



Noise Action Plan

2024 – 2028



Transportation, Infrastructure Development & Emergency Services

Document Control Sheet

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EXECUTIVE SUMMARY

The Environmental Noise Directive ('END') (2002/49/EC) aims to put in place a European wide system for identifying sources of environmental noise, informing the public about relevant noise data and taking the necessary steps to avoid, prevent or reduce noise exposure.

The END was transposed into Irish Law by the Environmental Noise Regulations 2006 (S.I. 140/2006) (the 'Regulations'). The Regulations were revised by the European Communities (Environmental Noise) Regulations 2018 (S.I. 549/2018) and amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. 663/2021).

Under the Regulations Wicklow County Council (WCC) are designated as the Noise-Mapping Body (NMB), for the purpose of making and approving strategic noise maps for the County of Wicklow (excluding lands within the Agglomeration of Dublin). Local authorities are also designed as the Action Planning Authority (APA), responsible for preparing a Noise Action Plan for the Agglomeration. For the purpose of this Action Plan, the part of Co. Wicklow included in the Dublin Agglomeration is not being considered.

This is the fourth round of noise action planning for County Wicklow, and this Noise Action Plan reports the findings of the strategic noise mapping prepared in consultation with Transport Infrastructure Ireland (TII), Irish Rail (Iarnród Éireann), and the Environment Protection Agency (EPA), and in respect of the calendar year 2021 for noise from the following sources (where applicable):

- Road traffic;
- Rail traffic; and
- Industrial activity sites, including ports.

This Noise Action Plan has been prepared in accordance with the Regulations and is aimed at strategic long-term management of environmental noise from transport systems and is based on the results of the strategic noise maps which informed assessments of population exposure and harmful effects of noise.

The results have been used to identify areas within the County to be subject to noise management activities during the implementation of the Noise Action Plan. These are referred to as Priority Important Areas.

The APAs will, subject to relevant collaboration with the Noise Mapping Bodies (NMBs), resources and funding, assess these Priority Important Areas and confirm the relevant noise management measures for each Priority Important Area, including processing of cost-benefit analysis and health benefits.

This Noise Action Plan includes Strategic Environmental Assessment (SEA) screening checks following the processes outlined in the Environmental Protection Agency (EPA) report Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland (2001-DS-EEP-2/5)' – Synthesis Report (Appendix B; SEA Checklist). The SEA screening concluded that no SEA is required.

The Noise Action Plan includes an assessment to determine if it is required to be subject to an 'Appropriate Assessment' under the Habitats Directive. The screening assessment concluded that the implementation of the Noise Action Plan in isolation or in combination with any other Action Plans is not directly related to the conservation management of any Natura 2000 site in

the assessment area. It was determined that there is no likelihood of a significant impact on a Natura 2000 site. Consequently, there is no need to conduct a 'Stage 2 AA' for the purposes outlined in Article 6(3) of the Habitat Regulations.

This Noise Action Plan is supported by a four-year programme for implementation (2024-2028), with progress reported to the EPA on an annual basis.

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1 INTRODUCTION

1.1 Objective of a Noise Action Plan

The Environmental Noise Directive (‘END’) (2002/49/EC) is a European Union legal instrument vital for protecting public health and the environment by addressing the adverse effects of environmental noise.

The END was transposed into Irish Law by the Environmental Noise Regulations 2006¹ (S.I. 140/2006) (the ‘Regulations’). The Regulations were revised by the European Communities (Environmental Noise) Regulations 2018² (S.I. 549/2018) and amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021³ (S.I. 663/2021).

The END does not set any limit values or prescribe noise management measures to fulfil its aims. Through the establishment of noise regulations, the execution of strategic noise maps and implementation of Noise Action Plans, the END strives to raise public awareness, prevent and reduce environmental noise, and preserve environmental noise quality in areas where it is good.

In Ireland, it is recommended that the Noise Action Plans support Policy Objective 65 from the National Planning Framework 2040⁴, 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.”

This Noise Action Plan, and its subsequent implementation, is critical to ensure Wicklow County Council (WCC) achieve the aims and objectives of the END, compliance with national policy and to address local environmental noise issues.

1.1.1 Strategic Environmental Assessment (SEA) Pre-Screening

Strategic Environmental Assessment (SEA) is a formal and systematic process (including the stages of Screening, Scoping and Environmental Assessment) designed to assess the potential significant environmental impacts of implementing a plan or program before deciding to adopt it.

The requirement for SEA for plans and programs is outlined in European Directive 2001/42/EC (‘SEA Directive’). In the context of transport sector plans (which could include a Noise Action Plan), this directive is implemented in Irish law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations, 2004⁵ (S. I. 435/2004). This legislation has been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011⁶ (S.I. 200/ 2011).

¹ <https://www.irishstatutebook.ie/eli/2006/si/140/made/en/print> [Accessed April 2024]

² <https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print> [Accessed April 2024]

³ <https://www.irishstatutebook.ie/eli/2021/si/663/made/en/print> [Accessed April 2024]

⁴ National Planning Framework 2040: <http://www.gov.ie/en/project-ireland-2040/> [Accessed April 2024]

⁵ [S.I. No. 435/2004 - European Communities \(Environmental Assessment of Certain Plans and Programmes\) Regulations 2004 \(irishstatutebook.ie\)](https://www.irishstatutebook.ie/eli/2004/si/435/made/en/print) [Accessed April 2024]

⁶ [S.I. No. 200/2011 - European Communities \(Environmental Assessment of Certain Plans and Programmes\) \(Amendment\) Regulations 2011 \(irishstatutebook.ie\)](https://www.irishstatutebook.ie/eli/2011/si/200/made/en/print) [Accessed April 2024]

SEA screening has been undertaken with respect to this Noise Action Plan, to firstly consider the applicability of the regulations, and then consider if this Wicklow Noise Action Plan would likely give any significant environmental impacts and therefore that further SEA would be required. SEA Screening has concluded that no further SEA work is required.

1.1.2 Appropriate Screening Assessment

The primary purpose of the Directive 92/43/EEC ('Habitats Directive') is to promote the conservation of natural habitats and wild fauna and flora across the European Union. The Habitats Directive is transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations, 2011⁷ (S. I. 477/2011) ('Habitats Regulations').

The European Environment Agency has designated a network of protected areas ('Natura 2000' sites) covering Europe's most valuable and threatened species and habitats.

This Noise Action Plan has been assessed to determine if it is required to be subject to an 'Appropriate Assessment' under the Habitats Directive. The screening assessment determined that there is no likelihood of a significant impact on a Natura 2000 site. Consequently, there is no need to conduct a 'Stage 2 AA' for the purposes outlined in Article 6(3) of the Habitat Regulations.

1.1.3 Roles and Responsibilities

The Regulations designate the Environmental Protection Agency (EPA) as the national authority (the Agency) responsible for overseeing the implementation of the Regulations and for reporting information relating to strategic noise mapping and Noise Action Planning to the European Commission in accordance with Article 10(2) of the END.

The EPA provides guidance ('EPA Guidance') on the required activities to be undertaken during the implementation of the Regulations. These have been fully accounted for in the preparation of this Noise Action Plan.

Under the Regulations, Wicklow County Council are designated as the Noise-Mapping Body (NMB), for the purpose of making and approving strategic noise maps for the County of Wicklow outside the boundaries of the Dublin Agglomeration (the 'Agglomeration').

Local authorities are also designated as Action Planning Authorities (APAs) and are responsible for preparing a Noise Action Plan for the County (outside the Agglomeration). Transport Infrastructure Ireland and Iarnród Éireann are designated as Noise Mapping Bodies (NMBs) for the purpose of making strategic noise maps for major roads (National) and major rail.

The APAs must prepare the Noise Action Plan in consultation with the Agency and the NMBs for the strategic noise map involved. Further details on the roles and responsibilities of all parties in respect of their obligations under the Regulations and the collaboration required to deliver the priorities of this Noise Action Plan are set out in [Table 7](#) in [Section 3.1.1](#).

1.1.4 Scope of the European Noise Directive

The END applies to environmental noise to which humans are exposed in built-up areas, in public parks or other quiet areas (where applicable), in quiet areas in open country, near schools, hospitals and other noise sensitive buildings and areas.

The END does not apply to noise that is caused by the exposed person, noise from domestic activities,

⁷ <https://www.irishstatutebook.ie/eli/2011/si/477/made/en/print> [Accessed April 2024]

neighbourhood noise, occupational noise or noise inside means of transport or due to military activities in military areas.

Strategic noise maps are strategic tools and should not be used for the assessment of local noise nuisances or making planning decisions.

1.2 Scope of the Noise Action Plan

This Noise Action Plan has been prepared in accordance with the Regulations and is aimed at strategic long-term management of environmental noise from transport systems referring to the results of the strategic noise maps to inform assessments of population exposure and harmful effects of noise.

The strategic noise maps for County Wicklow and also the agglomeration of Dublin have been prepared by the NMBs responsible; for Wicklow: Wicklow County Council, Transport Infrastructure Ireland (TII) and Irish Rail (Iarnród Éireann); and for the Agglomeration: Dublin City Council, Dún Laoghaire-Rathdown County Council, Fingal County Council, South Dublin County Council, Kildare County Council and Wicklow County Council, Transport Infrastructure Ireland (TII) and Irish Rail (Iarnród Éireann). The strategic noise maps have been prepared in respect of the calendar year 2021 for noise from the following sources:

- **Road Traffic** – all roads and major roads (sections of road with a flow threshold of 3,000,000 vehicle passages per year);
- **Rail Traffic** – all rail and major rail (sections of rail route with a flow threshold of 30,000 train passages per year); and
- **Industrial Activity Sites** - Industrial Emission (IE) sites as regulated by the EPA under the IPPC Directive 96/61 EC, and ports.

The Regulations require the strategic noise mapping to be based upon an assessment year of 2021. However, due to COVID-19 related travel restrictions and the operational impacts of the pandemic, noise contour results for 2021 may not be fully representative.

There have been three rounds of strategic noise maps and Noise Action Plans in Ireland (2008-2013, 2013-2018 and 2018-2023) with this Noise Action Plan being Round 4 (2024-2028)⁸.

The first three rounds of strategic noise maps have been developed using computation methods set out in Environmental Noise Regulations 2006 (S.I. 140/2006). For Round 4, Member States are required to use the Common Noise Assessment Methods for Europe (CNOSSOS-EU). This change in methodology makes a direct comparison of the Round 4 noise exposure statistics with the previous three rounds methodologically complex.

For the noise action planning process, the Regulations require that;⁹

“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 [EPA] 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.”

⁸ The European Commission allowed for one additional year for the Round 4 Noise Action Plans, reducing the five-year implementation period to four-years.

⁹ Regulation 12(2)

Furthermore the Regulations require each APA to “determine the measures to be included in an action plan.”

Finally, the action plan must “have as its objective that of also protecting quiet areas”.

This Noise Action Plan therefore includes the identification of existing noise emissions, the identification of priority important areas based on an assessment of harmful effects and details of noise management measures for consideration and evaluation at implementation stage.

1.2.1 Noise 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. For example, some noise metrics are better correlated with describing long-term health effects, whereas others are best used to describe the amount of noise produced and experienced during a short duration noise event, such as an aircraft overflight or a train passing-by.

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: Noise level indicators used for Noise Maps

L_{den}	<ul style="list-style-type: none"> • 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}	<ul style="list-style-type: none"> • 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](#) below.

Table 2: Other Noise Level Indicators Relevant to Environmental Noise

L_{Amax}	<ul style="list-style-type: none"> Maximum sound level during measurement period
L_{Aeq, T}	<ul style="list-style-type: none"> Equivalent sound level of period of T hours Most common are L_{Aeq, 16hr}, L_{Aeq, 24hr}
SEL	<ul style="list-style-type: none"> Numerically equivalent to the total sound energy of an event normalised to 1-second

The L_{Aeq, 16hr} noise metric has been used in planning and noise management decisions as a representation of the overall daytime noise level, alongside the L_{night} level, which is a L_{Aeq, 8hr} noise level. The L_{Aeq, 16hr} (the annual average noise level for the daytime/evening periods, from 07:00 – 23:00 hours) has been approved by the EPA as the appropriate noise indicator to inform the identification of Candidate Quiet Areas.

1.2.2 Effects on Health & 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). 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 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).

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. Local Authorities are designated as Action Planning Authorities (APA) under the Regulations, and have a statutory responsibility to make noise action plans, consulting with the public, and report to the EPA on all action taken under each action plan in the previous 12 months .

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.

The aims and objectives of the Directive state that the adoption of action plans 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.”

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

- Reduction of existing environmental noise where necessary (see sections 5 & 6); and
- Protection of the future noise climate (see Section 7).

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

“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 road, railway, aircraft and major industrial noise sources, which has previously been completed by the designated Noise Mapping Bodies (NMB). The strategic noise maps provide graphical and statistical data on the exposure of people, dwellings and areas to noise.

The Regulations require that “priorities” and “the most important area or areas” are to be addressed. This guidance note develops on these concepts by setting out a recommended approach following three-steps to identifying priorities:

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 (see Section 1.3.2 and Section 5.1);
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);
3. **Priority Important Areas (PIA)** – 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).

Additionally, from a national perspective it is recommended that noise action plans support Policy Objective 65 from the National Planning Framework 2040, 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) 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 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 previous version of the EPA guidance notes on noise action planning, from 2009 to 2018, focused noise mitigation measures on locations exposed to high levels of noise, however in the context of the ZPAP it was determined that a different approach would be required to help support APAs actions to reduce the overall health effects of environmental noise. The aim of the revised approach recommends the identification of Priority Important Areas (PIAs), see Section 4. This approach is to support the aspirations of ZPAP by providing noise reductions to larger numbers of exposed residents.

1.3 Consultations

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

- 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;
- Local development plans, including noise policy, planning policy and open areas policy;
- Sustainable transport and sustainable urban mobility strategies;
- National climate action plan;
- Local authority climate action plans;
- National Energy Security Framework;
- National Energy and Climate Plan 2021-2030;

1.3.1 Public Consultation

A period of public consultation will be completed on this draft Noise Action Plan. A summary of the public consultation is set out in Appendix D: Public Consultation.

1.4 Noise Action Plan Timetable

Under the Regulations, the action planning authorities are to make fourth round noise action 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. 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, 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 public to have adequate time to participate in this process.

In view of these requirements, indicative timelines for Round 4 and 5 noise actions plans are shown in [Table 3](#).

Table 3: 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

2 NOISE MANAGEMENT LEGISLATION & GUIDANCE

2.1 Noise Level Indicators and Effect on Health & Quality of Life

2.1.1 Environmental Noise Guidelines (World Health Organization, WHO), 2018

Noise can have a significant and disruptive effect on everyday life. Since the implementation of the Regulations, there have been extensive studies into the links between environmental noise exposure and health.

The World Health Organization (WHO) in its publication ‘Environmental Noise Guidelines for the European Region 2018’¹⁰ and ‘Night Noise Guidelines for Europe 2009’¹¹ has also presented several key health outcomes including: noise annoyance; sleep disturbance; cardiovascular health; mental health, wellbeing, and quality of life; and children’s learning.

The Environmental Noise Guidelines for the European Region provides recommendations for protecting human health from exposure to environmental noise originating from various sources including road traffic, railway and aircraft noise.

The recommendations include guideline values using L_{den} and L_{night} metrics in terms of the onset of health effects.

However, no single noise metric best correlates with all adverse health outcomes associated with environmental noise effects, and health effects can be correlated with more than one metric. The noise metrics which are generally considered to best correlate with the different health effects, and are the subject of this Noise Action Plan, are set out in [Table 4](#).

Table 4: Noise Metrics and the Associated Health Effects

Noise Metric	Health Effects
L_{den}	Cardiovascular disease, Cognitive impairment, and Annoyance
L_{night}	Sleep disturbance and Wellbeing

Existing international, European Union and national noise management legislation and guidance is shown in [Figure 1: Existing Noise Management Legislation and Guidance](#)[Figure 1](#), with brief summaries provided in [Sections 2.2 & 2.3](#).

¹⁰ Environmental Noise Guidelines for the European Region, World Health Organisation, 2018

¹¹ Night Noise Guidelines for Europe, World Health Organisation, 2009

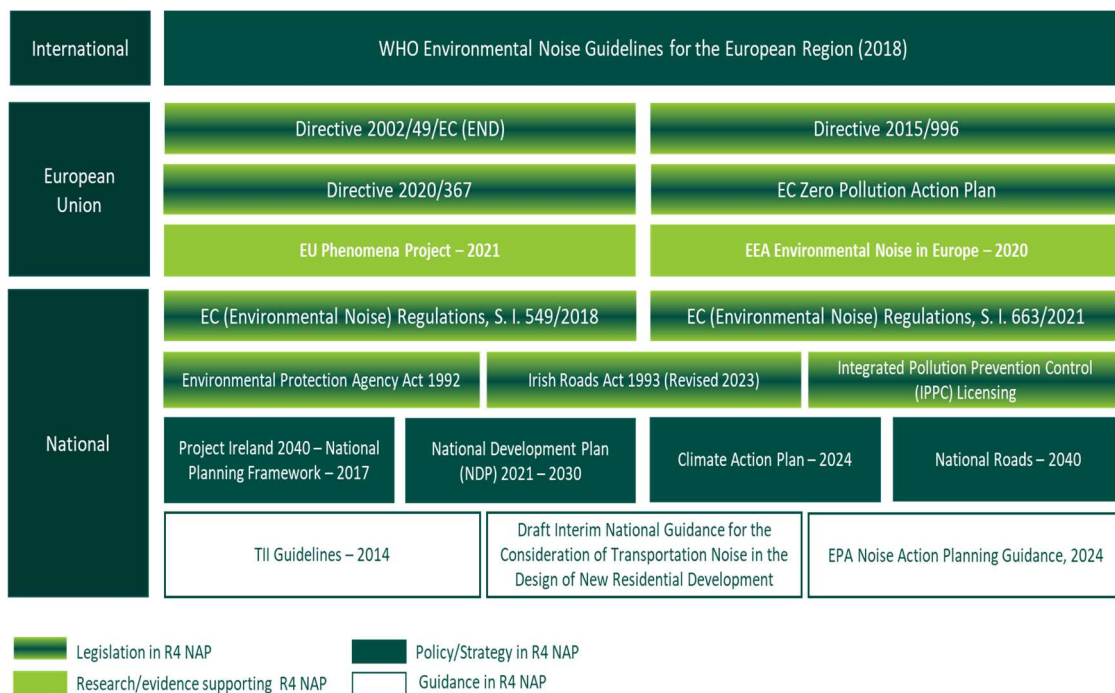


Figure 1: Existing Noise Management Legislation and Guidance

2.1.2 Effect of Noise on Health

The adverse effects of noise on health are now better understood following publication of the 2018 WHO *Environmental Noise Guidelines for the European Region*¹², to supplement the previously published “*Community Noise Guidelines*” (CNG) from 1999¹³, and “*Night Noise Guidelines for Europe*” (NNG) from 2009¹⁴. 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.

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. The WHO ENG 2018 guideline values for aircraft, railway and road traffic noise are shown in [Table 5](#).

Furthermore, the WHO developed dose-response relationships for the assessment of health effects due to chronic 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, which sets out methodologies to be used

¹² Environmental noise guidelines for the European Region, WHO 2019. Available at: <https://www.who.int/europe/publications/i/item/9789289053563> [Accessed December 2023]

¹³ Guidelines for community noise, WHO 1999. Available at: <https://www.who.int/publications/i/item/a68672> [Accessed December 2023]

¹⁴ Night noise guidelines for Europe, WHO 2009. Available at: <https://apps.who.int/iris/handle/10665/326486> [Accessed December 2023]

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.

Table 5: Summary of WHO Guideline Values

Level of Effect	Source	Level	WHO Guidelines
No effects on sleep are observed.	Any	below 30 dB $L_{night, inside}$ below 42 dB $L_{Amax, inside}$	NNG 2009
Lowest observed adverse effect level (LOAEL) for night noise.	Any	40 dB $L_{night, outside}$	NNG 2009
Noise above these levels is associated with adverse health effects and adverse effects on sleep.	Aircraft	45 dB $L_{den, outside}$ 40 dB $L_{night, outside}$	ENG 2018
	Railways	54 dB $L_{den, outside}$ 44 dB $L_{night, outside}$	ENG 2018
	Roads	53 dB $L_{den, outside}$ 45 dB $L_{night, outside}$	ENG 2018

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.

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^{15,16,17}; and
- The current noise control measures which are in place.

¹⁵ EPA Maps. Available at: <https://gis.epa.ie/EPAMaps/> [Accessed December 2023]

¹⁶ TII Strategic Noise Mapping 2022. Available at: <https://experience.arcgis.com/experience/411d8841d56a43e5ab9b885eb4680e2e> [Accessed December 2023]

¹⁷ 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.

2.1.3 CNOSSOS-EU:2020

The European Commission (EC) published Directive 2015/996¹⁸ established common noise assessment methods according to the END. It replaced Annex II of the END, removing the Interim Methods and now requiring that Member States apply the Common Noise Assessment Methods for Europe (CNOSSOS-EU) for the noise modelling of road, rail, aircraft and industrial sources.

The use of CNOSSOS-EU has since been transposed into Irish Law via the European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. 663/2021) and has been used to produce the strategic noise maps and to calculate the noise exposure statistics and harmful effects (see **Section 7.1**) for roads, rail and industry, where applicable.

Two result formats have been prepared for the noise indicators specified in the Regulations, L_{den} and L_{night} :

- 10m grid format – where the model outputs a result every 10m in a uniform grid. These results are used to produce the strategic noise maps; and
- Façade receiver format - where the model outputs a result at receiver points digitised at the façades of residential, school and hospital buildings. These results are used to calculate the exposure statistics and harmful effects (see **Section 7.1**).

The model was configured to output results down to a minimum of 20 dB L_{den} and L_{night} , which goes beyond the reporting requirements of the END (55 dB L_{den} and 50 dB L_{night}) and the levels required for the calculation of harmful effects.

2.2 European Union Legislation, Regulations & 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.

2.2.1 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 END¹⁹.

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”.

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;

¹⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015L0996&from=PT>

¹⁹ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02002L0049-20210729> [Accessed December 2023]

- 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.



Figure 2: Integrated Noise Management Process within the END.

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 etc²⁰.

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 plans²¹.

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

²⁰ END Article 7

²¹ END Article 8, as amended by Regulation (EU) 2019/1010

accessible²².

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

2.2.2 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
- Railway traffic source
- Industrial noise sources
- Propagation model for road, railway and industrial sources
- Aircraft
- Exposure assessment

European Communities (Environmental Noise) Regulations 2018²³ (S.I. 549/2018) transposed Commission Directive (EU) 2015/996 into Irish law.

2.2.3 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 Corrigendum²⁴ published in January 2018.

²² END Article 9

²³ Available at: <https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print> [Accessed December 2023]

²⁴ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L0996R%2801%29> [Accessed December 2023]

2.2.4 EU Regulation 2019/1010 – Alignment of Environmental Reporting Obligations

Regulation 2019/1010²⁵ 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.

END Annex VI Data to be Sent to the Commission sets out the mandatory reporting requirements. Prior to Round 4 (R4), reporting was undertaken through the European Environment Agency (EEA) Reportnet 2.0 system.

Regulation 2019/1010 establishes the European Environment Agency (EEA) as managers of a data repository and requires that a subsequent implementing act will establish a mandatory reporting mechanism for R4 in accordance with the INSPIRE Directive 2007/2/EC, and Directive 2003/4/EC on public access to environmental information.

It also provides for an additional 12 months for the development of R4 noise action plans, which are now due before 18 July 2024.

The EEA has now developed Reportnet 3²⁶ which includes the R4 mandatory reporting templates and the final reporting formats. There are cross-checks between DF4_8 (noise sources) dataflow and DF1_5 (noise maps).

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

Directive 2020/367²⁷ 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 2018²⁸. 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.

2.2.6 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 2021/1226²⁹ 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.

²⁵ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32019R1010> [Accessed December 2023]

²⁶ Available at: <https://reportnet.europa.eu/> [Accessed December 2023]

²⁷ Available at: <https://eur-lex.europa.eu/eli/dir/2020/367/oj> [Accessed December 2023]

²⁸ WHO, Environmental Noise Guidelines for the European Region. Available at: <https://www.who.int/europe/publications/i/item/9789289053563> [Accessed December 2023]

²⁹ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021L1226> [Accessed December 2023]

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

2.2.7 Commission Implementing Decision (EU) 2021/1967 – Data Repository and Information Exchange

Commission Implementing Decisions (EU) 2021/1967³⁰ 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.

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

Directive 2010/75/EU³¹ 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. 138/2013³², with the EPA designated as the competent authority for permitting under the Regulations. Monitoring data is available online through the EPA LEAP online portal³³.

2.2.9 Zero Pollution Action Plan

In May 2021 the EU launched the Zero Pollution Action Plan³⁴ (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 first integrated Zero Pollution Monitoring and Outlook Report³⁵ 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.

³⁰ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021D1967> [Accessed December 2023]

³¹ Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:334:0017:0119:en:PDF> [Accessed December 2023]

³² Available at: <https://www.irishstatutebook.ie/eli/2013/si/138/made/en/pdf> [Accessed December 2023]

³³ Available at: <https://www.epa.ie/our-services/compliance--enforcement/whats-happening/leap-online/> [Accessed February 2024]

³⁴ https://environment.ec.europa.eu/strategy/zero-pollution-action-plan_en [accessed October 2022]

³⁵ Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0674> [Accessed December 2023]

In support of the ZPAP noise target for 2030 ZPAP, the EU PHENOMENA³⁶ 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.

2.3 National Legislation and Regulations

The END was transposed into Irish Law by the Environmental Noise Regulations 2006³⁷ (S.I. 140/2006) (the ‘Regulations’), establishing a unified framework for mitigating and minimising the adverse consequences of environmental noise exposure. They identify organisations responsible for noise mapping and the development of strategic noise maps and noise action plans

The Regulations were revised by the European Communities (Environmental Noise) Regulations 2018³⁸ (S.I. 549/2018) and amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021³⁹ (S.I. 663/2021). A summary of these Regulations is presented in the following sections.

2.3.1 European Communities (Environmental Noise) Regulations, 2018 (S. I. 549/2018)

These Regulations replace the Environmental Noise Regulations 2006 (S.I. No. 140 of 2006) and provide for the implementation in Ireland of a common approach within the European Community to avoid, prevent or reduce, on a prioritised basis, the harmful effects, including annoyance, due to exposure to environmental noise.

The Regulations designate the Environmental Protection Agency (EPA) as the National Authority for the purposes of the Regulations. The Agency's role includes supervisory, advisory and coordination functions in relation to both noise mapping and action planning, as well as reporting requirements for the purpose of the Directive.

2.3.2 European Communities (Environmental Noise) (Amendment) Regulations, 2021 (S. I. 663/2021)

This Regulation amends the European Communities (Environmental Noise) Regulations 2018 (S.I. 549/2018), setting out methods for harmful effects, considering ischaemic heart disease (IHD), high annoyance (HA) and high sleep disturbance (HSD) and requiring each NMB to report details of these harmful effects as part of the noise mapping work.

The Regulations also amended the boundaries of the existing Dublin and Cork agglomerations and defined a new Limerick agglomeration

2.3.3 Environmental Protection Agency Act, 1992

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

³⁶ 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]

³⁷ <https://www.irishstatutebook.ie/eli/2006/si/140/made/en/print> [Accessed March 2024]

³⁸ <https://www.irishstatutebook.ie/eli/2018/si/549/made/en/print> [Accessed March 2024]

³⁹ <https://www.irishstatutebook.ie/eli/2021/si/663/made/en/print> [Accessed March 2024]

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’.

With regards to noise, Section 106-107 is most relevant:

- 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 gives power to local authorities or the Agency to serve notice requiring measures to be taken to prevent or limit noise from any premises, processes or works; and
- Section 108 sets out a process whereby noise issues may be taken to District County, which may make any order requiring that the person or body responsible for the noise to take measures for the prevention or limitation of the noise in question.

There is no clear official or statutory guidance which could help promote the effectiveness or clarity of the provisions within the Act; however, within the framework of the Regulations the EPA may consider it appropriate to develop such guidance in the future.

2.3.4 Roads Act, 1993 (Revised 2023)

In Ireland, the Roads Act, 1993⁴⁰ (revised 2023⁴¹), outlines the responsibilities of the roads authorities for the maintenance and construction of public roads. Under section 77 of the Roads Act 1993, power had been given to the Minister to make regulations requiring relevant road authorities to take measures to mitigate the effects of road traffic noise and to specify limits for road traffic noise which, if exceeded, would require mitigating action from the road authorities. However, Section 77 was repealed under the Public Transport Regulation Act, 2009⁴². There are no Irish statutory noise limits or standards governing road traffic noise for new or existing roads.

2.3.5 Integrated Pollution Prevention Control (IPPC) Licensing

The EPA’s Integrated Pollution Prevention Control Licensing terms require that certain bodies must limit environmental pollution caused by industrial activities to obtain a license to operate. The criteria relating to noise pollution are outlined in the EPA publication “*Guidance Note for Noise: Licence Applications, Surveys and Assessment in Relation to Scheduled Activities (NG4)*”- 2016. This document recommends a “Best Available Technique” approach to the assessment and mitigation of noise pollution. The document contains typical limit values for daytime (55 dB $L_{Ar,T}$ ⁴³), evening (50 dB $L_{Ar,T}$) and nighttime (45 dB $L_{Ar,T}$) noise, at sensitive locations, from licensed facilities. Alternative limit values are provided for quiet areas and areas of low background noise.

⁴⁰ <https://revisedacts.lawreform.ie/eli/1993/act/14/revised/en/html> [Accessed March 2024]

⁴¹ <https://revisedacts.lawreform.ie/eli/1993/act/14/revised/en/html> [Accessed March 2024]

⁴² <https://www.irishstatutebook.ie/eli/2009/act/37/enacted/en/print> [Accessed March 2024]

⁴³ The Rated Noise Level, equal to the L_{Aeq} during a specified time interval (T), plus specified adjustments for tonal character and/or impulsiveness of the sound.

2.3.6 Project Ireland 2040 – National Planning Framework, 2017

The National Planning Framework (NPF) is a high-level strategic plan to guide development and investment over the coming years. In addition to setting aims associated with infrastructure and investment, targets are also set around social outcomes.

Project Ireland 2040 – National Planning Framework recognises the importance of noise management which is implemented through the following objectives 52 and 65:

National Policy Objective 52

“The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.”

National Policy Objective 65

“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.”

2.3.7 National Development Plan (NDP) 2021 – 2030

An investment strategy and budget that aims to transform Ireland and support the largest public housing program in the history of the state.

The plan sets out the broad direction for investment priorities over the coming decade and pledges to allocate public investment of €165 billion across all sectors and regions of Ireland. The plan aims to prepare Ireland for population growth of approximately 1 million between 2016 and 2040 and help deal with the ongoing challenges of COVID-19 and Brexit.

2.3.8 Climate Action Plan, 2024

The Climate Action Plan (CAP24) is the third update to Ireland’s Climate Action Plan. It sets out a roadmap for actions to halve emissions by 2030 and reach net zero no later than 2050.

CAP24 implements carbon budgets and sectoral emissions ceiling with a view to accelerating the actions required to respond to the climate crisis, putting climate solutions at the centre of Ireland’s social and economic development.

2.3.9 National Roads 2040

National Roads 2040 (NR2040) is Transport Infrastructure Ireland’s long-term strategy for planning, operating, and maintaining the National Roads network. The strategy has been developed to support the delivery of National Planning Framework 2040 objectives and to align with the Department of Transport’s National Investment Framework for Transport in Ireland. One of the key visions for the strategy is that the national road network should be environmentally sustainable:

“Environmental sustainability is the bedrock for social and economic sustainability in Ireland; avoiding and where unavoidable mitigating environmental impacts including climate change, air quality and noise as well as biodiversity impacts of National Roads.”

While many of the issues in the strategy surround decarbonisation and the need to reduce greenhouse gas and carbon emissions, as set out in the Climate Action Plan, there are potentially opportunities for mutual gains for noise reduction (e.g., through active travel, integrated mobility, maintenance, and improvement works on the existing national road network).

2.3.10 Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004

Considering the lack of standardised methods for the assessment of road traffic noise the then National Roads Authority (NRA) published the ‘Guidelines for the Treatment of Noise and Vibration in National Road Schemes.’ These guidelines propose design goals for noise related to both the construction and operational stages of new road schemes.

Following a review of similar guidelines in the UK and adapting methodologies in line with the requirements of the END, the NRA proposed an operational design goal of $L_{den} \leq 60$ dB free field value. Essentially what this means is that for any new road scheme the Environmental Impact Assessment Report must take this target into account about any existing sensitive residential property likely to be affected by the road scheme.

The guidelines present an approach to mitigating the adverse effects of road construction in so far as practicable using measures such as alignment changes, barrier construction e.g., earth mounds, and the use of low noise road surfaces. The responsibility for noise mitigation policy relating to any proposed new sensitive properties in the vicinity of the road scheme lies with the relevant Planning Authority.

2.3.11 Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, 2014

The then NRA commissioned a study of Environmental Impact Statements of national road schemes four years after the publication of the Guidelines for the Treatment of Noise and Vibration in National Road Schemes. The purpose of the review was to evaluate the effectiveness of the Guidelines, including the effectiveness of noise mitigation measures, in achieving the NRA’s noise design goal as set out in the Guidelines. A further aim of the review was to identify good practice and potential deficiencies in current practice, and to provide advice on the practice to be adopted in the planning of national road development proposals.

The NRA commissioned also a noise research study with Trinity College Dublin looking at the design of noise barriers and the development of a quick look method for assessing the effectiveness of noise barriers in-situ.

The present Good Practice Guide is based on the lessons learned from these two studies. It provides advice for the information and use by acousticians, which also has some relevance for traffic, motorway and pavement engineers. The advice amplifies and supplements the Guidelines and should be read in conjunction with them.

2.3.12 Draft Interim National Guidance for the Consideration of Transportation Noise in the Design of New Residential Development, 2021

In the absence of Irish planning guidance for new residential development and the consideration of transportation noise local authorities in 2021 prepared draft guidance under a subgroup of the NIECE National Local Authority Noise Working Group.

This draft guidance includes an overarching aspiration that good acoustic design should be implemented from the outset of the design of new residential developments.

2.3.13 EPA Noise Action Planning Guidance, 2024

The EPA’s guidance for strategic noise mapping for Round 4 using the CNOSSOS-EU assessment methods is published in five parts:

- Part 1: Requirements
- Part 2: Calculation Methodology & Noise Modelling
- Part 3: Noise Exposure Assessment
- Part 4: Publication and Reporting
- Part 5: Harmful Effects Assessment

The EPA has also published guidance on noise action planning. These documents are referred to collectively as the ‘EPA Guidance’.

2.4 Regional Noise Management Policy and Guidance

2.4.1 Greater Dublin Area Transport Strategy 2022-2042 (GDATS)

While the GDATS has a twenty-year life, and the full benefits will not be realized until its completion, it is noteworthy that several phases of the strategy are currently in progress and will be implemented throughout the lifespan of the Noise Action Plan, with completion expected by 2030.

These include the BusConnects network, Dart+, a Luas Green Line upgrade, Greater Dublin Area Cycle Network (Active Travel schemes) and a number of City Centre Management Measures (Dublin City Centre Transport Plan 2023).

Many of these developments will contribute to a collective shift toward more sustainable forms of transportation, subsequently influencing noise levels within the Greater Dublin Area including the Priority Important Areas identified in this Noise Action Plan. While no details are provided for 2028, the Strategy forecasts a reduction in both business and commute vehicle kilometres travelled of -8% and -18% respectively by 2042.

The section of the GDATS dealing with noise (Section 17.2.6) states as a result of the reduction in private car trips for all purposes, it is forecast that the number of people exposed to unacceptable noise levels from traffic will reduce. It notes that growth may lead to an increase in the number of goods vehicles travelling in the Greater Dublin Area, which in turn may lead to some localised impacts in terms of increased noise. However, it is forecast that these adverse effects would arise primarily on the national and strategic road network, rather than on local roads and as such, would not lead to a significant increase in the population exposure to high noise levels. Furthermore it noted that overall the GDATS, in combination with other Government policies and developing technologies, is forecast to lead to a reduction in the numbers of people in the Greater Dublin Area being exposed to high noise levels from transport.

2.4.2 Eastern & Midland Regional Assembly – Regional Spatial & Economic Strategy (RSES), 2019-2031

The RSES was prepared by the Eastern and Midland Regional Assembly to support the implementation of Project Ireland 2040 and the economic policies and objectives of the Government by providing a long-term strategic planning and economic framework for the development of the Region. The strategy contains a policy objective for noise under Regional Policy Objective 7.8.

“Local authorities shall incorporate the objectives of EU Environmental Noise Directive in the preparation of strategic noise maps and action plans that support proactive measures to avoid, mitigate, and minimise noise, in cases where it is likely to have harmful effects”.

The RSES supports the development of strategic noise maps and actions plans, setting out mitigation measures to reduce the harmful effects, including long term exposure to environmental noise from roads, railways and airport traffic and the protection of ‘quiet areas’, which are shown to bring significant health and well-being benefits.

2.4.3 Eastern & Midland Regional Assembly – Regional Planning Guidance

The Eastern and Midland Regional Assembly's Regional Planning Guidelines for the Greater Dublin Area (2010-2022) briefly mentions noise in the context of noise management.

The guidelines state that with respect to the development of physical infrastructure, relevant Local Authorities should include provisions and zoning policies which support the delivery of high quality transport links to Dublin Airport; ensure that suitable lands are appropriately zoned to allow future expansion and restrict (and where appropriate, prohibit) development in public safety zones and approach zones of all GDA airports and airfields, and in **noise zones** associated with airport flight operations. The guidelines also note that in order to ensure the continued viability of Dublin Airport as an international transport hub it is important that the *“Inner and Outer Airport Noise and Public Safety Zones and Approach Zones are suitably protected through Development Plan and Local Area Plans policies and zoning”*.

With respect to the development of green infrastructure, the guidelines include an action to incorporate tree protection, management and planting programmes in urban areas and development projects. This incorporation is informed by considerations of noise mitigation, biodiversity, air quality and climate amelioration effects.

With respect to the development of health and healthcare facilities, *“Planning policies need to consider the added health burden from the effects of air and noise pollution”*. The guideline advocate for high-quality development, and robust local area planning presents a key opportunity to enhance the quality of life for communities. This enhancement involves improvements in health and the provision of real opportunities for interaction, exercise and ease of access to services for all members of the community.

2.5 Local Noise Management Policy and Guidance, Plans and Projects

2.5.1 Wicklow County Development Plan 2022 – 2028

The Wicklow County Development Plan sets out a strategic spatial framework for the proper planning and sustainable development of County Wicklow for the period between 2022 and 2028. While the Plan is in place for a six-year period, it is framed having regard to the long-term development objectives of the County beyond 2028. This new plan sets out the statutory planning framework for the entire County, with a focus on the strategic planning and sustainable development of the County.

The Development Plan Strategy is guided by three strategic principles - **Healthy Placemaking, Climate Action and Economic Opportunity**. It is the vision and aim of the plan to guide and facilitate the sustainable growth of the County in a manner which supports a deep respect for its unique natural heritage, capitalises on the potential of our towns and villages to deliver compact growth, facilitates healthy placemaking, supports the creation of self-sustaining settlements and rural areas that are attractive places to live in, work in and visit, provides for new job opportunities, embraces climate action and enables the transition to a low carbon, climate resilient and environmentally sustainable economy, improves sustainable mobility and conserves our heritage.

The statements and objectives contained within the Development Plan related to noise and its impacts are reproduced below.

- **Volume 1 – Written Statement**
 - Chapter 2 – Overall Strategy

NPO 65: *“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.”*

- Chapter 12 – Sustainable Transport

National Road Objectives

CPO 12.41: *“To ensure that all new developments in proximity to National Routes provide suitable protection against traffic noise in compliance with S.I No. 140 of 2006 Environmental Noise Regulations and any subsequent amendments to these regulations.”*

- Chapter 15 – Waste & Environmental Emissions

Incorporating consistent measures to avoid, mitigate and minimise or promote the pro-active management of noise;

Noise Pollution Objectives

CPO 15.12: *“To implement the Wicklow County Council Noise Action Plan 2018-2023 (and any subsequent Plan) in order to avoid, prevent and reduce the harmful effects, including annoyance, due to environmental noise exposure.”*

CPO 15.13: *“To enforce, where applicable, the provisions of the Environmental Protection Agency (EPA) Acts 1992 and 2003, and EPA Noise Regulations 2006.”*

CPO 15.14: *“To regulate and control activities likely to give rise to excessive noise (other than those activities which are regulated by the EPA).”*

CPO 15.15: *“To require proposals for new developments with the potential to create excessive noise to prepare a construction and/or operation management plans to control such emissions.”*

CPO 15.16: *“To require activities likely to give rise to excessive noise to install noise mitigation measures to undertake noise monitoring and to provide an annual monitoring audit.”*

- **Volume 3 – Appendices**

- Appendix 1 – Development & Design Standards

1.4.3 Noise Pollution

Noise nuisance is defined in Section 108 of the EPA Act 1992 as “Any noise which is so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood”. The Planning Authority will use the Development Management process to ensure that future developments are designed and constructed in such a way as to minimise noise disturbance and prevent noise nuisance. The Planning Authority will have regard to the WHO/Europe Night Noise Guidelines (2009) in the assessment of applications with potential night-time noise implications.

In this regard, the Planning Authority may require developers to produce a Sound Impact Assessment and Mitigation Plan where a noise-generating use is proposed and specialist input is deemed necessary, for any new development that the Planning Authority considers will impact negatively on pre-existing environmental sound levels.

In considering applications for development where the proposed use may cause noise, vibrations and air emissions (for example, gyms, public houses, leisure facilities, restaurants and retail) applicants will be required to demonstrate that consideration has been given to the ventilation strategy for buildings at the design stage, to prevent noise, vibration and air emissions that may cause nuisance from equipment and ducting.

The Planning Authority will have regard to the Wicklow Noise Action Plan 2018, when assessing planning applications along major road and rail transport corridors – the objective being to reduce noise from new sources and to identify and protect and create areas of low sound levels.

4.1.12 Lighting, Noise & Air emissions

Impacts resulting from lighting and noise from sites should be minimised. A detailed study may be required to be submitted as part of the application process in sensitive locations (e.g. adjacent to dwelling houses, nursing

homes etc.) to outline probable impacts and mitigation measures.

Noise arising from any industrial/employment development should not exceed 55dB(A) Leq (1 hour) with a maximum peak of 65 dB(A) between 0800 to 1800 hours, Monday to Saturday inclusive, but excluding public holidays, when measured along any point along the site boundary. At all other times the noise level should not exceed 45 dB(A) Leq (1 hour) when measured at the same locations. No pure tones should be audible at any time. All noise should be measured from the point of the nearest sensitive receptor.

Regard will also be paid to the recommendations / requirements of the Environmental Protection Agency.

The proposed development shall be capable of dealing satisfactorily with any emission or effluent.

3 DESIGNATED ACTION PLANNING AUTHORITIES

3.1 Action Planning Authorities

The Regulations designate Action Planning Authorities (APAs) for the purpose of making and approving noise action plans. The 31 Local Authorities are all designated as APAs under the Regulations. The Noise Action Plans (NAP) are to be made in consultation with the Agency, and the noise-mapping bodies.

An overview of the key designations is set out in [Table 6](#).

The Regulations also state that the requirement to provide action plans on specified dates is a statutory function of an APA in relation to environmental protection for the purposes of section 63 of the Environmental Protection Agency Act 1992⁴⁴.

Table 6: Action Planning Authorities⁴⁵

Organisation	Responsibility
All 31 Local Authorities	<ul style="list-style-type: none"> Making and approving action plans for: <ul style="list-style-type: none"> major railways; major roads; or major airports; located within their functional area.
Dublin City Council Dun Laoghaire/Rathdown County Council Fingal County Council South Dublin County Council Kildare County Council Wicklow County Council	<ul style="list-style-type: none"> Making and approving action plans for the agglomeration of Dublin.
Cork City Council, and Cork County Council	<ul style="list-style-type: none"> Making and approving action plans for the agglomeration of Cork.
Limerick City & County Council Clare CC	<ul style="list-style-type: none"> 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 involved⁴⁵.

⁴⁴ Regulation 5(4)

⁴⁵ Regulation 7

Inside the three agglomerations, it is required that several Local Authorities combine activities⁴⁶, 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 within their functional area which were included within the noise maps. This was confirmed by a judgement of the European Court of Justice⁴⁷, 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.

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

3.1.1 Roles and Responsibilities

The roles and responsibilities of the Action Planning Authorities (APAs) and the Noise Monitoring Bodies (NMBs) as set out by the Regulations, and the consultation and collaboration necessary between all parties to address noise from each noise source mapped and ensure the successful implementation of Noise Action Plans are summarised in [Table 7](#).

Table 7: Roles and Responsibilities

Organisation	Strategic Noise-Mapping Body (NMB) Responsibility	Noise Action Plan Preparation Responsibility	Noise Action Plan Implementation Responsibility
All Local Authorities	NMB responsible for making and approving strategic noise maps for their locality.	APA responsible for making and approving action plans, in consultation with NMBs.	Detailed evaluation of Priority Important Areas, in consultation with NMBs, including identification of noise mitigation measures and implementation of those measures within the Local Authority’s areas of competence and responsibility, subject to resources and budget.

⁴⁶ Regulation 7(b)

⁴⁷ 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]

Organisation	Strategic Noise-Mapping Body (NMB) Responsibility	Noise Action Plan Preparation Responsibility	Noise Action Plan Implementation Responsibility
Transport Infrastructure Ireland (TII)	<p>NMB responsible for making and approving strategic noise maps for major roads designated as national roads.</p> <p>NMB responsible for making and approving strategic noise maps for major railways (LUAS).</p>	<p>Consultee during action planning, with consideration of issues resulting from the strategic noise maps within their area of responsibility including identification of priority important areas to be included within the Noise Action Plan.</p>	<p>Consult, engage and collaborate with the APAs to assist in the identification and agree noise mitigation measures for locations within TII’s areas of competence and responsibility and implementation of same subject to resources and budget.</p>
Irish Rail	<p>NMB responsible for making and approving strategic noise maps for major railways.</p>	<p>Consultee during action planning, with consideration of issues resulting from the strategic noise maps within their area of responsibility including identification of priority important areas to be included within the Noise Action Plan.</p>	<p>Consult, engage and collaborate with the APAs to identify and agree noise mitigation measures for areas within Irish Rail’s areas of competence and responsibility and implementation of same subject to resources and budget.</p>

3.2 Role of the EPA

Under the Regulations, the EPA is the designated national authority. The EPA are to exercise general supervision over the functions and actions of noise mapping bodies and action planning authorities, and to provide guidance or advice, where necessary⁴⁸.

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 planning⁴⁹.

The EPA supervision of Round 4 strategic noise mapping has been carried out through collaboration, including regular bi-lateral meetings between ORM (Office of Radiation Protection and Environmental Monitoring), the EPA appointed noise contractor, and 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

⁴⁸ Regulations 5(1) and 5(2)

⁴⁹ Available at: <https://www.epa.ie/our-services/monitoring--assessment/noise/noise-mapping-and-action-plans/> [Accessed December 2023]

to gauge progress and provide advice around the noise modelling and mapping work. ORM 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, being less than three years old, shall be approved by the EPA⁵⁰. 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 values⁵¹.

The EPA may establish particular requirements on exposure to environmental noise which apply to quiet areas in agglomerations⁵², and may establish relevant criteria for the identification of priorities address by a noise action plan⁵³. The EPA may lay down rules on the types and format of noise maps used to inform the general public⁵⁴, further details of the recommended colour scheme may be found in Appendix E of this guidance note.

Under the Regulations, the requirement to provide noise action plans is a statutory function for the action planning authority in relation to environmental protection, for the purposes of section 63 of the EPA Act 1992⁵⁵, and 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, following consultation with noise-mapping bodies and action planning authorities⁵⁶. Further details of the relevant noise levels for quiet areas may be found in Section 7.2 of this guidance note, and further details of relevant criteria for identifying priorities may be found in Section 5.3 of this guidance note. The EPA shall notify the Commission of any additions or changes to such criteria⁵⁷, where they would constitute a noise limit value under the mandatory EEA reporting mechanism.

The EPA are also required to submit national reporting data to the EEA using the mandatory reporting mechanism, Reportnet 3⁵⁸.

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.

⁵⁰ Regulations 8(2) and 8(3)

⁵¹ First Schedule of the Regulations

⁵² Regulation 10(1)

⁵³ Regulations 12(2) and 12(3)

⁵⁴ Third Schedule of the Regulations

⁵⁵ Environmental Protection Agency Act 1992. Available at: <https://www.irishstatutebook.ie/eli/1992/act/7/enacted/en/html> [Accessed February 2024]

⁵⁶ Regulations 5(3) and 5(4)

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/l-a-performance/> [Accessed February 2024]

4 RESPONSIBLE AUTHORITY FOR ACTION PLANNING

4.1 Name and Contact Details for Responsibly Authority

Wicklow County Council

County Buildings
Whitegates
Wicklow Town
Co. Wicklow
A67FW96

Tel. 0404 20100

Fax: 0404 67792

4.2 Other Bodies of Relevance

4.2.1 Environmental Protection Agency

The Environmental Protection Agency (EPA) is the designated national authority responsible for overseeing the implementation of the Regulations. The EPA is required to provide advice and guidance to the relevant noise mapping bodies and action planning authorities and is responsible for reporting information to the European Commission. Further details can be found at <https://www.epa.ie/our-services/monitoring--assessment/noise/noise-mapping-and-actionplans/>.

4.2.2 Transport Infrastructure Ireland

Transport Infrastructure Ireland (TII) is the designated noise mapping body for national roads identified as major roads within the County and Wicklow County Council is the designated noise mapping body for non-national major roads. However, For the purposes of this Noise Action Plan, TII prepared the noise maps for all major national and non-national roads with >3million passenger vehicles for County Wicklow. Further details can be found at <https://www.tii.ie/technicalservices/environment/noise-maps/>.

Transport Infrastructure Ireland has overall responsibility for the national road network and provides funding to the Council for the maintenance and improvement of the national roads within the County.

4.2.3 Wicklow County Council Transportation, Infrastructure Delivery & Emergency Services Department

The Transportation, Infrastructure Delivery & Emergency Services Department in Wicklow County Council is responsible for the planning, design, improvement and upkeep of the regional and local road network within the county. They provide a number of services including road opening licences, temporary road closures, road safety, active travel improvements, winter maintenance, traffic management, public lighting, emergency situations, abnormal load permits, facility information signage, speed limits and reporting on planning applications as they relate to roads. Non-national roads are funded through the Department of Transport, National Transport Authority (NTA) and from the Council's own resources.

4.3 Relevant Plans, Studies and Measures

4.3.1 Wicklow Climate Action Plan 2024 – 2029

The Wicklow Climate Action Plan provides a roadmap for taking decisive action to transition to a lower carbon and more climate resilient future for the citizens of County Wicklow.

Our overarching goal is to transition to a climate resilient, biodiverse, sustainable, and carbon-neutral County by 2050. The plan builds on Wicklow County Council's commitment to the Local Authority Climate Charter, pledging to achieve a 51% reduction in carbon emissions and a 50% improvement in energy efficiency by 2030.

Mitigation and adaptation measures will be delivered across the services and functions delivered by the Council.

The Plan features a range of actions which are aligned to the following five themes:

- Governance & Leadership
- Built Environment & Transport
- Natural Environment & Green infrastructure
- Communities Resilience & Transition
- Sustainability & Resource Management

4.3.2 Dublin Region Air Quality Plan, 2021

The Dublin Region Air Quality Plan sets out a series of measures which are aimed at improving air quality. These measures will also help to reduce traffic noise by reducing the volume of traffic in the County. The measures include active travel, parking restrictions and remote working.

4.3.3 Environmental Noise Guidance for Local Authority Planning & Enforcement Departments (2021)

The Environmental Noise Guidance for Local Authority Planning & Enforcement Departments by the Association of Acoustic Consultants of Ireland (AACI) guides Local Authorities in their day-to-day management of noise issues. The document makes specific references to guidance documents that would be appropriate for use in the assessment of noise in the Republic of Ireland and many of those used by our practitioners in the assessment of noise.

4.4 Round 3 Noise Action Plan (2018-2023 Review)

The Round 3 Noise Action Plan centres on road traffic noise, identified as the major noise source in the Wicklow County Council area based on the strategic noise maps.

Many actions initiated in the past three Noise Action Plans will persist and be reaffirmed in this Noise Action Plan. The current and past policies, as well as the direction regarding the principles of avoidance, prevention, and reduction, where necessary, on a prioritised basis of harmful effects, including annoyance, due to long-term exposure to environmental noise, will continue to guide the implementation of the actions.

A summary of the actions undertaken over the course of the Round 3 Noise Action Plan are set out below;

- Road re-surfacing and repairs, including significant low noise surfacing on the N/M11.
- Completion of Round 4 strategic noise mapping, including section in Dublin Agglomeration.
- Progress on active travel, BusConnects, bike share schemes and the EV fleet expanded.
- Installation of a number of EV charging points.

-
- Engagement with the Planning Department in the preparation of the Wicklow County Development Plan 2022 – 2028 regarding strengthening policy on Environmental Noise.
 - Continue the assessment of areas identified as requiring further assessment for mitigation measures.
 - Annual reviews of the Action Plan were undertaken and reported to the EPA to assess progress and whether new developments need to be included in the Noise Action Plan.
 - A full speed limit review was undertaken, and limits generally reduced, especially in town centre locations.
 - Park and Ride facilities on the N11 were further progressed in 2023 and are now at various stages of planning and design under the Greater Dublin Area Park and Ride Strategy and will offer circa 1000 spaces when complete.
 - A number of Greenways were further developed to design stage during 2023 and will in the future provide safe alternatives for commuting and school travel in a number of towns.
 - An E-bike rental scheme operated by BOLT commenced in the town of Bray in 2023, allowing easy commuting around the town and cutting down on car trips.
 - Blessington ring road was progressed to detailed design stage and will eventually help remove significant traffic from this urban centre.
 - Roads staff attended and participated in the EPA noise steering meetings and annual workshop.

5 DESCRIPTION OF ACTION PLANNING AREA

5.1 Wicklow County Council (outside Dublin Agglomeration)

For the purposes of this Plan, Wicklow covers an area of c. 2,009km² and as per the 2022 census a population of 125,861. The total length of major roads (AADT>3,000,000/annum) included in the strategic noise maps is 72,244m as shown in Figure 3. There are no major railways within the area of this Action Plan. The administrative functions of Wicklow County Council are divided into five municipal districts based on population of the local electoral areas as shown in Table 8.

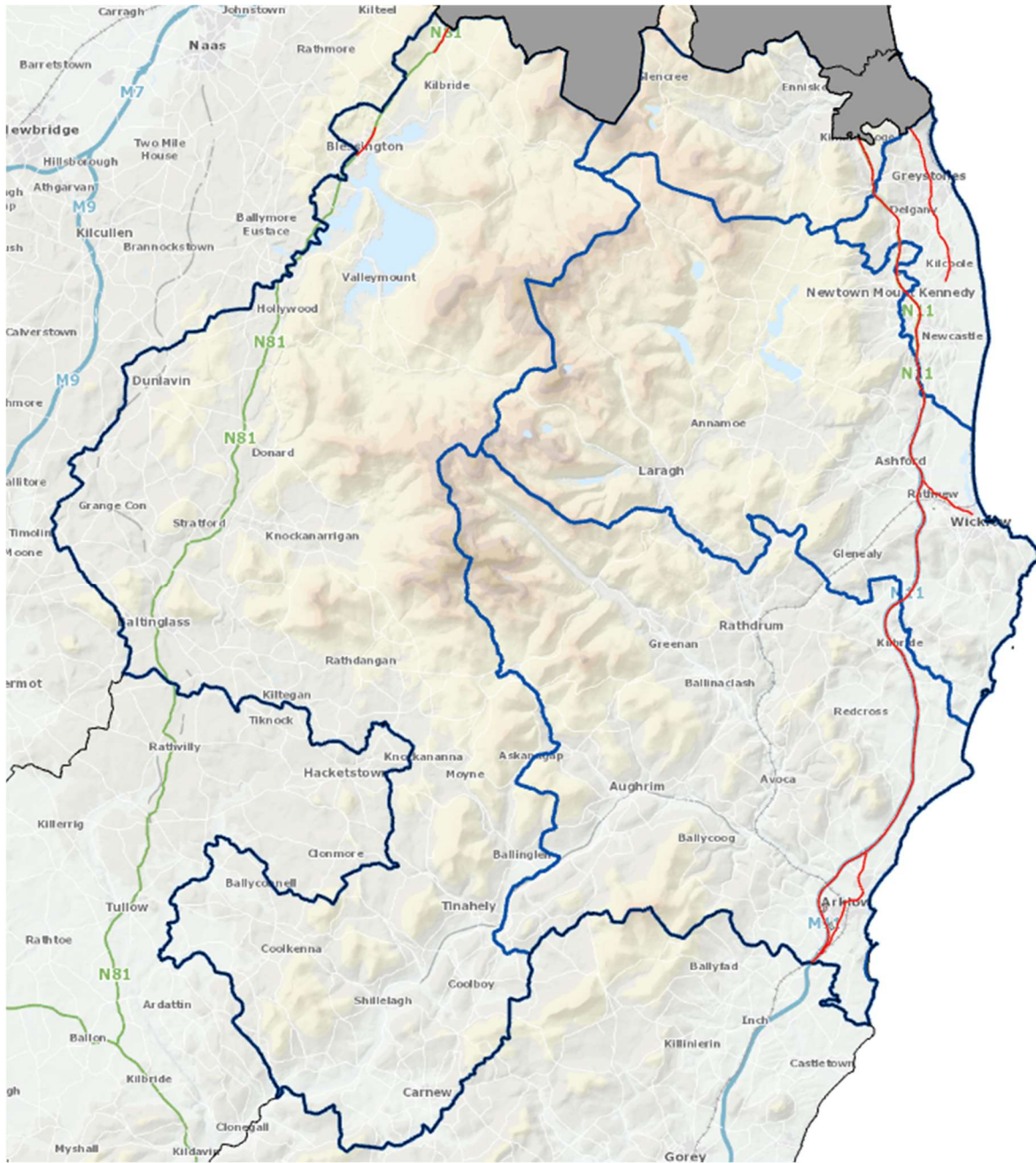


Figure 3: Wicklow Major Roads (outside Agglomeration)

Table 8: Municipal Districts Population

Municipal District	Population
Arklow	27,866
Baltinglass	28,041
Bray <i>(excluding Agglomeration)</i>	36,8726 <i>(6,882)</i>
Greystones	30,479
Wicklow	32,593

5.2 Dublin Agglomeration

The Dublin Agglomeration, which incorporates a portion of north-east Co. Wicklow, is defined in the Regulations and covers an area of 959.9km² with a population of 1,355,968 and is shown in Figure 4. For the purpose of this Action Plan, the part of Co. Wicklow included in the Dublin Agglomeration is not being considered. Further details of the Dublin Agglomeration Noise Action Plan can be found at www.dublincity.ie.

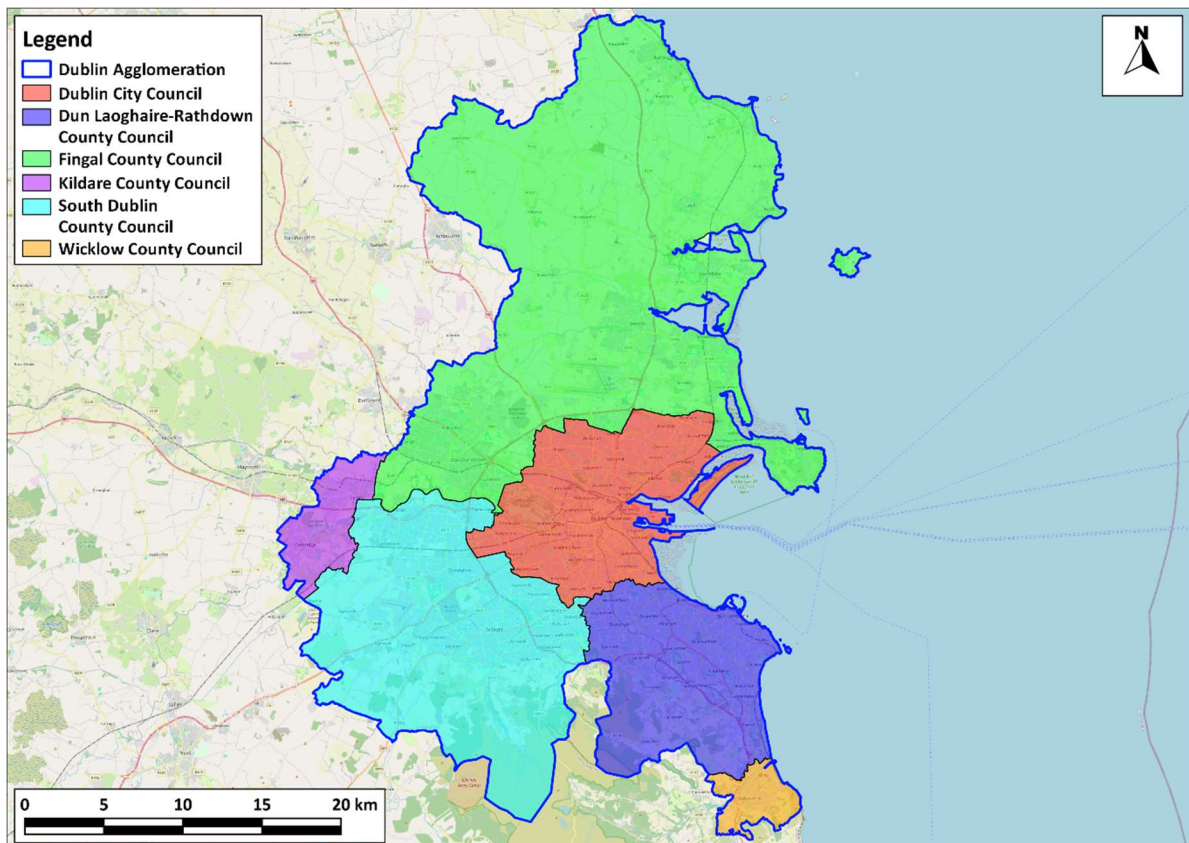


Figure 4: Agglomeration and County Boundaries

5.3 Topography/Geographical Location

Wicklow is often referred to as the ‘Garden of Ireland’, a reflection of the County’s scenic landscape. It is roughly divided centrally by the Wicklow mountains, providing a definitive east and west of the County. The County, which is within easy reach of Dublin city, has 21 towns including the major towns of Bray, Greystones-Delgany, Wicklow-Rathnew and Arklow on the east coast and Blessington, the largest town on the western side of the County. The County also has a range of attractive villages which are dotted throughout the rural landscape. The County is bound to the north by Dublin, to the south Wexford, and to the west by Kildare and Carlow.

Wicklow boasts a range of natural amenities including pristine beaches, coastal walkways and the Wicklow Mountains. Wicklow Mountains National Park, which covers over 20,000 hectares, is Ireland’s largest national park and the only one located in the east of the country. The highest mountain in the range, Lugnaquilla, rises to 925 metres above sea level. The County provides excellent walking, hiking, cycling and climbing opportunities in addition to both coastal and lake water-based activities. The Wicklow Way, at 127km, is the oldest marked long-distance walking/hiking trail in Ireland.

5.4 General Population

The majority of the population of Wicklow reside in the towns and villages in east of the County, with the highest population density towns (Bray, Greystones-Delgany, Wicklow-Rathnew) in the north-east. This can be seen in [Figure 3](#) and in [Table 9](#). The vast majority of town on the east coast act as commuter towns to Dublin city with the subsequent strain on the transport network (both road and rail).

All Wicklow settlements over 1,500 population have been categorised into the new settlement hierarchy and a hierarchy of 10 tiers has been determined, which is consistent with the RSES but provides for subcategories so as to provide a better fit for Wicklow, in particular better grouping of settlement types. Housing in Wicklow tends to be suburban in nature in the towns/villages with housing estates of 2-5 bed houses with a small mix of apartments developed in the larger towns. The density of housing is similar when compared to equivalent development in towns and villages throughout Ireland.

Table 9: Wicklow Settlement Hierarchy

Level	Settlement Typology	Description	Settlement	Population (2022 Census)
1	Metropolitan Area Key Town	Large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to act as growth drivers to complement the Regional Growth Centres.	Bray	33,512
2	Core Region Key Town	Large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to	Wicklow - Rathnew	16,439

Level	Settlement Typology	Description	Settlement	Population (2022 Census)
		act as growth drivers to complement the Regional Growth Centres.		
3	Core Region Self-Sustaining Growth Towns	Self-Sustaining Growth Towns with a moderate level of jobs and services – includes sub-county market towns and commuter towns with good transport links and capacity for continued commensurate growth to become more self-sustaining.	Arklow	13,399
			Greystones - Delgany	22,009
			Blessington	5,611
4	Core Region Self-Sustaining Towns	Self-Sustaining Towns with high levels of population growth and a weak employment base which are reliant on other areas for employment and/or services and which require targeted ‘catch up’ investment to become more self-sustaining.	Baltinglass	2,611
			Enniskerry	2,000
			Kilcoole	4,569
			Newtownmountkennedy	3,539
5	Towns & Villages Small Towns Type 1	Small towns with good local service and employment functions.	Ashford	1,892
			Aughrim	1,437
			Carnew	1,233
			Dunlavin	1,074
			Tinahely	1,037
6	Towns & Villages Small Towns Type 2	Small Towns with moderate local service and employment functions.	Avoca	757
			Donard	238
			Kilmacanogue	1,240
			Newcastle	1,010
			Roundwood	907
			Shillelagh	390
7	Villages Type 1	Villages with moderate capacity for development.		
8	Villages Type 2	Villages with limited capacity for development.		

Level	Settlement Typology	Description	Settlement	Population (2022 Census)
9	<i>Rural Clusters</i>	Existing clusters of rural housing, suitable for new rural generated housing		
10	<i>Open Countryside</i>			

5.5 Location of Noise Sensitive Groups

A noise sensitive location is any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels. For the purposes of this Noise Action Plan, the following locations are considered noise sensitive within the action plan area.

- All residential properties within 600m of the centreline of the N11.
- In a built-up area, only residential properties in the immediate vicinity of the major road.
- Schools (playschool/creche, primary or post schools) located along the major roads.

5.6 Description of Main Infrastructure

5.6.1 Major Roads

The east of the County is served by both major road connections to the north and south. The national primary route N11 runs north-south parallel to the east coast and is part of European route E1 running from Belfast through Rosslare to Portugal and Spain. The west of the County is served by the national secondary route N81.

For the purposes of this plan the major roads within County Wicklow are as follows:

- N11 – National Primary Route
- N81 – National Secondary Route, two sections – Blessington Town & north of R759 junction to county boundary.
- R750 – From roundabout in Rathnew Village to Station Road junction in Wicklow Town
- R772 – From Junction 16 M11 to the roundabout in Rathnew Village
- R772 – From Junction 20 M11 to Junction 21 M11 in Arklow
- R761 – Runs north-south from north Greystones to Kilcoole

5.6.2 Major Rail

The train line runs from Bray through Greystones (as part of the DART network) and also extends to Wicklow, Rathdrum and Arklow before heading to Wexford/Rosslare. There is no major rail in Wicklow outside the area included in the Agglomeration.

6 EXISTING NOISE MANAGEMENT FRAMEWORK

6.1 Roads

A number of initiatives have been undertaken to mitigate the effects on noise throughout Co. Wicklow. These include:

- Noise barriers are in place at six locations along the M/N11
- Low noise surfacing undertaken on sections of M/N11 & also on regional and local roads within towns/villages. The low noise surfacing on the N11 was undertaken in 2023 and would impact the results of MIAs 72, 82, 83.
- The ‘Noise Action Plan’ was incorporated into the County Development Plan to ensure new developments in areas with potential noise disturbance (identifiable via noise mapping) incorporate appropriate noise mitigation measures.
- Planning Applications are analysed thoroughly where transportation noise is inborne using data from noise maps.
- The Current County Development Plan 2022-2028 contains strengthened measures to reflect current noise legislative and guidance requirements/ noise pollution objectives/ spatial intervention /site selection stage. Through this Plan, Wicklow County Council is implementing noise pollution controls. These include:
 - Requiring proposals for new developments with the potential to create excessive noise to prepare a construction and/or operation management plans to control such emissions.
 - Requiring activities likely to give rise to excessive noise to install noise mitigation measures to undertake noise monitoring and to provide an annual monitoring audit.
- Noise complaints relating to road noise are logged in our CRM and referred to the Roads Section.
- WCC have reviewed the speed limits in a number of sensitive areas which should aid in the reduction of road noise.
- Four Park and Ride facilities on the N/M11 were further progressed in 2023 and are now at various stages of planning and design under the Greater Dublin Area Park and Ride Strategy and will offer circa 1000 spaces when complete. This should aid in a reduction of vehicles on the major road network when fully operational.
- Three Greenways were further developed to design stage during 2023 and will in the future provide safe alternatives for commuting and school travel in a number of towns.
- Active travel projects were completed in 2023, including 2km of cycle path in Arklow, 500m in Greystones/Kilcoole, 2.5km of new footpaths and 1km of footpath upgrades around the county.
- An E-bike rental scheme operated by BOLT commenced in the town of Bray in 2023, allowing easy commuting around the town and is cutting down on car trips.
- Designated parking for EVs in Wicklow County Council Car Park helps encourage quieter EVs
- The Blessington ring road is being progressed to detailed design stage and will eventually remove significant traffic from this urban centre.
- Roads staff attended and participated in the EPA noise steering meetings and annual workshop.

6.2 Railways

There are no major railways within the boundaries of this plan.

6.3 Licensed Industrial Facilities

There are four licensed industrial facilities along the N/M11 major route relevant to this Noise Action Plan and none of these are thought to significantly contribute to environmental noise. These are licensed and managed by the EPA and noise management conditions are set in the relevant licence for the site. <https://gis.epa.ie/EPAMaps/>.

7 SUMMARY OF THE RESULTS OF THE NOISE MAPPING PROCESS

7.1 Wicklow Noise Exposure and Harmful Effects

7.1.1 Noise Exposure Assessment

The first three rounds of strategic noise maps have been developed using computation methods set out in Environmental Noise Regulations 2006 (S.I. 140/2006). For Round 4, Member States are required to use the Common Noise Assessment Methods for Europe (CNOSSOS-EU). This change in methodology makes a direct comparison of the Round 4 noise exposure statistics with the previous three rounds methodologically complex.

Exposure statistics are assessed independently for each noise source and are summarised for the noise metrics across the noise exposure bands defined in the Regulations. The population exposure statistics have been rounded to the nearest 100 as required by the Regulations. Airport noise exposure statistics will be presented within a standalone Action Plan for Dublin Airport.

Table 10: Number of People in Dwellings – L_{den}

Noise Exposure* (dB L _{den})	Major Roads
55-59	9500
60-64	4900
65-69	2400
70-74	1500
>=75	300

*exposure statistics rounded to the nearest 100.

Table 11: Percentage of Total Population Exposed to the Noise Source – L_{den}

Noise Exposure (dB L _{den})	Major Roads
55-59	13 %
60-64	7 %
65-69	3 %
70-74	2 %

Noise Exposure (dB L _{den})	Major Roads
>=75	0 %

Table 12: Number of School Buildings (& Hospital Buildings) – L_{den}

Noise Exposure (dB L _{den})	Major Roads
55-59	0 (0)
60-64	0 (0)
65-69	0 (0))
70-74	0 (0)
>=75	0 (0)

Table 13: Number of People in Dwellings – L_{night}

Noise Exposure* (dB L _{night})	Major Roads
45-49	11000
50-54	6200
55-59	3100
60-64	1700
65-69	400
>=70	100

*exposure statistics rounded to the nearest 100.

Table 14: Percentage of Total Population Exposed to the Noise Source – L_{night}

Noise Exposure (dB L _{night})	All Roads
45-49	15 %
50-54	8 %
55-59	4 %
60-64	2 %
65-69	1 %
>=70	0 %

Table 15: Number of School Buildings (& Hospital Buildings) – L_{night}

Noise Exposure (dB L _{night})	All Roads
45-49	0 (0)
50-54	0 (0)
55-59	0 (0)
60-64	0 (0)
65-69	0 (0)
>=70	0 (0)

7.1.2 Harmful Effects Assessment

The European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. 663/2021) sets out the assessment methods for harmful effects, which considers ischaemic heart disease (IHD), high annoyance (HA) and high sleep disturbance (HSD).

Ischaemic heart disease is calculated for road traffic noise only, whereas high annoyance and high sleep disturbance are calculated for road traffic, railway and aircraft noise.

The exposure of harmful effect is assessed independently for each source. Where the same people are simultaneously exposed to different noise sources, the harmful effects may not, in general, be cumulated, however can be compared to identify proportional significance.

The method determines harmful effects on population within an assessment area, rather than an accurate assessment of possible health effects at any specific building or location.

Whilst the Regulations set out the equations to be used for calculating harmful effects, it does not define noise thresholds above which health effects should be calculated for, nor does it stipulate the assessment bands that should be used (0.1 dB, 1 dB or 5 dB), these have been provided by the EPA, and are as follows:

- The calculations for harmful effects should be undertaken in 1 dB assessment bands.
- The assessment of harmful effects should be undertaken above the following thresholds which are in line with WHO Guidelines:
 - **Road traffic noise:** 53 dB L_{den} , 45 dB L_{night}
 - **Railway noise:** 54 dB L_{den} , 44 dB L_{night}

Harmful effects have therefore been calculated from population exposure statistics in 1 dB bands for the noise level thresholds set out above using the calculation methodology set out in the Regulations.

Table 16 presents the calculated harmful effects in the case of road traffic noise for the Wicklow.

Table 16: Wicklow - Health Effects (Road Noise)

Harmful Effect	Number of People		% of Population*	
	All Sources	Major Sources	All Sources	Major Sources
Ischaemic Heart Disease (IHD)	4	4	0.01%	0.00%
Highly Annoyed (HA)	3,810	3,810	5.16%	4.63%
Highly Sleep Disturbed (HSD)	1,153	1,153	1.56%	1.45%
*Total population for Wicklow excluding Dublin Agglomeration = 73,789				

7.1.3 Strategic Noise Mapping Figures

The strategic noise maps are noise contour maps, a graphical representation illustrating the distribution of noise levels over a geographical area. The colours of the noise exposure bands are indicated in the legend, with darker colours representative of higher noise levels.

Transport Infrastructure Ireland (TII) carried out noise mapping for the County and produced the strategic noise map for all major roads. A major road for R4 noise mapping could be any section of a National, Regional or Local road with a total annual bi-directional traffic flow across all carriageways during 2021 of more than 3 million vehicle passages per year, or approximately 8,219 per average 24 hours.

Two noise maps were produced by TII in 2021 for the County’s major roads:

- One showing the L_{den} (dB) noise contour bands, and:
- One showing the L_{night} (dB) noise contour bands.

Each map presents the noise levels in 5dB contour bands and are shown in greater detail in Appendix C or can be viewed at <https://gis.epa.ie/EPAMaps/>.




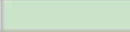
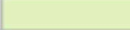






dB Band	Sample
30 – 34dB	
35 – 39dB	
40 – 44dB	
45 – 49dB	
50 – 54dB	
55 – 59dB	
60 – 64dB	
65 – 69dB	
70 – 74dB	
75 – 79dB	
80 – 99dB	

Figure 5: Noise Contour Legend

The L_{den} map shows the loudest noise is the road itself, while moving out from the road, the noise level reduces. The lowest noise band shown is 55-59dB (orange) and beyond this the noise level from the road (L_{den}) is not reported under the Regulations i.e. <55dB. The strategic noise maps in Appendix C do not provide the L_{den} 53dB noise band, but calculations of the exposed population within the L_{den} 53dB noise band are considered in this NAP.

The L_{night} map similarly shows noise contours in 5dB bands. The highest noise on the road itself at night is in the 65-69dB range. Moving out from the road, the noise level decreases with distance with the lowest noise band shown as 45-49dB (yellow) and beyond this the noise level from the road (L_{night}) is not reported under the Regulations i.e. <45dB.

The model calculations provide results outputs every 10m, which are used to produce the strategic noise maps.

The Regulations do not set out noise limits which are permissible or impermissible in relation to environmental noise, however, do set the noise exposure bands to be reported, which are reflected in the strategic noise maps. In the absence of noise limits, it could be assumed that the closer the calculated noise level is to the highest noise exposure band set out in the Regulations the more undesirable it is.

The strategic noise maps are shown in the following figures for the two noise indicators specified in the Regulations, L_{den} and L_{night} .

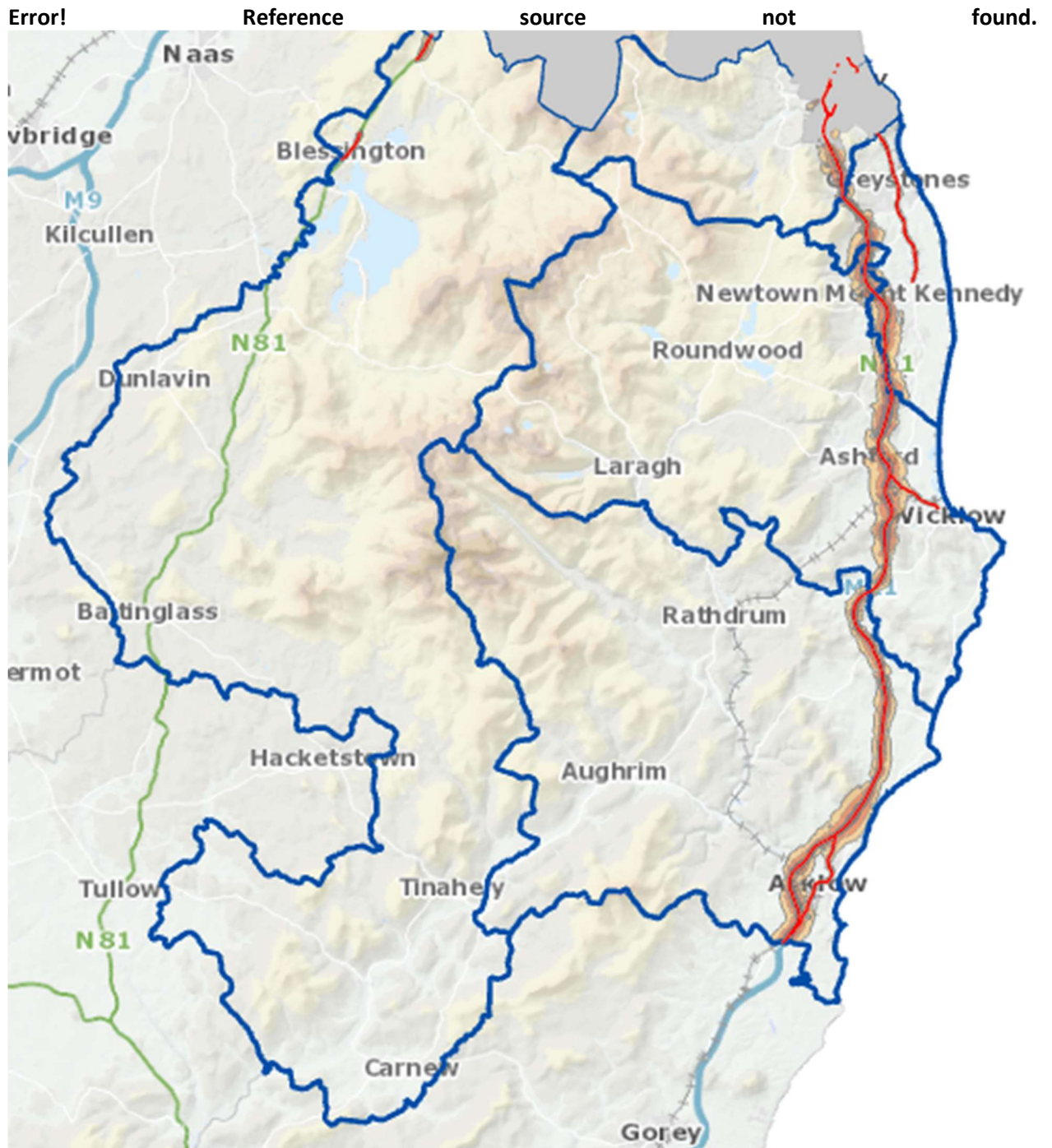


Figure 6: Wicklow – Strategic Noise Map – L_{den} – Road Traffic – All Sources

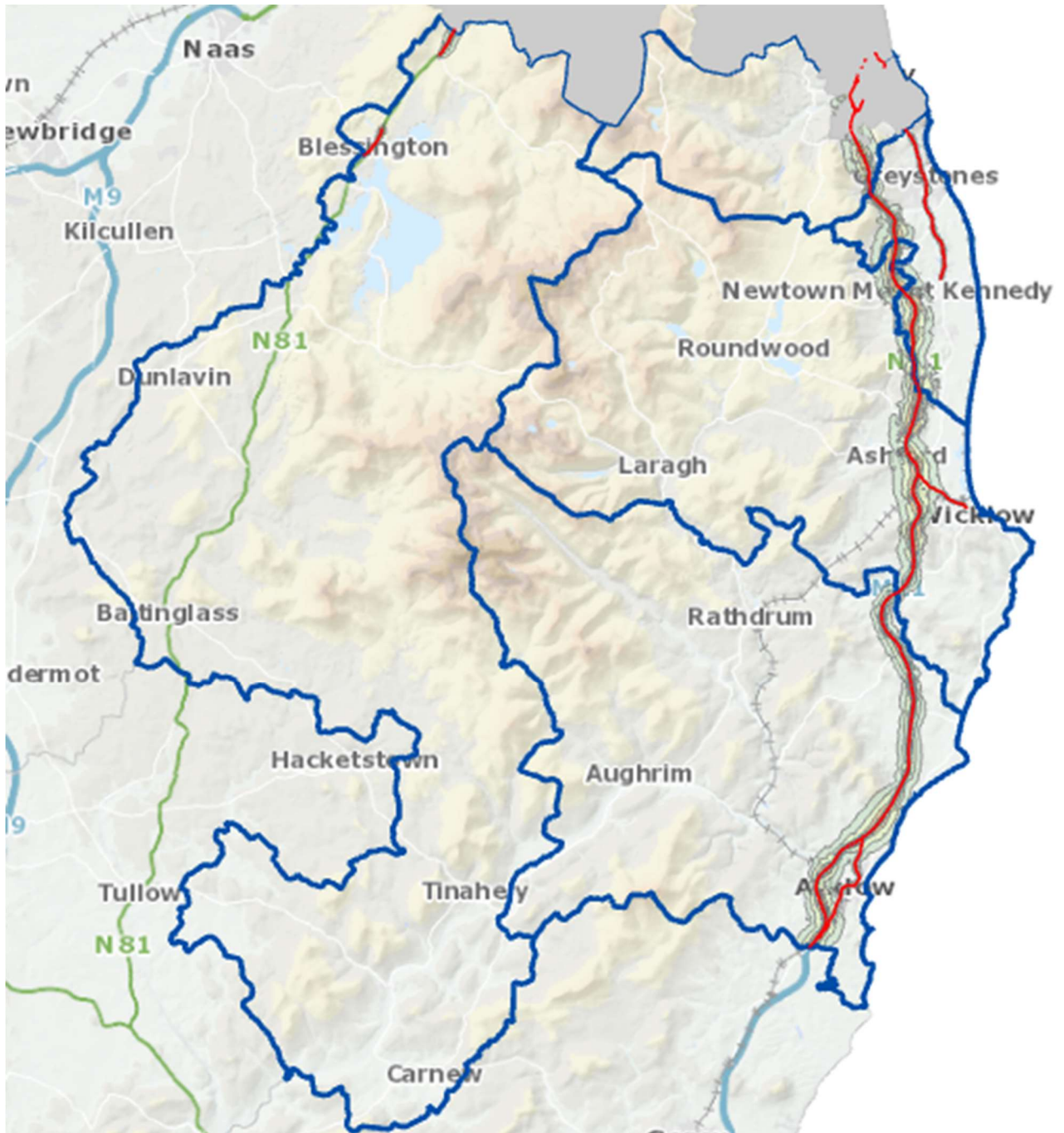


Figure 7: Wicklow – Strategic Noise Map – L_{night} – Road Traffic – All Sources

7.2 Key Insights from Strategic Noise Mapping

7.2.1 Harmful Effects

The statistical representation of harmful effects on population within Wicklow indicates that 3,810 people are at risk of high annoyance from road traffic noise. This equates to 5.169% of the population at risk of high annoyance from road traffic noise.

The calculation of number of people highly sleep disturbed indicates that 1,152 people are at risk of high sleep disturbance from road traffic noise. This equates to 1.56% of the population at risk of high sleep disturbance from road traffic noise.

The calculation of number of people at risk from ischemic heart disease indicates that 4 people are at risk of high sleep disturbance from road traffic noise. This equates to 0.01% of the population at risk of high sleep disturbance from road traffic noise.

8 IDENTIFICATION OF PRIORITY IMPORTANT AREAS

The Regulations require that APA's address "*priorities*" and "*the most important area or areas*" with a view to identifying "*measures*" that will help "*avoid, prevent or reduce*" the "*harmful effects, including annoyance, due to exposure to environmental noise*".

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

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;
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;
3. **Priority Important Areas (PIA)** – between 5 and 10 MIAs, or groups of similarly affects MIAs, which are identified by the APAs as those which will be addressed during the implementation of the Noise Action Plan (NAP).

The IAs, MIAs and PIAs are identified with respect to noise from roads and railways (where applicable). 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.

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.

8.1 Overview of Process

The process of identifying Important Areas, Most Important Areas and Priority Important Areas within Wicklow is Stage 1 of a two-stage process for the determination and implementation of noise management actions, as detailed within the Noise Action Plan.

Stage 1 includes using the results of the strategic noise maps to identify the number of people and noise sensitive properties exposed to levels above the limits set by the EPA Guidance which are in line with the 2018 WHO *Environmental Noise Guidelines for the European Region* (WHO ENG 2018)⁶⁰. These limits for road and rail traffic are set out in [Section 8.2](#) below.

The findings of the Important Area process are then used to inform an automated process within Geographic Information System (GIS) software to generate raster heatmaps of the relative number of people highly annoyed due to noise in a given area, referred to as Most Important Areas. The APA, in consultation with the NMBs, prioritise the Most Important Areas to identify those which are to be addressed during the implementation of the Noise Action Plan, referred to as Priority Important Areas.

Stage 2 of the process takes place during the implementation of the Noise Action Plan and focuses on undertaking an assessment of each of the identified Priority Important Areas including identification of appropriate noise mitigation measures.

⁶⁰ Environmental noise guidelines for the European Region, WHO 2019. Available at: <https://www.who.int/europe/publications/i/item/9789289053563> [Accessed October 2023]

8.2 Identifying Important Areas (IAs) – Roads and Railways

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. These resultant datasets are then be used to identify IAs where long term noise exposure to noise from 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.

The EPA Guidance references the WHO ENG 2018 guidelines in setting the “noise limit value” for identifying Important Areas, namely:

- **Railway noise: 54 dB L_{den} and 44 dB L_{night};** and
- **Road traffic noise: 53 dB L_{den} and 45 dB L_{night}.**

The noise limit values are relevant for the reduction of harmful effects from environmental noise on human health, and a summary of the number of people and number of noise sensitive receptors in Wicklow which experience environmental noise above these levels is summarised in [Table 17](#) and [Table 18](#), respectively.

Table 17: Important Areas - Number of People in Dwellings

Noise Source	Noise Limit Value	Number of People in Dwellings Exposed to Level Above Noise Limit Value
Road Traffic	53 dB L _{den}	18,647
	45 dB L _{night}	22,331
Railway	54 dB L _{den}	0
	44 dB L _{night}	0

Table 18: Important Areas - Number of School Buildings (& Hospital Buildings)

Noise Source	Noise Limit Value	Number of People in Schools (& Hospitals) Exposed to Level Above Noise Limit Value
Road Traffic	53 dB L _{den}	17 (1)
	45 dB L _{night}	24 (1)
Railway	54 dB L _{den}	0 (0)
	44 dB L _{night}	0 (0)

8.3 Identifying Most Important Areas (MIAs) – Major Roads

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.”

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 (CNOSSO-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, the number of people highly sleep disturbed, and the number of cases of ischaemic heart disease 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. In particular concerning the statistical significance, the WHO studies were based on representative populations, and the results of these assessment methods are consequently considered relevant when applied to representative populations.

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 8.2](#) above, and is generated on a 100m radius, which generates 100m² raster cells.

It is then possible to identify 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 100m²**, the MIAs (delineated as polygons) are shown below in [Section 0](#).

It is crucial to emphasize that the approach to identifying Most Important Areas is of a statistical nature and pertains to the entire population encompassed by the noise maps. It should not be construed as a precise assessment of harmful effects for specific buildings, nor are the extents of the Most Important Areas definitive. Instead, they are indicative in identifying areas with a relatively high number of people highly annoyed due to noise.

8.3.1 Most Important Areas Summary

A summary of the Most Important Areas identified within Wicklow using the EPA Guidance density criterion of 15 or more people per 100m² is given in [Table 19](#).

Using this criterion, 14 Most Important Areas were identified within Wicklow, with a Municipal District breakdown as shown in [Table 16](#). Wicklow MD has the highest number of MIAs, with 6 identified. The Most Important Areas per Municipal District are shown in [Figure 8](#), [Figure 9](#), [Figure 10](#) and [Figure 11](#) to be read in conjunction with

[Table 20](#).

Table 19: Most Important Areas (MIAs) Summary

APA	No. of MIA		Harmful Effects Statistics**		
	MIAs	Total Population*	HA	HSD	IHD
Arklow MD	5	1,490.31	292.30	95.05	0.36
Bray MD (Outside Agglomeration)	0	0	0	0	0
Baltinglass MD	0	0	0	0	0
Greystones MD	3	116.20	32.75	10.38	0.05
Wicklow MD	6	466.63	110.98	36.17	0.12
TOTAL	14	2,073.14	436.03	141.60	0.53

*The total population inside all Most Important Areas (MIA)

** Total harmful effects inside all MIA (the harmful effects presented in this table are determined from 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)

8.3.2 Most Important Area Figures

Table 20: MIA Reference

MIA Ref. Number	Municipal District	Town
72	Wicklow	Kilpedder
73	Greystones	Kilcoole
74	Wicklow	Newtownmountkennedy
75	Wicklow	Wicklow
76	Arklow	Arklow
77	Greystones	Kilcoole
78	Wicklow	Rathnew
79	Greystones	Kilcoole
80	Arklow	Arklow
81	Arklow	Arklow
82	Wicklow	Kilpedder
83	Wicklow	Kilpedder
84	Arklow	Arklow
85	Arklow	Arklow

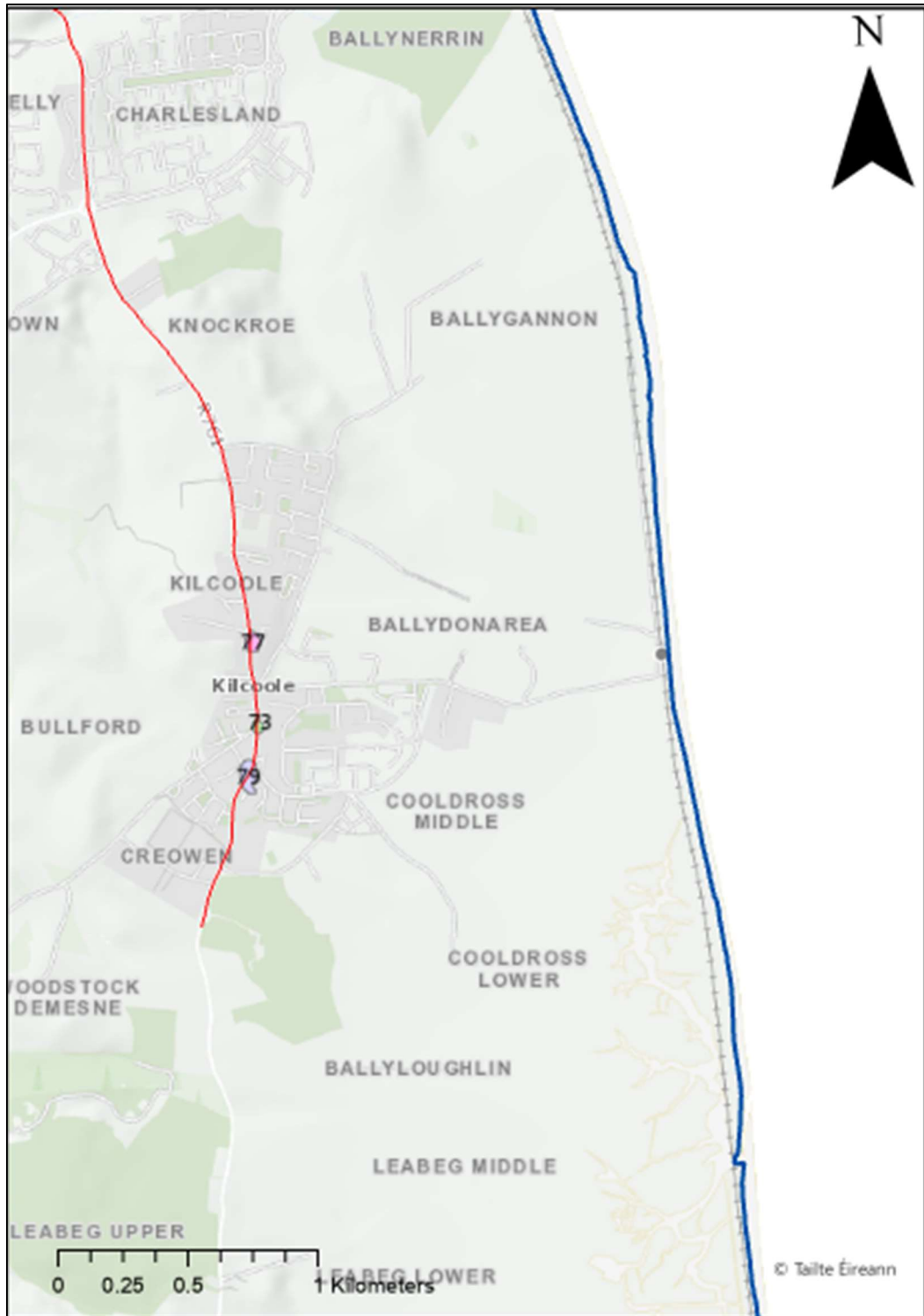


Figure 8: Greystones MD MIAs

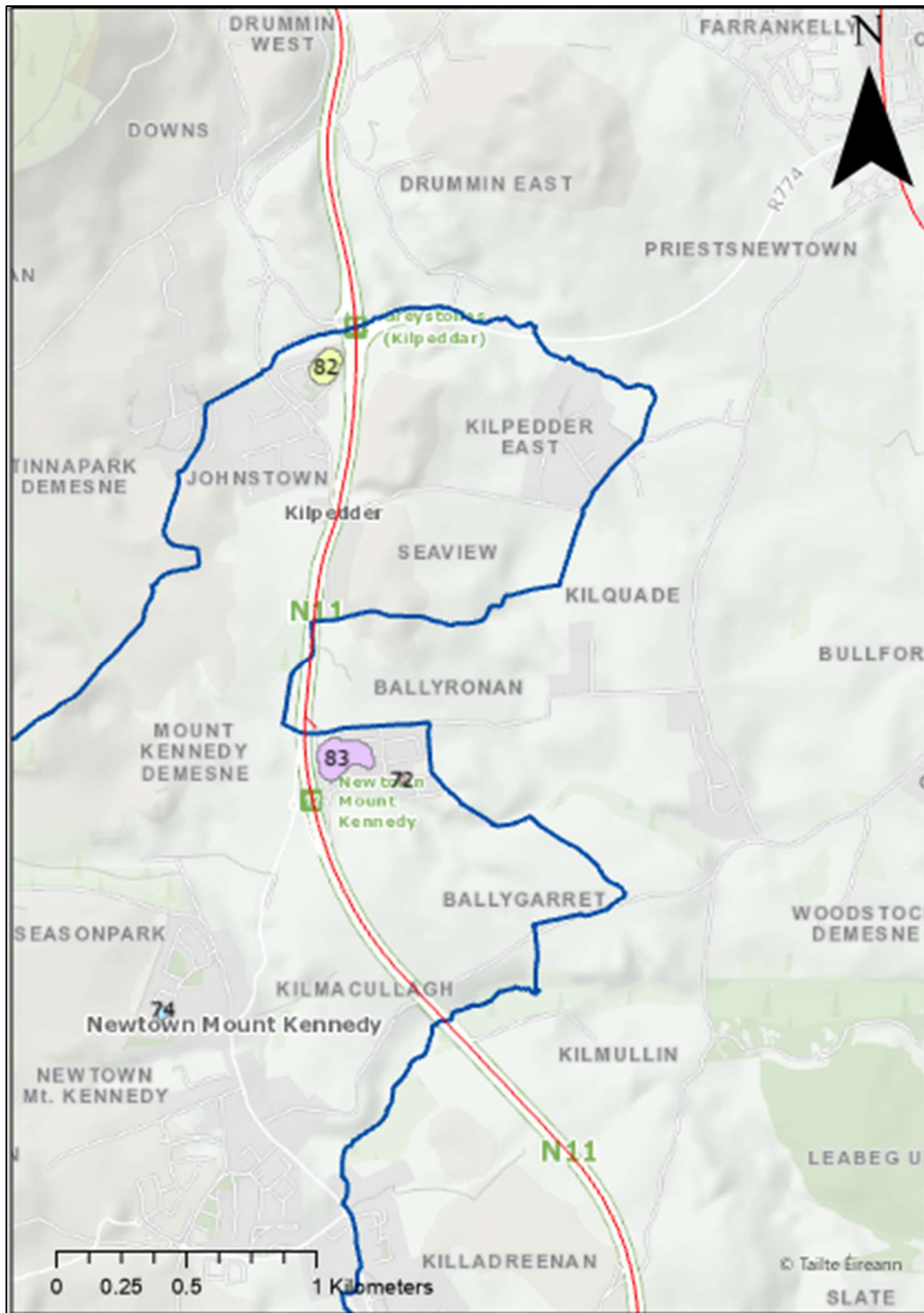


Figure 9: Wicklow MD MIAs (1)

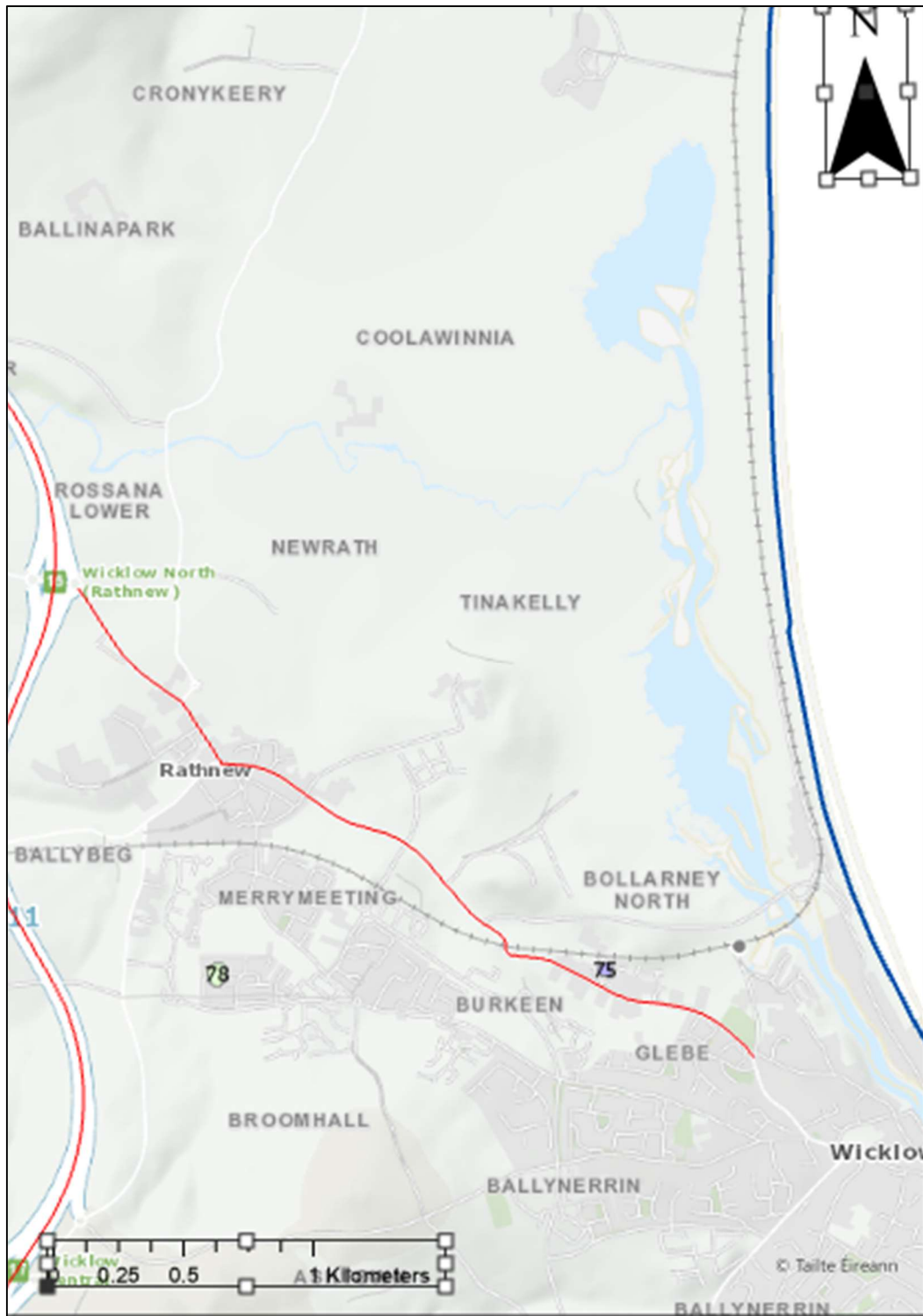


Figure 10: Wicklow MD MIAs (2)

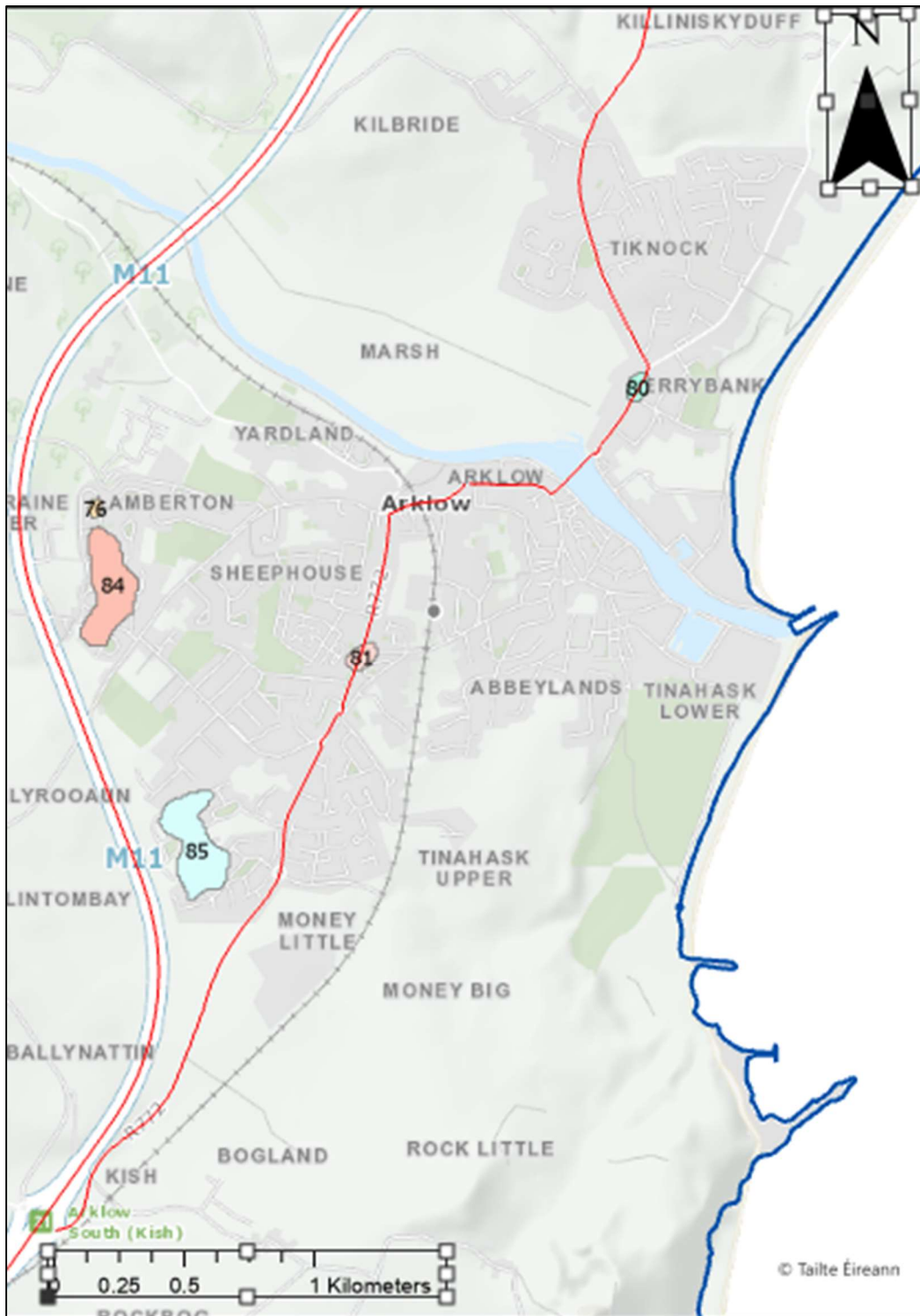


Figure 11: Arklow MD MIAs

8.4 Identifying Priority Important Areas (PIAs)

The recommended process described in [Section 8.3](#) 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 important 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:

- Area (m²)
- Total population
- Number of people highly annoyed (HA)
- Number of people highly sleep disturbed (HSD)
- Population increased risk to ischaemic heart disease (IHD)
- 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)

8.4.1 Priority Important Areas Summary

The Priority Important Areas are summarised in

[Table 21](#) and can be seen [Figure 12 – 18](#).and were selected based upon those Most Important Area or groups of Most Important Areas with the greatest number of people (50+) and consideration of other factors such as planned road maintenance works and traffic plans and projects.

The Priority Important Areas selected cover, statistically speaking, 305.19 people highly annoyed (HA), 97.84 people highly sleep disturbed (HSD) and 0.37 people at increased risk of ischemic heart disease (IHD) with the potential to benefit from the noise management measures considered.

Noise management measures to be considered in the assessment of noise mitigation for the identified Priority Important Areas are set out in [Section 10](#). The progress of investigating these measures will be reported to the EPA throughout the life cycle of the Noise Action Plan.

Table 21: Priority Important Area (PIA) Summary

Municipal District	No. of PIA			Harmful Effects Statistics**		
	PIA Ref.	MIA Ref.	Total Population*	HA	HSD	IHD
Arklow MD	AMD PIA 01	76 & 84	725.69	132.27	43.03	0.16
	AMD PIA 02	81	81.19	23.19	7.21	0.03
	AMD PIA 03	85	617.53	116.2	38.27	0.14
Baltinglass MD	n/a	n/a	0	0	0	0
Bray MD	n/a	n/a	0	0	0	0
Greystones MD	GMD PIA 01	79	59.53	13.72	4.27	0.02
Wicklow MD	WMD PIA 01	75	65.39	9.57	1.79	0.01
	WMD PIA 02	78	73.67	10.24	3.27	0.01
TOTAL			1,622.97	305.19	97.84	0.37
	*The total population inside all Priority Important Areas (PIA)					
	** Total harmful effects inside all IA (the harmful effects presented in this table are determined from 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)					

8.4.2 Priority Important Areas Figures

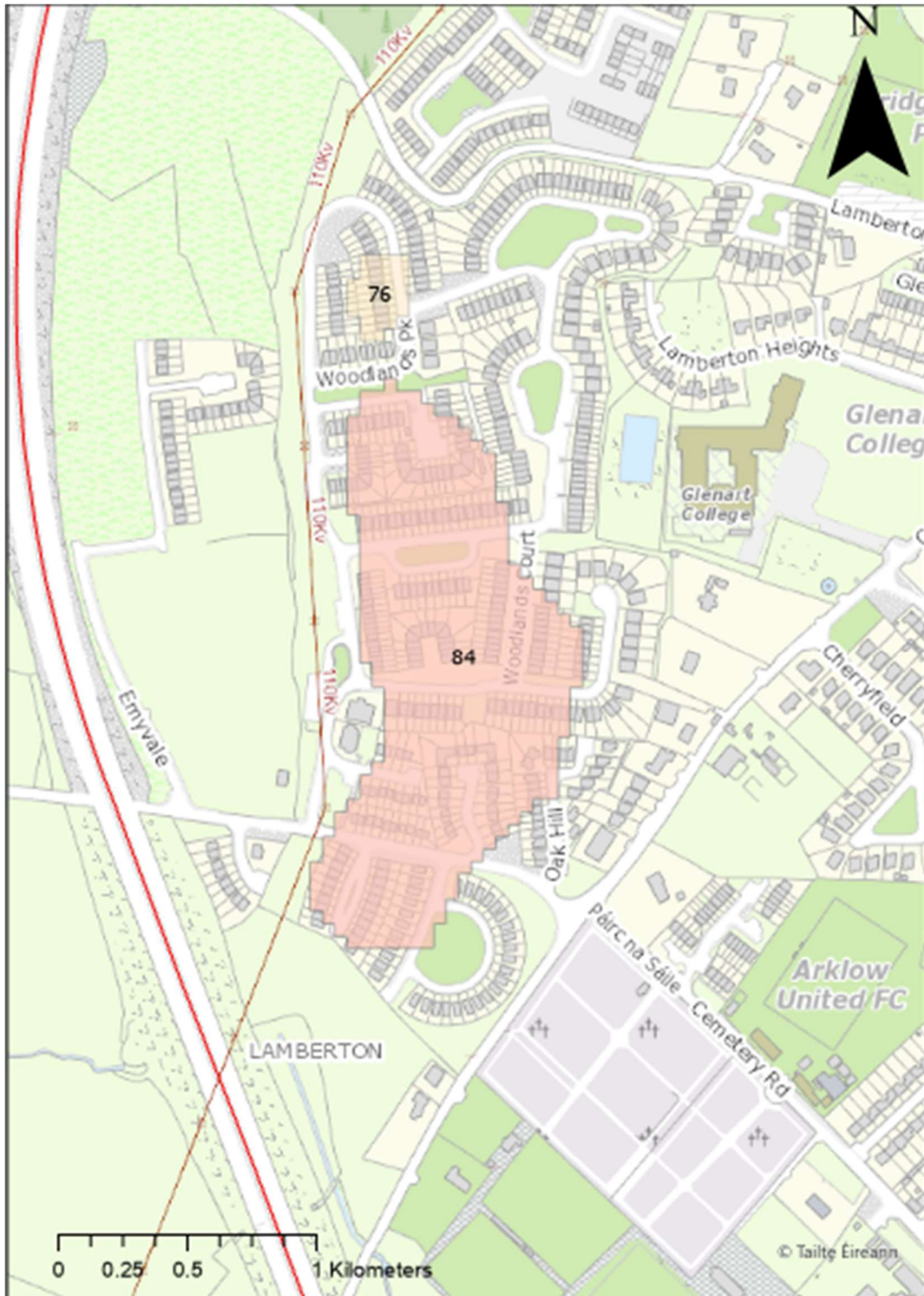


Figure 12: AMD PIA 01



Figure 13: AMD PIA 02



Figure 14: AMD PIA 03



Figure 15: GMD PIA 01



Figure 16: WMD PIA 01



Figure 17: WMD PIA 02

9 PRESERVATION OF ENVIRONMENTAL NOISE QUALITY

The Regulations require that noise action plans aim to prevent increased exposure to environmental noise, where practicable, and preserve quiet areas. This section presents the recommended approach for noise action plans in helping to protect the future noise environment, and preserve quiet areas, in support of these objectives.

9.1 Protection of the Future Noise Climate

In addition to noise reduction, the END aims to avoid and prevent the harmful effects due to exposure to environmental noise. This is 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.

In order to avoid harmful effects of environmental noise in the future, it is necessary to put actions in place which will provide adequate protection from the potential impacts of new developments which may give rise to long term exposure to environmental noise within the area covered by the action plan and will preserve and maintain areas with environmental noise levels deemed to be good.

The Regulations apply to:

- “public parks or other quiet areas in an agglomeration”, and
- “quiet areas in open country”⁶¹,

while the noise action plans shall

- “have as its objective that of also protecting quiet areas in an agglomeration and quiet areas in open country.”⁶²

Quiet areas may be delimited⁶³ under the Regulations and are to be regarded as areas where environmental noise levels are deemed to be good.

In areas not delimited as Quiet Areas, and likewise not considered to be a MIA or PIA, it may be relevant to consider the potential noise impact of a proposed future development in the context of the existing ambient noise levels, and relevant guidance on control of noise exposure 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. 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.

Measures to preserve the quality of environmental noise levels, or avoid harmful effects, may be required in two generalised scenarios:

1. Delimited quiet areas; and
2. Areas not delimited as Quiet Areas, nor considered as areas where reduction of the existing noise climate is necessary.

⁶¹ Regulation 4(2)

⁶² Regulation 12(4)(b)

⁶³ Regulation 10(1)

9.2 Quiet Areas Outside Agglomerations

The END currently requires Quiet Areas only be assessed in an agglomeration. At present there is no universally accepted definition of what constitutes a Quiet Area outside an agglomeration. The strategic noise mapping undertaken for this Noise Action Plan does not provide a resource which may be used to help identify quiet areas in open country. This is partially due to the nature of the assessed noise sources, which do not include recreational activities, and partially due to the area of coverage of the strategic noise mapping, which is near to major sources, and therefore they are not locations which will be undisturbed by them. Any proposals to designate any Quiet Areas would need to be discussed with the EPA for approval.

10 PREVENTION AND MITIGATION MEASURES

10.1 Introduction

The management of noise within Wicklow adopts two approaches:

- **Prevention** – measures which seek to avoid additional members of the community being exposed to undesirable noise conditions. In Wicklow, preventative measures consist of planning policy in respect of not locating residential developments and other noise sensitive buildings in potentially noisy environments and in particular adjacent to transportation infrastructure.
- **Mitigation Measures** – relates to the identification and prioritisation of appropriate mitigation measures to reduce and/or mitigate noise levels in areas where they are potentially harmful to human health.

10.2 Prevention

10.2.1 Planning Guidance

Applications for new residential developments in Wicklow will be assessed in accordance with the policies and goals outlined in the relevant Local and County Development Plans.

Where an assessment outcome determines the likelihood of an adverse noise impact, planning applications should be supplemented by an Acoustic Design Statement carried out by appropriately qualified acousticians and competent persons⁶⁴.

10.2.2 Noise and the Public Realm

A healthy acoustic environment in public areas depends on environmental noise levels as well as a variety of subjective factors such as the intended use of space, the preferences of people, their expectations and their attitudes and sensitivity to the sounds they hear. The management of environmental noise in the public realm should have a broad focus with a consideration of noise levels as well as the need to create the right acoustic environment for the right time and place.

There are synergies between the mitigation of traffic-related noise and air pollution because the source of emissions is often similar. Early input in the design of public spaces by considering air quality and the acoustic environment offers the opportunity to maximise the benefits of taking an integrated approach to design.

Public spaces should be designed to maximise the contribution in terms of maintaining good air quality, reducing environmental noise and improving the quality of sound, consideration should be given to measures including:

- Using novel environmentally friendly methods (e.g., holistic and sustainable abatement of noise by optimized combinations of natural and artificial means (HOSANNA)⁶⁵, funded by the European Union

⁶⁴ The Council's definition of competent persons is based on the EPA's interpretation in their Guidance Note for Noise in Relation to Scheduled Facilities.

⁶⁵ <https://cordis.europa.eu/project/id/234306> [Accessed March 2024]

Seventh Framework Programme, FP7/2007–2013⁶⁶) such as barrier designs, the appropriate planting of trees, shrubs, or bushes, ground and road surface treatments, and greening of building façades and roofs;

- Pedestrianisation of streets and the use of green infrastructure to reduce the likelihood of citizens being present in locations where air and noise pollution are highest, and creating attractive, accessible places where pollution levels are lower;
- Providing options for active travel along routes other than beside busy roads, making walking and cycling increasingly attractive alternatives to private vehicle use. This will reduce citizens' exposure to air and noise pollution, and potentially vehicular emissions;
- Providing and protecting tranquil outdoor environments and positive acoustic environments. This may reduce annoyance for citizens living near busy roads and ensure people have options other than being indoors when they want to enjoy respite from noise;
- Encouraging exercise and other outdoor recreation to improve citizens health and well-being due to health risks posed by air and noise pollution; and
- Providing alternative acoustic interventions to create new positive types of sounds that mask environmental noise.

10.3 Mitigation

10.3.1 Areas to be Subject to Noise Management Activities

Priority Important Areas, (see [Section 8](#)), have been identified within Wicklow as those where noise management activities are to be considered during the implementation of the Noise Action Plan.

As noted in [Section 8](#), the Priority Important Areas have been identified with respect to noise from major roads only (there is no major railway in Wicklow outside the Agglomeration).

Considering the multitude and diversity of noise management options, choosing a noise mitigation measure necessitates evaluating its potential effectiveness in reducing noise exposure and adverse effects, while also considering its associated costs. The general steps in this process, which will be considered by the APA in consultation and collaboration with the NMBs during the implementation of the Noise Action Plan, are:

1. Noise measurements at Priority Important Areas.
2. Review of the assumptions used to identify the Priority Important Areas.
3. Re-evaluation and confirmation of Priority Important Areas.
4. Identification of practical noise mitigation measures.
5. Appraisal of noise mitigation measures monetised benefits to health.
6. Financial assessment of noise mitigation measures.
7. Cost-benefit analysis.
8. Recommendation of noise mitigation measure(s).

Each of these steps is further elaborated upon in the subsequent sections. The appraisal of the noise mitigation measures shall be undertaken during the implementation of the plan.

⁶⁶ <https://eur-lex.europa.eu/EN/legal-content/summary/seventh-framework-programme-2007-to-2013.html> [Accessed March 2024]

1. Noise Measurements at Priority Important Areas

The assessment of Priority Important Areas is guided by an initial undertaking of noise measurements at locations representative of the area identified. The surveys will be conducted by/on behalf of Wicklow County Council.

The primary objective of the noise survey is to verify that the measured noise exposures accurately correspond to the results obtained from the strategic noise maps. The results of the noise measurements will service to authenticate the strategic noise models, providing a basis upon which the noise mitigation measures can be evaluated.

2. Review of the Assumptions used to Identify the Priority Important Areas

If disparities arise between the noise measurements and the results obtained from the strategic noise maps, investigations will be conducted into factors such as road surface, traffic speeds, traffic counts, presence of barriers etc, and these findings will be compared against the assumptions within the noise models utilised for development the strategic noise maps.

3. Re-evaluation of Priority Important Areas

A re-evaluation of the identified Priority Important Area to ensure the analysis is representative of the 2021 assessment year, and appropriate amendments to the model parameters have been incorporated. This may include re-running the adjusted noise model and/or a review of any noise measurements.

4. Identification of Practical Noise Mitigation Measures

Wicklow County Council will identify practical noise mitigation measures in relation to the Priority Important Areas that remain following steps 1-3 (above). The practicality of the measures will take into consideration its potential impact in terms of noise exposure and harmful effects reduction, planning, land-use, cost, and available technology.

The noise mitigation measures are collectively described as a noise management framework, and can be considered both in isolation, and in combination. Consideration will also be given to measures that may result from existing road management, traffic and works programmes. Examples of mitigation measures for noise associated with traffic can be seen in [Table 22](#).

The EPA is responsible for issuing Waste, Industrial Emission (IE) and Integrated Pollution Control (IPC) licenses. Within the licensing systems, specific activities and operations are subject to license conditions that regulate noise emissions. The requirement for industry noise mitigation measures would be identified by the EPA and evaluated on a case-by-case basis, accounting for the facilities existing licensing conditions and present noise mitigation strategies. The focus of this Noise Action Plan is the strategic noise management activities associated with road noise.

Table 22: Road Traffic Noise Mitigation Measures

Source Control	Technical Measures
	<ul style="list-style-type: none"> • Re-surface roads with 10mm stone mastic asphalt (SMA) • Re-surface roads with low noise road surfaces, or thin surface treatments • Road surface maintenance
	Traffic Planning

	<ul style="list-style-type: none"> • Vehicle speed management, or speed limit reductions • Speed bumps to reduce speed and deter vehicles from travelling on route • Traffic management – looking at routes and HGVs to reduce traffic volume • Bans on HGV's/trucks • Redesigning junctions - roundabouts may create a steadier driving pattern • Co-ordinated signalisation at intersections for smoother driving
	<p>Land Use Planning & Management</p>
	<ul style="list-style-type: none"> • New road construction (bypass) • Car-free zones – redesign of street space • Quiet Façade i.e. ensure dwelling have at least one quiet side e.g. (garden/balcony) • Safe cycle lanes along major routes
	<p>Quieter Sources</p>
	<ul style="list-style-type: none"> • Quieter tyres • Specific lower vehicle sound limits • Increased electrification of the road vehicle fleet • Low-noise waste collection vehicles • Low-noise night-time delivery • Check on noisy vehicles
	<p>Local Organisational Measures</p>
	<ul style="list-style-type: none"> • Liaise with residents in PIA's regarding road traffic noise perceptions • Awareness raising campaign regarding driver behaviour in PIA's • Increased signage in PIA's relating to traffic noise or traffic speed
	<p>National Measures</p>
	<ul style="list-style-type: none"> • Regulatory measures to require the selection of quieter sources • Increase in EV charging stations • Economic measures and incentives to support the selection of quieter sources • Increase in public transport fleet • Enforcement of speed limits
<p>Pathway Control</p>	<p>Reduction of Sound Transmission</p>
	<ul style="list-style-type: none"> • Earthworks, such as earth bunds, mounds or cuttings • Roadside noise barriers and screening measures • Coverage, including baffles or tunnels
<p>Receiver Location Control</p>	<p>Building Control Measures</p>
	<ul style="list-style-type: none"> • Dwelling insulation, either new build or retrofit • Acoustic windows or secondary glazing • Acoustics ventilation, passive or active • Chimney caps and dampers • Specify building construction details for new developments exposed to environmental noise

5. Appraisal of Noise Mitigation Measures Monetised Benefits to Health

An assessment of the identified practical noise mitigation measures, which will likely include testing of the measures using the revised CNOSSOS-EU (or other appropriate methodology) detailed computational noise model to determine the noise exposure and health benefits of the measures.

In Ireland there is no recommended method for monetising the health benefits of noise mitigation measures. In the absence of an Irish method, the EPA Guidance recommends that appraisals use the UK environmental impact appraisal methodology within the English Department for Transport, Transport Analysis Guidance (WebTAG) to inform a cost benefit assessment.

WebTAG provides guidelines and tools for translating the expected benefits of road, rail and aviation mitigation measures into monetary terms. WebTAG is informed by noise calculation results for a year during the implementation of the plan (2024-2028) and a future year, (typically 15 years ahead), with and without the noise mitigation measure(s) in place. The WebTAG noise workbook⁶⁷ calculates the monetary value of long-term effects on sleep disturbance, amenity (annoyance), AMI (acute myocardial infarction), stroke, and dementia during the daytime, and sleep disturbance at night.

The WebTAG outcomes provide the net present value of the noise level change resulting from the assessed mitigation scheme in Pounds Sterling. This value will require conversion to Euros using the prevailing exchange rate, enabling a comparison with the estimated implementation costs.

6. Financial Assessment of Noise Mitigation Measures

The estimated cost of implementing mitigation measure(s) will be determined, considering costs over the measure's lifetime, encompassing construction and maintenance expenses. The selection of specific mitigation measure(s) will result from an appraisal of their benefits to health, monetised accordingly.

Many measures are likely to involve road re-surfacing, either in addressing road traffic noise independently or in combination with other measures.

Example of Potential Noise Mitigation Measure through Road Re-Surfacing

Quiet road surfaces can be an effective way of reducing road traffic noise at receptors. The characteristics of a quiet road surface generally consist of its enhanced ability to absorb sound rather than reflect it, and a smoother surface so tyres encounter fewer irregularities.

The noise reduction of a quiet road surface can be between 1 – 5 dB^{68 69} when compared with a common dense asphalt concrete road surface type. Larger reductions are possible, particularly when replacing worn roads with optimised quiet road surfaces.

A review of the road surface assumptions in the strategic noise mapping identified Priority Important Areas in the Agglomeration where there is a higher proportion (greater than 25%) of standard road surfaces, such as Hot Rolled Asphalt (HRA) in their vicinity⁷⁰ than quieter road surfaces, such as Stone Mastic Asphalt (SMA). A key component of the re-evaluation of Priority Important Areas discussed earlier, will be confirmation of these road surface parameters within the noise model.

⁶⁷ <https://www.gov.uk/government/publications/tag-environmental-impacts-worksheets> [Accessed October 2023]

⁶⁸ J. Sliggers: Road surface label, Push and Pull for Noise Emission Reduction from Road Traffic in the NLS and EU, Informal document GRB-65-27 (65th GRB, February 2017, agenda item 10)

⁶⁹ F. G. Praticò, F. Anfosso-Lédée, Trends And Issues In Mitigating Traffic Noise Through Quiet Pavements, Procedia - Social and Behavioral Sciences 53 (2012) 203 – 212

⁷⁰ Within 100m set-back area of the Priority Important Area

The specific costs per square metre of a standard road surface compared with a quieter road surface can be commercially sensitive, however the Phenomena project (2021), discussed in **Section** Error! Reference source not found., notes these cost increases can be 5-10%.

The financial assessment of noise mitigation would be developed through consultation between Wicklow County Council's departments.

7. Cost-Benefit Analysis

A comparison of benefits to health versus the cost of the noise mitigation measure. This is presented as a cost-benefit ratio (the ratio of costs over benefit).

Cost-benefit ratios of less than 1.0 indicate the benefits to health outweigh the costs.

8. Recommendation of Noise Mitigation Measure(s)

The final step in the process, which allows all of the noise mitigation scenarios to be compared through the outcomes of the cost-benefit analysis.

The most cost-effective noise mitigation measures will be proposed in collaboration with NMBs and any appropriate authorities, and will be implemented subject to resources and funding.

11 ASSESSMENT OF COST-EFFECTIVE NOISE MITIGATION MEASURES FOR REDUCTION OF ENVIRONMENTAL NOISE FOR PIAS

An overview of the general prevention and mitigation measures that could be considered for the management of noise from road, rail and industry within the Agglomeration is presented within [Section 10](#).

This section considers those measures in a local context, together with key local noise management related policy guidelines and local and regional projects and set out the framework that Wicklow County Council intends to follow to help manage and mitigate the effects of exposure to environmental noise.

The environmental noise management measures are presented as follows;

- General – Noise Management Measures
- Prevention – Noise Management Measures
- Protection – Noise Management Measures
- Mitigation – Noise Management Measures.

In some instances, measures do not necessarily stand in isolation and may be relevant to other categories. A summary of Responsible Aim that is achieved, or partially achieved, through the proposed measure is set out in [Table 23](#).

When considering the broader framework of measures and actions aimed at mitigating exposure to environmental noise from the transport and industry sectors, it is important to emphasize that Wicklow County Council, in some instances, does not have exclusive ownership or influence over certain noise sources, areas, and the measures presented in this Noise Action Plan. Many of the measures and actions will require input and collaboration by other infrastructure owners, along with support from government departments and bodies through relevant legislation and funding.

In addition to third-party collaboration, the successful implementation of this Noise Action Plan will also depend on the availability of adequate resources to execute the proposed measures and actions.

The measures are described below across each of the four categories. The measures, and associated actions are presented in [Table 23](#).

11.1 General – Noise Management Measures

General noise management measures cover a range of activities to support the implementation of the Noise Action Plan.

11.1.1 Measure WCC_M01: Support the Development of National Noise and Other Related Policy and Guidance

At present there is no national policy relating specifically to noise other than specific objectives set out within a range of national plans and strategies such Policy Objective 65 from the National Planning Framework 2040. Furthermore, there is no adopted consistent approach for Local Authorities to apply in the evaluation of noise issues at the planning application stage. Some have developed their own guidelines, and many apply the ProPG (2017) approach which is used within the UK. Development of national policy and guidelines will be the responsibility of the Department of Environment, Climate and Communications (DECC).

In addition to specific national policy and guidance relating to noise, other national policy and guidance can have an indirect impact on noise related issues.

Wicklow County Council will actively support and engage with the development of national policy and guidance on the subject of noise and all related policy.

11.1.2 Measure WCC_M02: Noise Mapping and Action Planning Steering Group

It is proposed to continue collaborating with the EPA and other NMBs to co-ordinate the activities and actions for Noise Action Planning.

11.1.3 Measure WCC_M03: Noise Action Plan Working Group(s) - Action Planning Authorities and Transport Infrastructure Owners

Wicklow County Council will support the establishment of relevant noise working groups to co-ordinate and collaborate with other relevant APAs (Dublin Agglomeration) and the relevant NMBs (Transport Infrastructure Ireland) in respect of noise management issues in general and mitigation measures at a Priority Important Area level.

11.1.4 Measure WCC_M04: Annual Report to Environment Protection Agency (EPA)

Wicklow County Council will prepare an annual report for the EPA setting out progress made in respect of the implementation of the Noise Action Plan including the investigations of Priority Important Areas and implementation of noise mitigation measures for those areas and other general areas.

Wicklow County Council will liaise with relevant third-party infrastructure owners in respect of progress made by them with implementing actions that may be relevant for them and their infrastructure.

11.1.5 Measure WCC_M05: Continued Investigation and Management of Noise Complaints

Wicklow County Council's Environment and Transportation Departments investigate complaints under the provisions of the Environmental Protection Agency Act 1992 (Noise) Regulations 1994.

11.1.6 Measure WCC_M06: Ongoing Community Engagement

A key requirement in the development of the strategic noise maps and Noise Action Plan is that the information is made available to the public in a clear, comprehensible, and accessible manner. Furthermore, the public should be consulted on the preparation of the Noise Action Plan, provided with the opportunity to participate and comment on the Noise Action Plan, and the feedback from public engagement should be considered when finalising the Plans.

As part of the implementation of the Noise Action Plan, it is proposed to engage with the public as part of the evaluation of the Priority Important Areas and also through engagement on relevant existing Plans and Projects. This engagement will include:

- Ongoing engagement with elected members.
- Presentation of the findings of the detailed appraisal of mitigation measures on Wicklow County Council's website.
- Presentation of the findings of the evaluation of the candidate Quiet Areas on Wicklow County Council's website.
- Formal public consultation on proposed measures and other Plans and Projects, where appropriate.
- Use of relevant social media and information services to report findings and progress.
- Meetings with local area resident groups, as appropriate.

11.2 Prevention – Noise Management Measures

11.2.1 Measure WCC_M07: Planning Application Advice, Conditioning and Enforcement

Wicklow County Council’s Transportation and Environment Departments consult directly with the Planning Department advising on planning applications and enforcement of planning conditions in relation to noise emissions.

In reviewing and advising on planning applications due consideration will be given to the existing strategic noise maps and this Noise Action Plan. Developments that may have the potential to generate noise should be conditioned to ensure no increase in the ambient noise level.

11.3 Mitigation – Noise Management Measures

11.3.1 Measure WCC_M08: Evaluation of each Priority Important Area

Wicklow County Council will complete an evaluation of each of the six Priority Important Areas identified in [Section 8](#) of this Noise Action Plan. Where the Priority Important Area relates to infrastructure that is exclusively the responsibility of and managed by Wicklow County Council, then the evaluation will be completed by Wicklow County Council and any other agencies where required.

The objective of the evaluation process will be to confirm the validity of the Priority Important Area and identify the most appropriate noise mitigation measures through detailed economic and health benefits appraisal.

11.3.2 Measure WCC_M09: Implementation of Recommended Noise Mitigation Measures

Wicklow County Council will implement measures deemed technically, economically, and environmentally justified as part of this round of the Noise Action Plan or future rounds, contingent upon resources and funding.

Implementation will involve reviewing the effectiveness of the measures through monitoring where appropriate. The implementation of measures related to infrastructure not under Wicklow County Council's responsibility should be carried out by the third parties responsible for that infrastructure. Wicklow County Council will coordinate with these parties in monitoring progress and reporting to the EPA as part of the annual report.

Consideration will be given to funding sources and will include liaising with relevant Wicklow County Council sections and projects as well as third parties and government departments with a view to securing funding for relevant measures or ensuring the noise measures are incorporated within existing funding streams for existing projects.

11.4 Potential Priority Important Area Noise Mitigation Measures

Measure WCC_M8 commits to undertaking an evaluation of each Priority Important Area including the identification of appropriate noise mitigation measures for each area. [Table 23](#) below provides a summary of some of the potential noise mitigation measures that could be considered for each area.

It should be noted that the measures presented in [Table 23](#) are for consideration only and would need to be fully evaluated to confirm their appropriateness and justification for each Priority Important Area. National Road related potential measures would need to be reviewed, discussed and agreed with Transport Infrastructure Ireland for the relevant Priority Important Areas.

Table 23: WCC: Priority Important Area (PIA) Example Mitigation Measure Considerations

PIA	Source	Noise Reduction at Source	Noise Abatement Operating Procedures	Community Engagement and Responsible Actions	Operational Restrictions	Land-Use Planning and Management	Opportunities for Noise Barrier(s)
AMD PIA 01	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Potential for noise barriers to complement existing noise barrier features, such as earth bunds, along the M11.
AMD PIA 02	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Traffic noise contributions at properties on R772 – Wexford Road.
AMD PIA 03	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Potential for noise barriers to complement existing noise barrier features, such as earth bunds, along the M11.
GMD PIA 01	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Traffic noise contributions at properties on R762 – Main Street.
WMD PIA 01	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Traffic noise contributions at properties on R750 – Dublin Road.
WMD PIA 02	ROAD	Low Noise Road Surfacing	Promotion of Noise Preferential Routes	Noise Measurement and Reporting	Speed Restrictions	Noise Barriers	Potential for noise barriers to complement existing noise barrier features, such as earth bunds, along the M11.

PIA	Source	Noise Reduction at Source	Noise Abatement Operating Procedures	Community Engagement and Responsible Actions	Operational Restrictions	Land-Use Planning and Management	Opportunities for Noise Barrier(s)
							barrier features, such as earth bunds, along the M11.

11.5 Noise Management Framework – Summary of Actions

A summary of the proposed noise management measures is set out in [Table 24](#) below together with details of the proposed action(s) for each.

Table 24: Noise Management Framework – Summary of Actions

Measure	Measure Description	Action
General – Noise Management Measures		
WCC_M01	Support the Development of National Noise and Other Related Policy and Guidance.	Support the Department of Environment, Climate and Communications (DECC) and other government departments and bodies in the development of national noise and other related policies and guidance, and assist in their implementation once in place.
WCC_M02	Noise Mapping and Action Planning Steering Group	Collaborate with the EPA, government departments and bodies to co-ordinate the activities of NMBs and the production Noise Action Plans and Reports.
WCC_M03	Noise Action Plan Working Group(s) - Action Planning Authorities and Transport Infrastructure Owners	Support the establishment of relevant noise working groups to co-ordinate and collaborate with other relevant APAs and the relevant NMBs in respect of noise management issues.
WCC_M04	Annual Report to Environment Protection Agency (EPA)	Prepare an annual progress report regarding the implementation of the Noise Action Plan and submit it to the EPA.
WCC_M05	Continued Investigation and Management of Noise Complaints	Review and investigate all noise complaints received in a timely manner and in accordance with national and international best practice.
WCC_M06	Ongoing Community Engagement	Publish the final Noise Action Plan and provide updates on the progress made with its implementation, including the findings of the appraisal of Priority Important Areas on the Wicklow County Council website. This information will also be communicated through ongoing engagement in Local Areas Committee meetings and formal public consultations where deemed necessary.
Prevention – Noise Management Measures		
WCC_M07	Planning Application Advice, Conditioning and Enforcement	Liaise with the Planning Department to ensure acoustic measures are implemented for new developments that may be impacted by adverse noise.
Mitigation – Noise Management Measures		

Measure	Measure Description	Action
WCC_M08	Evaluation of each Priority Important Area	For each Priority Important Area, conduct a review of the noise model used in the development of the strategic noise maps. Additionally, perform a detailed appraisal of the noise mitigation measures in each area to identify the preferred measure(s) for implementation, if any.
WCC_M09	Implementation of Recommended Noise Mitigation Measures	Liaise with relevant Wicklow County Council sections, third parties, and government departments to secure funding for noise mitigation measures. Implement the measures for which Wicklow County Council has responsibility and support third parties in the implementation of their measures.

12 NOISE ACTION PLAN IMPLEMENTATION

A summary of the proposed noise management measures is set out in [Table 24](#) together with details of the proposed action(s) for each.

This Noise Action Plan is supported by a four-year programme for implementation (2024-2028), with progress reported to the EPA on an annual basis.

Implementation of these measures and actions is subject to resources, appropriate funding being made available and collaboration with relevant key stakeholders and infrastructure owners.

12.1 Roles and Responsibilities.

Wicklow County Council is the designated Action Planning Authority for this Noise Action Plan and will oversee its implementation.

12.1.1 Planning & Licensing

The implementation of the planning and licensing regulations is a matter for the appropriate statutory body including Wicklow County Council, the EPA and An Bord Pleanála.

12.1.2 Non-National Major Roads

The monitoring and the installation of noise related measures will be sole responsibility of the local authority. The implementation of any measures is subject to appropriate funding being available.

12.1.3 Major National Roads

TII is a key external stakeholder during the implementation of this Action Plan. Review of the strategic noise maps will be carried out in consultation with TII and the EPA. TII will be consulted on the monitoring and potential noise abatement measures that could be identified for the national roads. The implementation of any measures is subject to appropriate funding being available.

12.2 Targets and Objectives.

This four year Noise Action Plan is intended to manage noise issues from major roads, avoiding, preventing or reducing on a prioritised basis the harmful effects of environmental noise based on a communal approach within the European Community, details of which can be found in [Sections 7 - 11](#).

12.3 Programme of Works

All measures identified in this programme of works are subject to funding and resources and cost benefit analysis.

Table 25: Programme of Works

Year	Measure
2024	Finalise Noise Action Plan 2024 – 2028 & Report to EPA
2025	<ul style="list-style-type: none"> • Conduct noise monitoring and validate noise model for: <ul style="list-style-type: none"> ○ AMD PIA 01 ○ AMD PIA 02 ○ AMD PIA 03 • Review potential mitigation measures for these three PIAs. • Undertake cost-benefit analysis for any measures identified. • Provide NAP annual report to EPA.
2026	<ul style="list-style-type: none"> • Conduct noise monitoring and validate noise model for: <ul style="list-style-type: none"> ○ WMD PIA 01 ○ WMD PIA 02 • Review potential mitigation measures for these three PIAs. • Undertake cost-benefit analysis for any measures identified. • Provide NAP annual report to EPA.
2027	<ul style="list-style-type: none"> • Conduct noise monitoring and validate noise model for: <ul style="list-style-type: none"> ○ GMD PIA 01 • Review potential mitigation measures for these three PIAs. • Undertake cost-benefit analysis for any measures identified. • Provide NAP annual report to EPA. • Collect traffic data for noise monitoring for Round 5 NAP (probable).
2028	<ul style="list-style-type: none"> • Review potential mitigation measures for these all PIAs. • Provide NAP annual report to EPA. • Participate in Round 5 NAP review.

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

Term	Definition
	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	<p>Areas lying between contours of the following levels (dB):</p> <p>L_{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75</p> <p>L_d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75</p> <p>L_e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75</p> <p>L_n <45, 45-49, 50 – 54, 55 – 59, 60 – 64, 65 – 69, ≥ 70</p> <p>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</p>
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	<p>A combination of L_d, L_e and L_n as follows:</p> $L_{den} = 10 * \log 1/24 \{12 * 10^{((L_{day})/10)} + 4 * 10^{((L_{evening}+5)/10)} + 8 * 10^{((L_{night}+10)/10)}\}$

Term	Definition
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

Term	Definition
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

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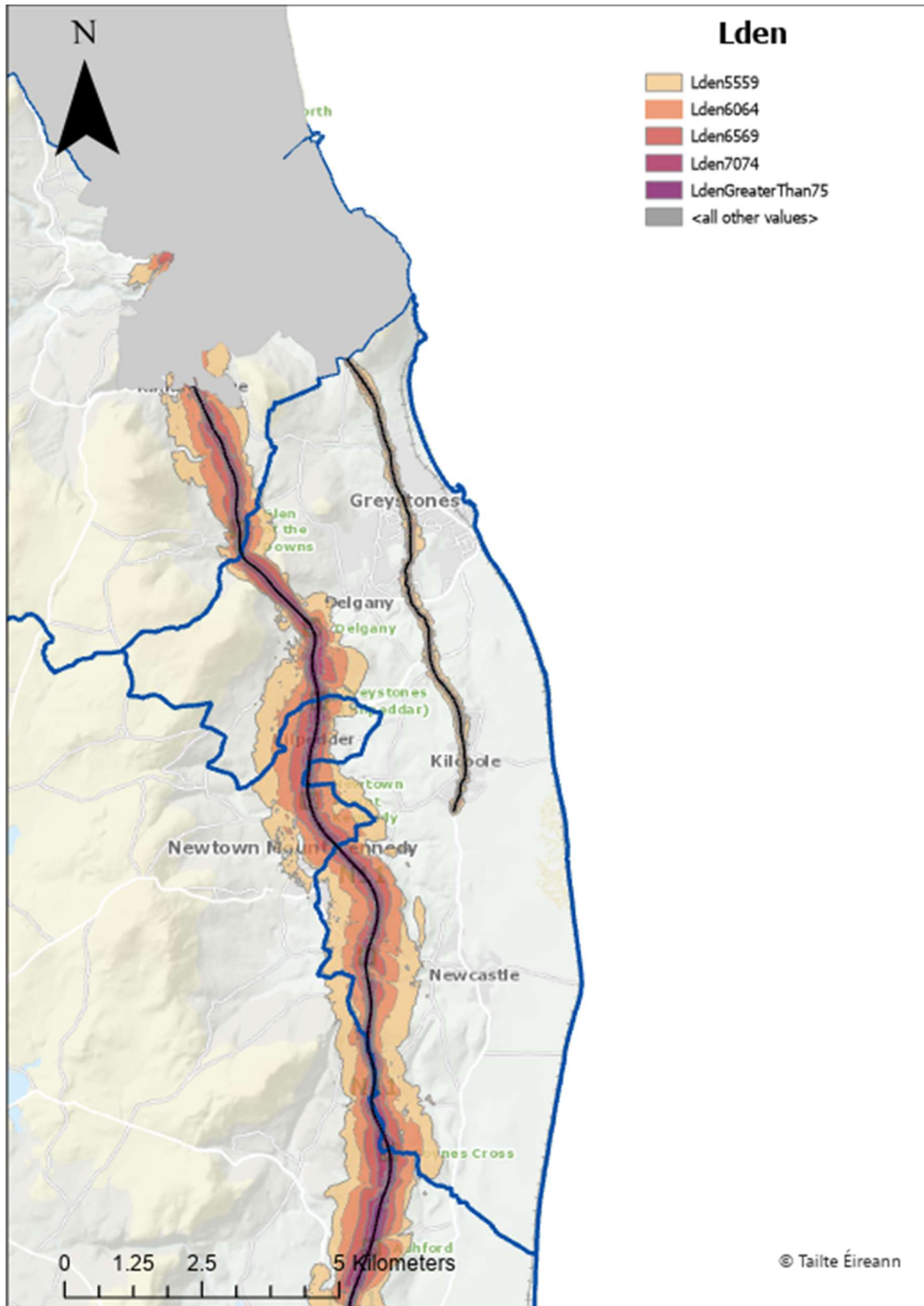
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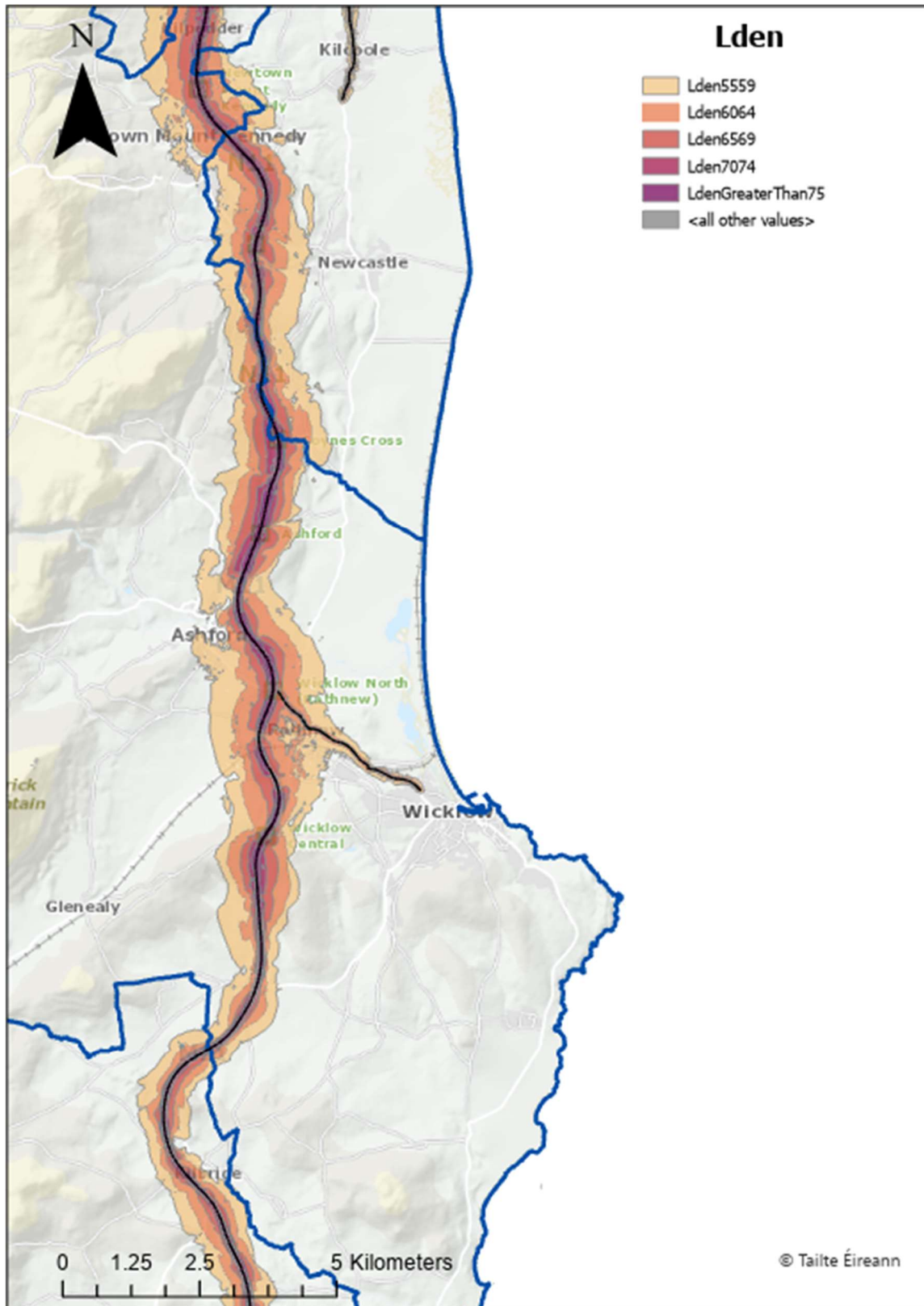
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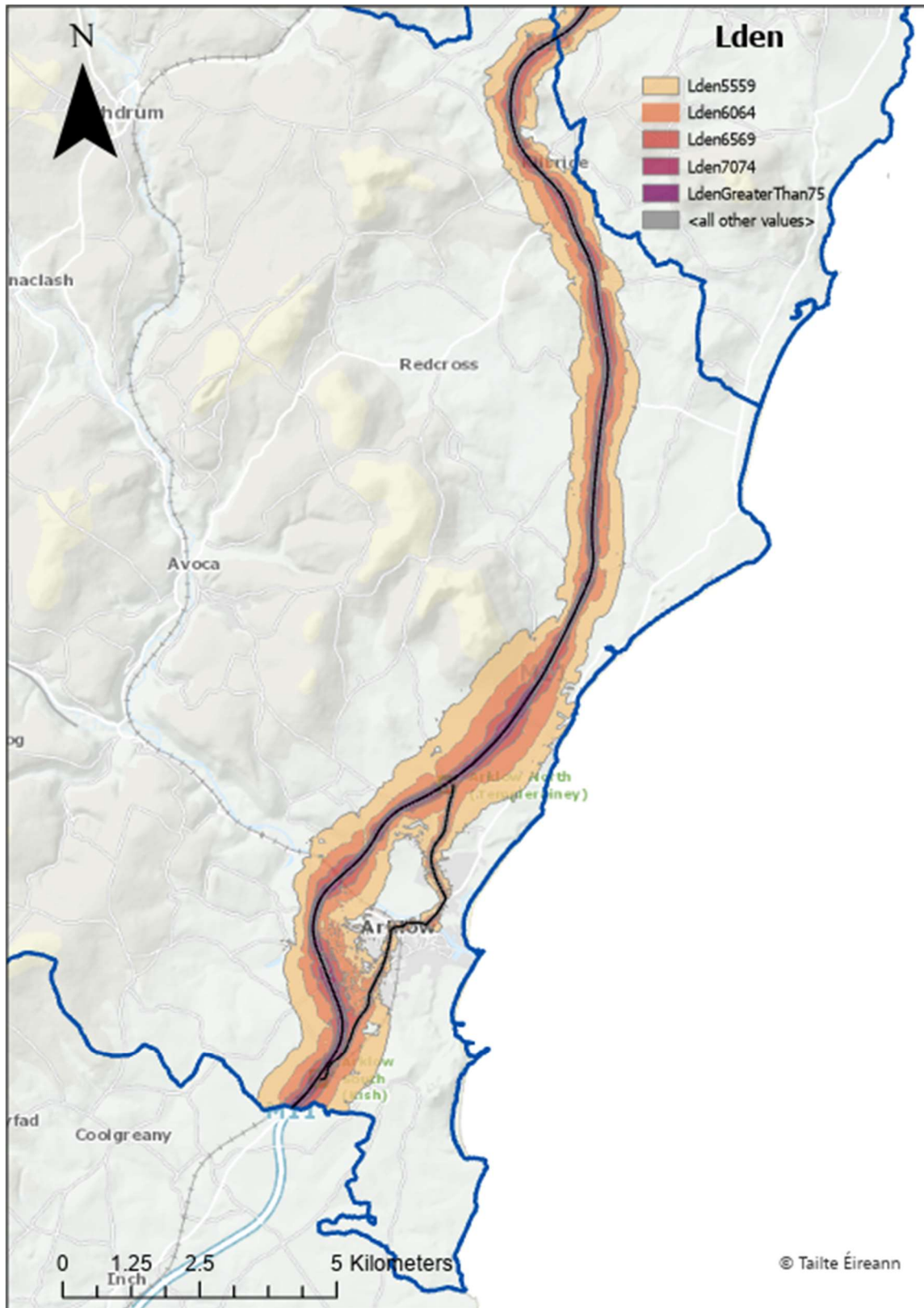
APPENDIX C: STRATEGIC NOISE MAPS

L_{den} Strategic Noise Maps

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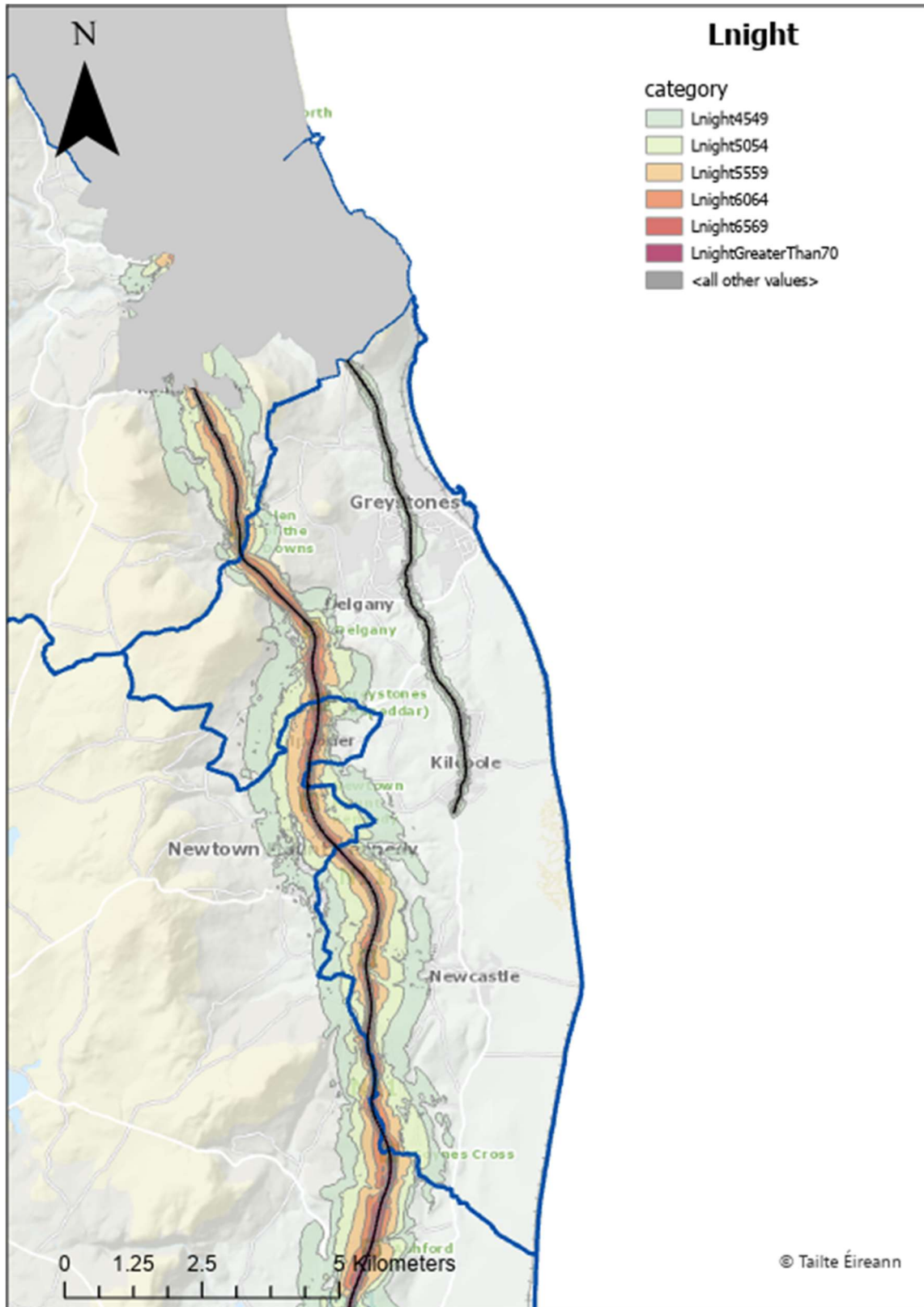


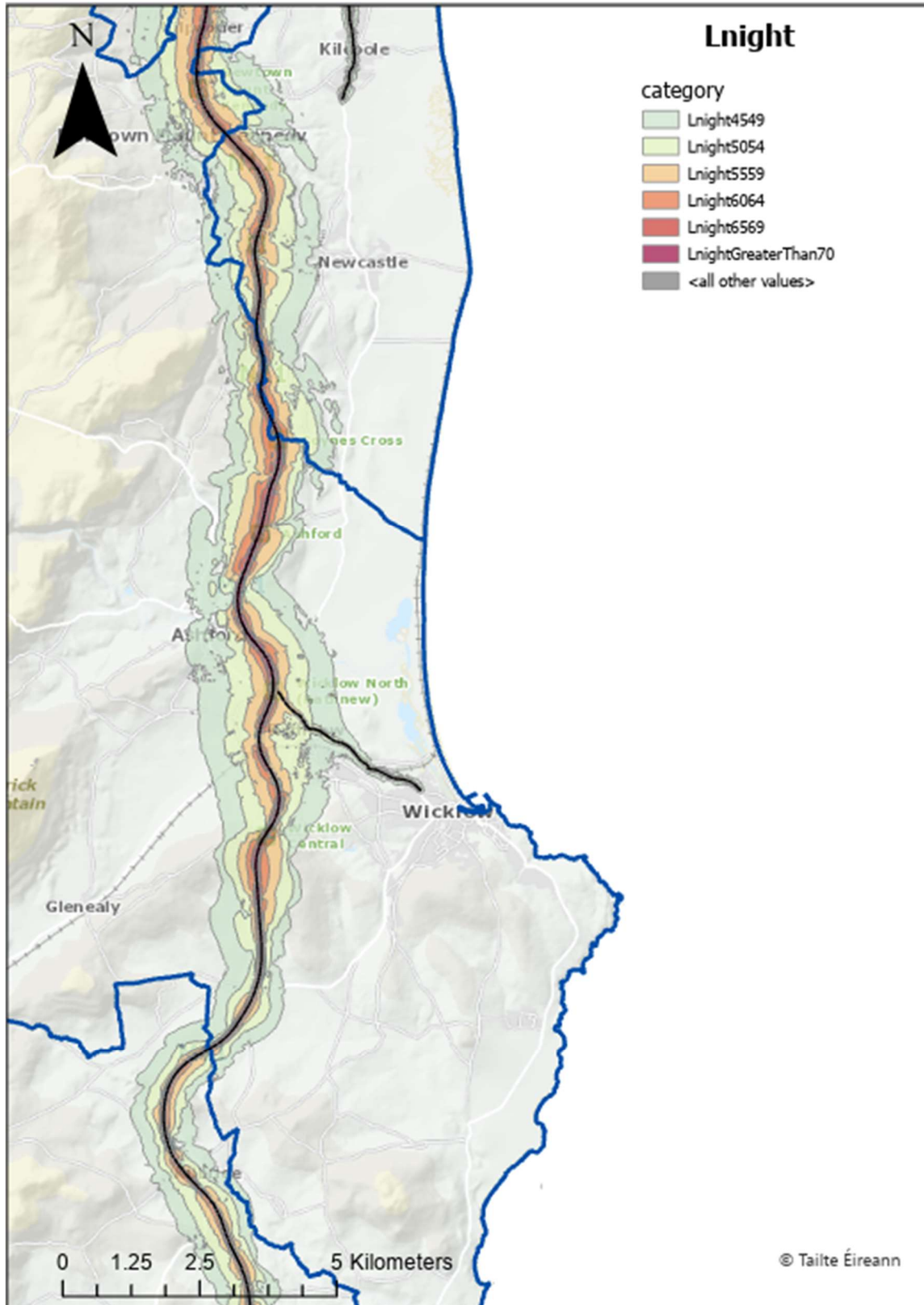


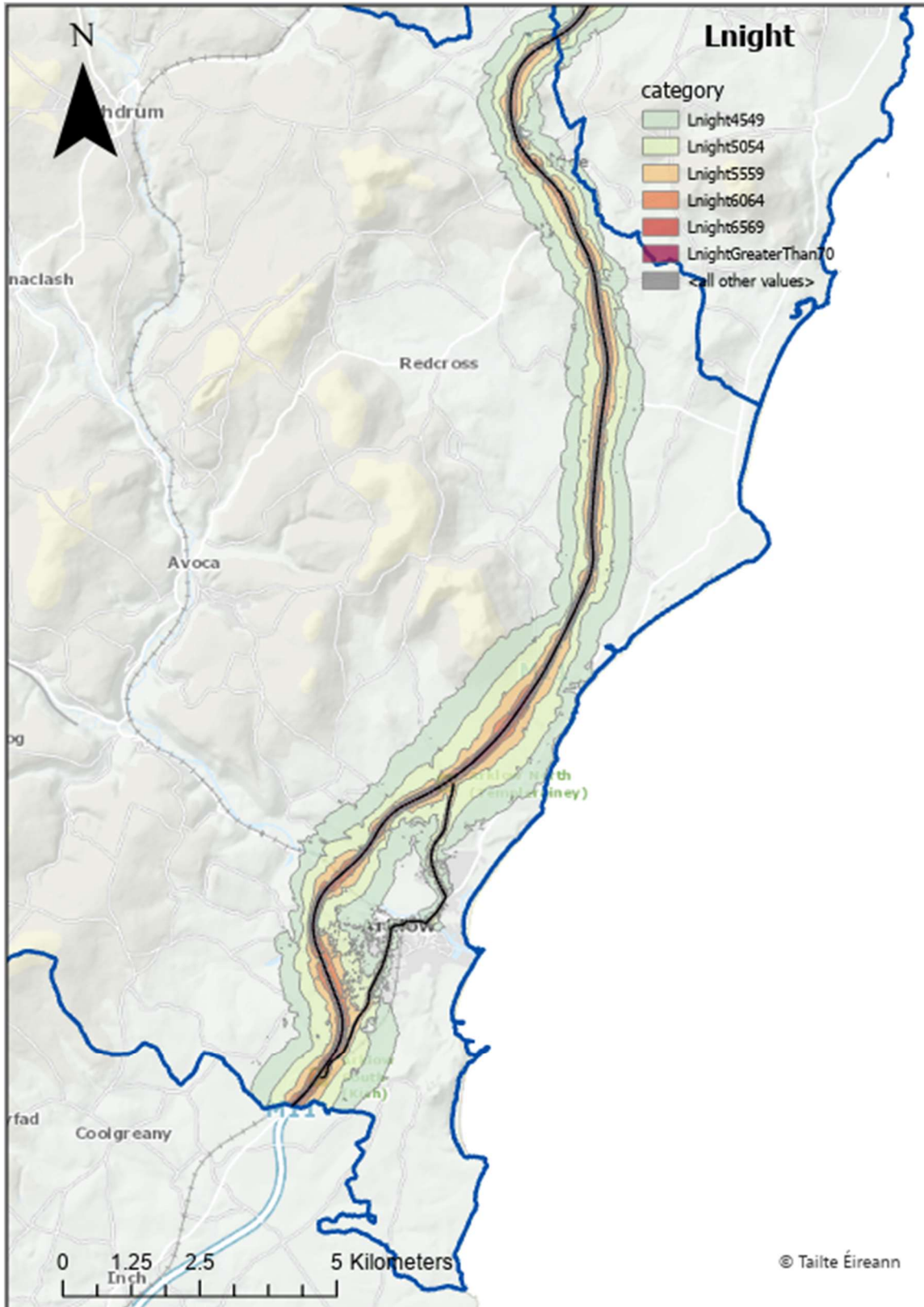




Lnight Strategic Noise Maps









Appendix F: Additional Noise Related Legislation

APPENDIX D: PUBLIC CONSULTATION

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