No 661/2009 of the European Parliament and of the Council and Commission Regulations (EC) No 631/2009, (EU) No 406/2010, (EU) No 672/2010, (EU) No 1003/2010, (EU) No 1005/2010, (EU) No 1008/2010, (EU) No 1009/2010, (EU) No 19/2011, (EU) No 109/2011, (EU) No 458/2011, (EU) No 65/2012, (EU) No 130/2012, (EU) No 347/2012, (EU) No 351/2012, (EU) No 1230/2012 and (EU) 2015/166, OJ L 325, 16th December 2019.

Directive (EU) 2020/367 of 4 March 2020 amending Annex III to Directive 2002/49/EC of the European Parliament and of the Council as regards the establishment of assessment methods for harmful effects of environmental noise, OJ L 67, 5 March 2020.

Regulation (EU) 2020/740 on the labelling of tyres with respect to fuel efficiency and other parameters, amending Regulation (EU) 2017/1369 and repealing Regulation (EC) No 1222/2009, 25 May 2020.

Delegated Directive (EU) 2021/1226 amending, for the purpose of adapting to scientific and technical progress, Annex II of Directive 2002/49/EC of the European Parliament and the Council as regards common noise assessment methods, OJ L269/65-142 of 28th July 2021, 21 December 2020

Implementing Decision (EU) 2021/1967 setting up a mandatory data repository and a mandatory digital information exchange mechanism in accordance with Directive 2002/49/EC of the European Parliament and of the Council, 11 November 2021

Judgement of the Court (Eight Chamber). European Commission v Portuguese Republic. Case C-687/20, 31 March 2022.

Irish Legislation

Road Traffic Act 1961, Revised, Updated to 16 May 2023, Number 24 of 1961.

Environmental Protection Agency Act, 1992 (Noise) Regulations, 1994, S.I. No. 179/1994.

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Appendix C: Guidelines on the Information to be contained in Noise Action Plans

The following is an indicative table of contents setting out the type of information which may be included within a noise action plan. Any items not specifically mentioned in this framework, but which are mentioned in the main body of the guidance document, the Regulations or Directive are still to be included.

Executive Summary

Table of Contents

1. **Introduction**
   - Policy Objective
   - Purpose
   - Scope
   - Consultation
   - Noise action Plan Timetable
2. **Noise and effects on Health and Quality of Life**
   - Noise Level Indicators
   - Effects on Health and Quality of Life
3. **EU Legal and Policy Framework**
   - EU Policy and Guidance
     - Zero Pollution Action Plan
     - EEA Reports
   - EU Regulations and Directive:
     - END
     - EU Regulation 598/2014
     - Other EU Legislation
4. **National Legal and Policy Framework, including:**
   - National Policy and Guidance
     - National Policy Objectives, such as noise, compact growth, regeneration, prioritisation of development in existing settlements, climate adaptation, integrated land use, and transport
     - EPA Guidance
     - TII guidance
     - National Planning guidance
   - National Legislation
     - Noise Regulations
     - EPA Act
     - IPPC/IED
     - Planning and Development Act
     - Building Regulations etc
     - include description of any statutory limit values in place or in preparation, including TII, IPPC/IED etc
   - Regional or local policy and guidance, including:
     - Planning policy

    - Regional roads
    - Local guidelines of use of EPA Act

5. **The Responsible Authority for Action Planning**
    - Name and contact details for the Responsible Authority
    - Description of other bodies of relevance
    - Description of associated working groups/steering groups, where relevant
    - Review of previous noise action plan
6. **Description of the Action Planning Area**
    - Extent of the area (e.g., boundaries of the agglomeration and how this was defined. In relation to the extent of major sources (rail, road, airport etc.) outside of agglomerations, the action plans must extend to "near" these sources. Thus, there needs to be a clear definition given for "near"
    - Description of the topography/ geographical location
    - Description of the general population (numbers, distribution patterns, housing types (single dwelling, multi-dwellings, etc.)
    - Location of noise sensitive groups (e.g., schools, hospitals and other noise sensitive buildings and areas)
    - Description of the main infrastructure/services
7. **Existing Noise Management Framework**
    - Roads
    - Railways
    - Licensed industrial facilities
    - Airports
        - Include, where relevant, descriptions of any noise-reduction measures already in force within the action planning area, or projects in preparation
8. **Summary of the results of the noise mapping**
    - Overview of the preparation of the noise map
        - Who, when, where etc
        - Data sources
        - Methodology
    - Presentation of results
        - Noise contour maps for action planning area
            - See Appendix E of EPA Guidance for recommended colour scheme for display of noise level bands
        - Summary exposure statistics for action planning area
        - Area, dwellings and people in various noise bands, per source
        - Harmful effects
9. **Identification of areas to be subjected to noise management activities**
    - Description of approach to identify IAs, MIAs and PIAs
        - MIAs identified
        - PIAs selected & rationale
    - Description of approach to identify Quiet Areas
        - Candidate Quiet Areas identified
10. **Mitigation and protection measures**
    - Description of how PIAs will be investigated

- Description of how candidate Quiet Areas will be investigated
- Discuss any known future developments within the action planning area and describe how noise impact from these are / will be managed
- Describe how extent of noise exposure levels will be confirmed
- Review of possible mitigation measures, where necessary
    - Discuss potential for noise mitigations measures
    - Discuss measures applicable at different levels of responsibility
    - Discuss potential noise reduction achievable, and costs associated (if known)
- Discuss how noise reduction effects of potential measures will be assessed
    - Discuss budgets, cost-effectiveness assessment, cost-benefit analysis etc.
    - Discuss how outcomes will be identified (selection of the most appropriate mitigation/protection measures)

11. Implementation Plan

    - Timescale e.g., 2024 – 2028, 2028 – 2033 etc).
- Roles and Responsibilities.
- Targets and Objectives.
    - Long term aims / objectives / strategy of APA regarding management of noise
    - Over life of plan, and beyond to subsequent rounds
- Programme of Works
    - Broken down per year
- Evaluation, Review and Corrective Action Programmes
    - Annual reporting to the EPA on progress
    - Ongoing review:
        - How often reviews of progress against the original programme of works will be undertaken,
        - An evaluation of the outputs of the measures taken and any corrective actions/changes to the original programme to be undertaken as a result of the evaluation
        - And who the responsible bodies are for this
    - End of Program review:
        - A description of how the progress and results of the Action Plan will be evaluated and measured in 2028 when the fifth round action plan is drawn up

12. Summary and Conclusions

Appendix A: Glossary of acoustic and technical terms

Appendix B: Bibliography and references

Appendix C: Strategic noise map(s)

    - See Appendix E of EPA Guidance for recommended colour scheme for display of noise level bands.

Appendix D: Public Consultation: Provide details of the public consultations organised in accordance with Regulation 12 (5) of the Regulations. Including the following, for example:

- Description of the consultations undertaken with the public on the proposed action plans including dates and duration of consultations and methods of consultation used e.g., newsletters, newspaper articles, public meetings, website etc.
- The results of the public participation and how these were taken into account in the finalisation of the action plans.
- Description as to how the public were informed of the decisions taken in relation to the action plans.

Note that the Regulations require that reasonable time frames be adopted to allow sufficient time for each stage of the public participation process.

Appendix D: Guidelines on review of Noise Action Plans

Based upon the minimum requirements, see Section 4, and the recommended contents, Appendix C, the following checklist sets out recommended aspects to be included within a noise action plan.

It is recommended that APAs undertake a review of the draft noise action plan against the checklist prior to public consultation, and again prior to publication, to ensure that all relevant aspects are included within the NAP.

No.	Guidance Page No.	Description	Requirement	Included in NAP? (Page reference)	Notes
1	P12 - 14	Effects of noise on health outlined	Recommended		
2	P14	Wider context of local and national policy considered	Recommended		
3	P15-17	Are internal resources used to make and implement noise action plan outlined	Recommended		
4	P15 & P21	Timetable – is timetable proposed which enables Action Plan to be reported on time	Recommended		
5	P29	Review of relevant Regional and Local policy or guidance on the management of environmental noise	Recommended		
6	P31	Agglomeration APAs coordinate to develop consistent approach	Recommended		
7	P31	Agglomeration LAs coordinate to avoid overlaps	Recommended		
8	P31	FCC consultation with adjacent affected APAs when drawing up major airport NAP	Recommended		
9	P31	ICAO balanced approach considered with NAPs which include airport noise	Recommended		
10	P32	Coordination with neighbouring APAs where noise from mapped sources crosses over County boundaries	Recommended		
11	P32	Consultation with EPA	Mandatory		
12	P32	Consultation with relevant NMBs	Mandatory		
13	P32	Review previous noise action plan – including reason for review	Mandatory		
14	P32	Co-operate with counterparts in neighbouring States, if applicable	Mandatory, if applicable		
15	P32	Measures determined to be included in NAP	Mandatory		
16	P32	Quiet areas delimited	Optional		
17	P33	Public have been consulted	Mandatory		
18	P33	Public were given early and effective opportunities to participate	Mandatory		

No.	Guidance Page No.	Description	Requirement	Included in NAP? (Page reference)	Notes
19	P33	Result of public consultation were taken into consideration	Mandatory		
20	P33	Reasonable time-frames were adopted for public consultation	Mandatory		
21	P33	Summary of NAP to be, or has been, submitted to EPA within 1 month	Mandatory		
22	P33	Annual reports have been, or shall be, submitted to EPA	Mandatory		
23	P33	NAP includes priorities to be addressed	Mandatory		
24	P33	NAP includes all minimum requirements from Fourth Schedule of Regulations	Mandatory		
25	P33	Objective to protect quiet areas in agglomerations	Optional, if applicable		
26	P33	Objective to protect quiet areas in open countryside	Optional, if applicable		
27	P33	Estimated reduction in harmful effects due to mitigation measures in the NAP	Mandatory, if applicable		
28	P33	Review of implementation of the previous NAP	Mandatory, if applicable		
29	P34	Description of the agglomeration, the major roads, the major railways or major airports and other noise sources taken into account	Mandatory		
30	P34	The authority responsible	Mandatory		
31	P34	The legal context	Mandatory		
32	P34	Any statutory limit values in place	Mandatory		
33	P34	Summary of the results of the noise mapping	Mandatory		
34	P35	Evaluation of the estimated number of people exposed to noise, identification of problems, and situations that need to be improved	Mandatory		
35	P35	Record of the public consultations organised	Mandatory		

No.	Guidance Page No.	Description	Requirement	Included in NAP? (Page reference)	Notes
36	P35	Any noise-reduction measures already in force and any projects in preparation	Mandatory		
37	P35	Actions which the APAs intend to take in the next five years, including any measures to preserve quiet areas	Mandatory		
38	P36	Long-term strategy	Mandatory		
39	P36	Financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment	Mandatory		
40	P36	Provisions envisaged for evaluating the implementation and the results of the action plan	Mandatory		
41	P36	The actions which the action planning authorities intend to take in the fields within their competence	Mandatory		
42	P37	Estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other)	Mandatory		
43	P37	Completed review checklist (Appendix D) included in NAP	Recommended		
44	P37	Review of previous NAP: Has there been a material change in environmental noise since the previous NAP?	Recommended		
45	P38	Review of previous NAP includes how undertaken, conclusions drawn and subsequent action?	Recommended		
46	P38	Does review of previous NAP include: - progress against timetable, - changes in noise situation and exposures, - details of actions undertaken, - costs,	Recommended		

No.	Guidance Page No.	Description	Requirement	Included in NAP? (Page reference)	Notes
		- dates, - numbers of people affected or benefited?			
47	P39	Appendix D review checklist utilised?	Recommended		
48	P40	Three step approach adopted to identify IAs, MIAs and PIAs	Recommended		
49	P44	Confirm levels used to identify IAs	Recommended		
50	P45	Confirm population density used to identify MIAs	Recommended		
51	P45	Evidence based alternative method used to identify MIAs?	Recommended		
52	P46	Aspects considered when selecting PIAs	Recommended		
53	P47	Number of PIAs identified in NAP	Recommended		
54	P47	Rationale for each PIA included	Recommended		
55	P49	Approach to long term monitoring described	Recommended		
56	P49	Approach to validating noise calculation model described	Recommended		
57	P49	Review of noise mitigation measures: - within responsibility of APAs - within responsibility of NMBs or other third-parties	Recommended		
58	P52	Record of consultation with NMBs and third-parties when selecting feasible noise mitigation measures	Recommended		
59	P52	Approach to assessing noise mitigation measures described	Recommended		
60	P53	Approach to cost benefit analysis described	Recommended		
61	P61	Approach to identify CQAs adopted	Recommended		
62	P61	PCQAs identified	Recommended		
63	P61	CQAs identified	Recommended		
64	P64	Approach to delimiting QAs from CQAs described	Recommended		
65	P65	CQAs in open countryside identified	Recommended		

No.	Guidance Page No.	Description	Requirement	Included in NAP? (Page reference)	Notes
66	P72	SEA pre-screening undertaken	Recommended		
67	P72	SEA screening undertaking	Recommended		
68	P72	SEA undertaken	Recommended if necessary		
69	P73	AA screening undertaken	Recommended		
70	P73	AA undertaken	Recommended if necessary		
71	P75	Consultation process has regard for DPER guidance	Recommended		
72	P76	Length of public consultation period documented	Recommended		
73	P76	Consultation stakeholders listed	Recommended		
74	P76	Consultation responses summarised	Recommended		
75	P76	Amendments to NAP following consultation documented	Recommended		
76	P76	Finalised NAP approval documented	Recommended		
77	P76	Approach to approved NAP dissemination described	Recommended		
78	P77	Summary NAP clear and comprehensible, and include a summary setting out the most important points	Mandatory		
79	P77	Approved NAP made available within 1 month of being made	Mandatory		
80	P77	Dissemination uses available information technologies	Mandatory		
81	P77	Publication and dissemination follow AIE Regulations and DECC guidance	Mandatory		

Appendix E: Recommended colour scheme for presentation of noise level bands

The colour bands below are recommended for use in the production of noise level contour maps.

Furthermore, it is recommended that the colour bands are made semi-transparent such that the base mapping below remains partly visible such that orientation and location remains possible.

The reference values[220] for the recommended colour bands are shown in Table AE-1.

Table AE-1: Recommended colour bands for presentation of noise contour results

Band	Sample	Colour	R	G	B	C	M	Y	K	Hex
30 – 34		dark blue-green	130	166	173	53	23	28	4	#82A6AD
35 – 39		blue-green	160	186	191	42	18	21	2	#A0BABF
40 – 44		light blue-green	184	214	209	33	6	19	0	#B8D6D1
45 – 49		light green	206	228	204	24	1	25	0	#CEE4CC
50 – 54		yellowish green	226	242	191	16	0	33	0	#E2F2BF
55 – 59		light orange	243	198	131	5	26	54	0	#F3C683
60 – 64		orange	232	126	77	3	61	71	0	#E87E4D
65 – 69		dark orange	205	70	62	15	84	74	3	#CD463E
70 – 74		magenta	161	26	77	32	98	47	14	#A11A4D
75 – 79		purple	117	8	92	58	100	26	17	#75085C
80 - 99		dark purple	67	10	74	79	100	37	39	#430A4A

Note: It is recommended that class boundaries be at .00, e.g., 55 to 59 is actually 55.00 to 59.99.

[220] Coloring Noise, Dr. Beate Weninger (Tomio), 2016. Available at: https://web.archive.org/web/20230601010819/https://www.coloringnoise.com/ https://www.coloringnoise.com/theoretical_background/new-color-scheme/ [Accessed December 2023]

Appendix F: Additional Noise Related Legislation

Below is set out an overview of related elements within EU and Irish legislation and guidance outside the scope of the END, but related to wider aspects associated with management of environmental noise.

Union Type-Approval Legislation ('automotive approval')

Type approval describes the process applied by Type Approval Authorities to certify that a model of a vehicle meets all EU safety, environmental and conformity of production requirements before authorising it to be placed on the EU market.

A manufacturer can obtain type approval certification for a vehicle type in one EU country and market it EU-wide without further tests. The certification is issued by a Type Approval Authority and the tests are carried out by the designated technical services.

The applicable legislation for the automotive industry is listed below:

- Regulation (EU) 2018/858[221] on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles;
- Regulation (EU) No 168/2013[222] on the approval and market surveillance of two- or three-wheel vehicles and quadricycles;
- Regulation (EU) No 167/2013[223] on the approval and market surveillance of agricultural and forestry vehicles;
- Systems, components, and separate technical units intended for the above-mentioned vehicles
- Regulation (EU) 2016/1628[224] on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery;
- Vehicle regulations of the United Nations Economic Commission for Europe (UNECE).

Regulation (EU) 2018/858, Regulation (EU) 168/2013 and Regulation (EU) 167/2013 set the fundamental rules for the particular 'automotive' sector and refer to separate legislation for further technical details, including the specific requirements within the respective sector.

Regulation (EU) 2016/1628 only makes provisions for the gaseous and particulate pollutant emission limits of internal combustion engines for non-road mobile machinery and does not contain any provisions on noise emissions. Union type-approval is required to place or make automotive items and internal combustion engines for NRMM available on the EU market. It is based on requirements harmonised at Union or international level, and is mutually recognised and accepted by all Member States of the Union without further testing.

For the purpose of wider harmonisation that extends beyond the borders of the European Union, which fosters technical progress and results in access to larger markets, avoidance of

[221] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0858 [Accessed December 2023]
[222] Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:060:0052:0128:en:PDF [Accessed December 2023]
[223] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0167 [Accessed December 2023]
[224] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R1628 [Accessed December 2023]

duplication of standards, and avoidance of repeated certification processes, where appropriate, Union type-approval is required. This legislation makes reference to those Vehicle Regulations of the United Nations Economic Commission for Europe (UNECE) adopted by the Union. Similar to Union type-approvals, UNECE approvals are issued and accepted by the relevant Contracting Parties (which include the EU, where relevant, and external countries).

Under Irish legislation:

- European Union (Road Vehicles: Type-Approval and Market Surveillance) Regulations 2020, S.I. No. 556/2020[225], gives further effect to Regulation (EU) 2018/858;
- European Union (Two or Three Wheel Motor Vehicles and Quadricycles Type-Approval) Regulations 2015, S.I. No. 614/2015[226], gives further effect to Regulation (EU) No. 168/2013;
- European Union (Agricultural or Forestry Vehicle Type Approval and Entry into Service) Regulations 2017, S.I. No. 645/2017[227], gives effect to Regulation (EU) No 167/2013;
- European Union (Internal Combustion Engines for Non-Road Mobile Machinery) (Gaseous and Particulate Pollutant Emission Limits and Type-Approval) Regulations 2021, S.I. No. 735/2021[228], gives full effect to Regulation (EU) 2016/1628.

Sound level requirements and measurements for Union Type-Approval

Each of the aforementioned 'automotive' sectors relevant within the context of noise has specific regulations and provisions concerning noise emissions. For example, Regulation (EU) No 168/2013 prohibits the use of defeat devices that reduce the effectiveness of, amongst others, sound abatement systems during normal vehicle operation and use.

Legislation pertaining to each relevant sector includes, amongst others, vehicle specific sound level requirements that are applicable during Union type-approval according to dedicated test procedures carried out in specified test sites.

In general, for example, in the case of passenger cars and other commonly encountered motor vehicles (but excluding certain electric hybrid vehicles), or 'motorcycles', vehicles are tested using different methods for the vehicle in motion and for the vehicle when stationary. The final result from each test is eventually included, together with any relevant parameters, in the Certificate of Conformity accompanying each vehicle. In the case of a hybrid electric vehicle where an internal combustion engine cannot operate when the vehicle is stationary, the emitted noise is measured only in motion.

Depending on the vehicle, additional tests may be applicable for Union type-approval concerning noise. For example, vehicles having a technically permissible maximum laden mass exceeding 2800 kg equipped with certain brake equipment are subject to an additional measurement in accordance with a dedicated procedure noting the compressed air noise of the stationary vehicle.

UNECE Regulation 41[229] applies to noise emission from motorcycles. This Regulation requires the sound emissions of the motor cycle type submitted for approval to be measured by the two methods. The first method is when the motor cycle is in motion and the second is when the motor cycle is stationary. In the case of a motor cycle where an internal combustion engine

[225] Available at: https://www.irishstatutebook.ie/eli/2020/si/556/made/en/pdf [Accessed December 2023]
[226] Available at: https://www.irishstatutebook.ie/eli/2015/si/614/made/en/pdf [Accessed December 2023]
[227] Available at: https://www.irishstatutebook.ie/eli/2017/si/645/made/en/pdf [Accessed December 2023]
[228] Available at: https://www.irishstatutebook.ie/eli/2021/si/735/made/en/pdf [Accessed December 2023]
[229] Available at: https://digitallibrary.un.org/record/661972?ln=en [Accessed December 2023]

does not operate when the motor cycle is stationary, the emitted noise is measured when the motor cycle is in motion. This Regulation requires that all exhaust or silencing systems are constructed in a way that do not easily permit removal of baffles, exit-cones and other parts whose primary function is part of the silencing chambers. This Regulation requires that where incorporation of such a part is unavoidable, its method of attachment shall be such that removal is not facilitated and should also be attached such that removal causes permanent damage to the assembly.

Regulation (EU) 2019/2144[230] concerning type-approval requirements for motor vehicles and their trailers, systems, components and separate technical units intended for such vehicles, as regards to their general safety and the protection of vehicle occupants and vulnerable road users, lays down fundamental provisions on vehicle safety, carbon dioxide (CO_2) and rolling noise emissions from tyres.

Within the context of noise, Regulation (EC) No 661/2009 has been recently repealed and replaced by Regulation (EU) 2019/2144, and the requirements for tyre performance included therein are replaced by the equivalent in UN Regulation Number 117[231]. Amongst others, UN Regulation Number 117 classifies tyres in different categories depending on intended use and sets uniform provisions concerning the approval of tyres with regard to rolling sound emissions and/or to adhesion on wet surfaces and/or to rolling resistance.

Regulation (EU) No 540/2014[232] establishes the administrative and technical requirements for the EU type-approval of all new vehicles of the categories M and N with regard to their sound level, and of replacement silencing systems and components. Regulation (EU) No 540/2014 on the sound level of motor vehicles and of replacement silencing systems came into force in July 2016 and has been amended by Commission Delegated Regulation (EU) 2017/1576[233] and Commission Delegated Regulation (EU) 2019/839[234].

Annex III of Regulation (EU) 540/2014 stipulates how noise limit values will change over time for a range of Category M and N vehicles (M1, M2, M3, N1, N2, N3 etc), as defined under Annex I of Regulation (EU) 2018/858. The established permitted noise limits for first registration 1st July 2022 range between 70dB(A) – 81dB(A), whilst the range for first registration as from 1st July 2026 range between 68 dB(A) – 79 dB(A), depending on the vehicle category. The Regulation also introduced requirements for all new electric vehicles to be fitted with an Acoustic Vehicle Alerting System (AVAS) as from April 2019. The AVAS will emit an artificial sound when the electric vehicles are running below 20 km/h to alert pedestrians of their presence.

UNECE Regulation No 51[235] on noise of M and N categories of vehicles contains provisions on the sound emitted by motor vehicles and applies to vehicles of categories M and N. The specifications in this Regulation are intended to reproduce sound levels which are generated by vehicles during normal driving in urban traffic.

[230] Available at: https://eur-lex.europa.eu/eli/reg/2019/2144/oj [Accessed December 2023]
[231] Available at: https://digitallibrary.un.org/record/689860?ln=en [Accessed December 2023]
[232] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0540&rid=1 [Accessed December 2023]
[233] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1576 [Accessed December 2023]
[234] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0839 [Accessed December 2023]
[235] Available at: https://unece.org/transport/documents/2023/02/standards/un-regulation-no-51-rev3-amend7 [Accessed December 2023]

The General Safety Regulation, Regulation (EU) 2019/2144, is directly applicable in all Member States, and comes within the remit of the Road Safety Authority (RSA)[236] in Ireland. The National Standards Authority of Ireland (NSAI)[237] is the appointed authority in Ireland responsible for issuing all national approvals for brand new unregistered vehicles.

Regulation (EU) 2020/740

Regulation (EU) 2020/740[238] sets out requirements through labelling of tyres to allow end-users to make an informed choice when purchasing tyres, for the purpose of increasing safety, the protection of health, and the economic and environmental efficiency of road transport, by promoting fuel-efficient, long-lasting and safe tyres with low noise levels.

This Regulation applies to tyres produced from May 2021, for passenger cars (C1 tyres), buses and coaches, light and heavy goods vehicles, and light and heavy trailers (C2 and C3 tyres). However, this Regulation does not apply to a certain specialised category of tyres, such as those for off-road professional use, vehicles first registered before 1st October 1990 or second-hand tyres, unless imported from a non-EU country.

Figure F1.1 shows the required format for the tyre label, which must include certain aspects of the tyre performance such as:

- the fuel efficiency class,
- the wet grip class,
- the external rolling noise class and the measured value,
- the snow grip symbol (only if the tyre satisfies the minimum snow grip index values set out in UNECE Regulation No 117), and
- the ice grip symbol (only if the tyre satisfies the relevant minimum ice grip index values).

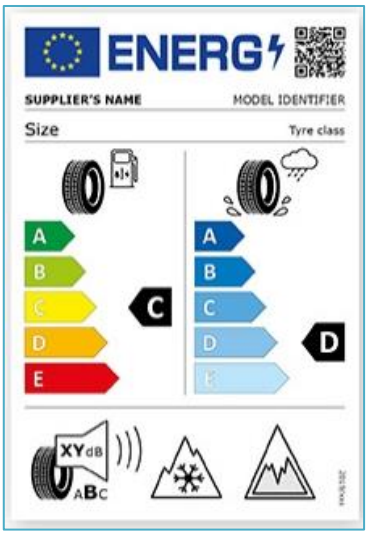

Figure F1.1: Label required on C1, C2 and C3 tyres produced from May 2021

[236] https://www.rsa.ie/road-safety/road-users/legislation [Accessed December 2023]
[237] Available at: https://www.nsai.ie/certification/automotive/ [Accessed December 2023]
[238] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0740 [Accessed December 2023]

Using the same design as used for familiar energy labelling such as those on fridges, washing machines, and lights, the tyre label shows the tyre's fuel efficiency and wet grip classes on sliding scales from A (best) to E (worst).

In the bottom part of the label, the external noise level relates to the noise produced by the tyre when the vehicle passes by and is measured in decibels (dB). The range of external rolling noise classes (A to C) have the following interpretation:

- Class 'A' shows that the tyre's noise level is 3dB or more, better than the European limit.
- Class 'B' shows that the tyre's noise level is between the European Limit and up to 3dB better than the European limit.
- Class 'C' shows that the tyre's noise level is worse than the European limit.

As an EU Regulation, Regulation (EU) 2020/740 is directly applicable in all Member States and is given effect in Irish Legislation through European Union (Tyre Labelling) (Energy Efficiency) Regulations 2022, S.I. No. 670 or 2022[239].

Directive 2014/45/EU

Directive 2014/45/EU[240] establishes requirements for the periodic roadworthiness testing of motor vehicles. This Directive has been transposed into Irish legislation under:

- European Union (National Car Test - EU Roadworthiness Certificates) Regulations 2020, S.I. No. 554/2020[241], amending the Road Traffic Act 1961 (as amended), No. 24 of 1961[242]; and
- European Union (Commercial Vehicle Roadworthiness) (Roadworthiness Certificate and Roadworthiness Test) Regulations 2021, S.I. No. 617/2021[243], amending the Road Safety Authority (Commercial Vehicle Roadworthiness) Act 2012 (No. 16 of 2012).

Under this legal instrument, motor vehicles registered in a European Union (EU) country and their trailers must undergo periodic roadworthiness tests to ensure that they are fit to be used on the road. Annexes I and II to this directive detail the categories of vehicles to be tested, the frequency of the roadworthiness tests and the items which must be tested.

Under the periodic roadworthiness test, the vehicle's noise suppression system (including exhaust silencers and under bonnet noise) is inspected. Maximum permissible exhaust sound limits for different vehicle categories and fuel types are set out in the directive and the vehicle is tested at revolutions that are at three-fourths of the maximum rated speed. A motor vehicle will fail the roadworthiness test if the noise levels are in excess of those permitted. The roadworthiness testing of the noise of motor cycles is required as from 2022.

[239] Available at: https://www.irishstatutebook.ie/eli/2022/si/670/made/en/pdf [Accessed December 2023]
[240] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0045&rid=1 [Accessed December 2023]
[241] Available at: https://www.irishstatutebook.ie/eli/2020/si/554/made/en/pdf [Accessed December 2023]
[242] Available at: https://revisedacts.lawreform.ie/eli/1961/act/24/revised/en/pdf?annotations=false [Accessed December 2023]
[243] Available at: https://www.irishstatutebook.ie/eli/2021/si/617/made/en/pdf [Accessed December 2023]

Directive 2014/47/EU

Directive 2014/47/EU[244] sets out requirements for technical roadside inspections of roadworthiness of commercial vehicles; namely: vehicles carrying goods and passenger transport vehicles carrying more than eight passengers (Category I, Category II, Category III and Category V). The roadside test is mainly visual (and aural in the case of noise testing). Inspected vehicles identified as having exhaust noise levels in excess of those permitted, are subjected to a more elaborate test at a nearby designated testing centre.

EC Directive 2006/93/EC

EC Directive 2006/93/EC[245] sets out requirements of EU Member States for the regulation of civil subsonic aircraft to Chicago Convention Annex 16 Volume 1, Chapter 3 ("ICAO Chapter 3" aircraft) and replaces the repealed EU Directive 92/14/EEC.

The EU Member States are required to ensure that all civil subsonic aircraft operating from airports in their territory comply with the ICAO Chapter 3 requirements, barring specific exemptions, such as those of specific historical interest.

Environmental Protection Agency Act 1992

In Ireland, statutory provisions relating to environmental noise pollution come primarily from the Environmental Protection Agency Act (1992)[246].

The Act identifies noise as a form of environmental pollution and contains provisions for dealing with noise deemed 'a nuisance or would endanger human health or damage property or harm the environment'.

Sections 106 to 108 of the Act are of direct relevance, and may be summarised as follows:

- Section 106 gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property;
- Section 107 sets out the powers prescribed by the Act to a local authority or the Agency to prevent or limit noise. It typically relates to noise from sites regulated by the Agency or a local authority. This allows local authorities or the Agency to serve notices on premises/sites where prevention or limitation of noise is required. The Environmental Protection Agency Act 1992 (Noise) Regulations 1994[247] provide for a prosecution where there is a failure to comply with the requirements of the issued notice, and;
- Section 108 describes the provisions for complaints regarding noise nuisance to be taken to the District Court by any person or agency. It allows for any person, local authority or the Agency to make a complaint to the District Court where noise levels are considered to be generating a reasonable cause for annoyance. Where the court

[244] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0047&rid=7 [Accessed December 2023]
[245] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0093 [Accessed December 2023]
[246] Available at: https://www.irishstatutebook.ie/eli/1992/act/7/enacted/en/html [Accessed December 2023]
[247] Available at: https://www.irishstatutebook.ie/eli/1994/si/179/made/en/print?q=Environmental+Protection+Agency+Act+noise [Accessed December 2023]

finds in favour of a noise nuisance complaint, the person or body responsible for the noise must reduce it to a specific level, to limit it or cease it.

It is noted that at present there is no clear official or statutory guidance which could help promote the effectiveness or clarity of the provisions within the Act.