

Comhairle Chontae na Gaillimhe
Galway County Council

Draft Noise Action Plan

2024 – 2028

July 2024

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, Galway County Council is designated as the Noise Mapping Body (NMB), for the purpose of making and approving strategic noise maps for the county (excluding Galway City). Galway County Council is also designated as the Action Planning Authority (APA), responsible for preparing a Noise Action Plan for the county (excluding Galway City).

This is the fourth round of noise action planning, and this Noise Action Plan (2024-2028) reports the findings of the Strategic Noise Mapping for sections of major roads, above a flow threshold of 3 million vehicles per annum (i.e. the Action Planning Area), in County Galway (Figure 1), prepared in consultation with Transport Infrastructure Ireland and the Environmental Protection Agency (EPA) in respect of the calendar year 2021.

The Noise Action Plan has been prepared in accordance with the Regulations and is aimed at the strategic long-term management of environmental noise from traffic-related sources. The proposed measures are based on the results of Strategic Noise Maps which have been assessed to estimate the population exposure and harmful effects of noise in the Action Planning Area..

The results of the assessment have been used to identify areas that shall be subject to noise management activities during the implementation of the Plan should funding and resources be available. These areas are referred to as Priority Important Areas. Galway County Council is committed to reviewing the requirement for noise mitigation in the Priority Important Areas within the lifecycle of the Noise Action Plan, including cost-benefit analysis where necessary and determining the reduction in harmful effects where practicable.

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

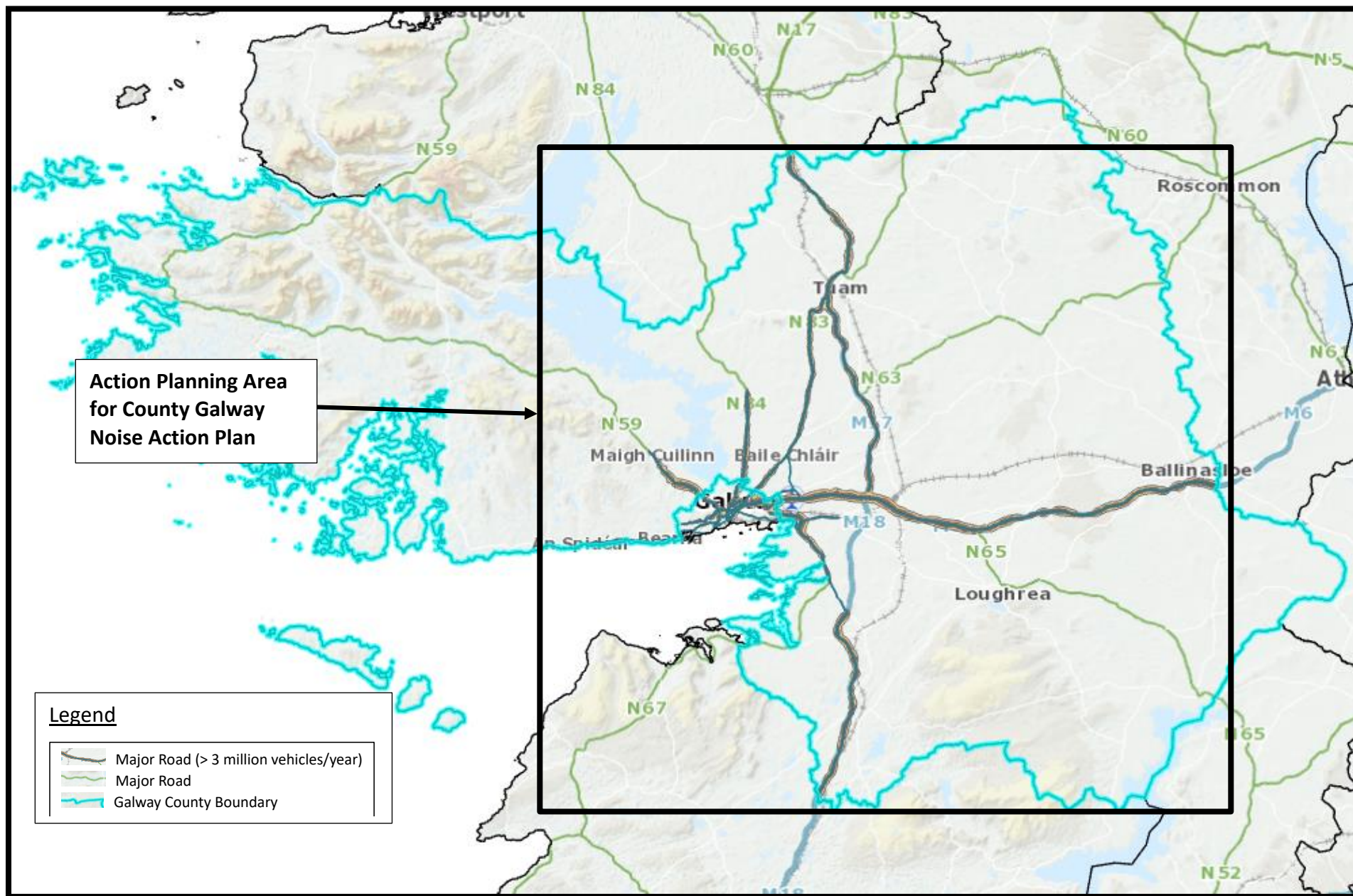


Figure 1. Sections of major roads in County Galway that qualified for the Round 4 Noise Action Plan (R4 NAP) 2024-2028 (i.e. Action Planning Area)

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1. INTRODUCTION

1.1 Policy Objective

The European Community Directive 2002/49/EC (known as the Environmental Noise Directive or “END”) deals with the assessment and management of environmental noise. END was transposed into Irish Law by the European Communities (Environmental Noise) Regulations 2018, SI No. 549 of 2018 (Regulations). The regulations both revise and revoke the Environmental Noise Regulations 2006, S.I. 140/2006, & transpose Directive 2015/996. The Regulations were amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021.

For the purposes of the Directive and Regulations, environmental noise is unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic and noise in agglomerations over a specified size. Types of noise not included in the regulations are noise that is caused by the exposed person, noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside means of transport or due to military activities in military areas.

The Regulations designated Action Planning Authorities for the purpose of making and approving Noise Action Plans. Galway County Council is the designated Authority for major roads / railways / airports in its functional area and its Noise Action Plan must be made in consultation with the EPA and the noise mapping bodies. The Regulations also state that the requirement to provide action plans on specified dates is a statutory function of an Action Planning Authority in relation to environmental protection for the purposes of Section 63 of the Environmental Protection Agency Act 1992. Galway County Council is the “Action Planning Authority” for county Galway.

The requirement to prepare Noise Action Plans is supported under the National Planning Framework 2040 Policy Objective 65 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.”*

1.2 Purpose

The aim of the Environmental Noise Directive (END) is to provide a common framework to avoid, prevent or reduce, on a prioritised basis, the harmful effects of exposure to environmental noise. The END requires member states to prepare and publish strategic noise maps and noise management action plans every five years. This Noise Action Plan is the 3rd produced by Galway County Council and it replaces the previous Noise Action Plan 2019-2023

1.3 Scope

The Regulations define “environmental noise” as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic and from sites of industrial activity. Types of noise not included within these Regulations are noise that is caused by the exposed person, noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside means of transport or due to military activities in military areas

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

The Regulations set a threshold for roads, railways, agglomerations and airports falling under the scope of the Environmental Noise Regulations and strategic noise maps are prepared to display noise exposure levels in a given area, resulting from particular noise sources as follows;

- Major Roads >3 million vehicles/annum
- Major Railways >30,000 trains/annum
- Agglomerations >100,000 inhabitants (Dublin, Cork, Limerick)
- Airports >50,000 movements/annum

Within County Galway some sections of road fall within the definition of a major road, as defined in the Regulations and it is for these areas that this Noise Action Plan has been devised (see Fig. 1). These thresholds will be used on an on-going basis normally at 5 yearly intervals, but this plan is devised for 4 years and will be revised in 2028. The railways and airports in county Galway are below the thresholds referred to above.

1.4 Consultation

As required under the Regulations, the Public are invited to participate in the development of the Galway County Council Noise Action Plan. This allows the general public and relevant stakeholders an opportunity to review and participate in the formulation of strategic noise policy, with a view to preventing and reducing, where necessary, exposure to environmental noise.

The Draft Noise Action Plan will be put on public display for a period of 8 weeks, beginning 5th July 2024 and ending at 4.00pm on 30th August 2024, during which period submissions are invited. A notice regarding the public consultation will be placed in the local paper, and social media advising the public of the locations where and when the plan will be on display.

- Roads Section, Galway County Council Offices, County Hall, Prospect Hill, Galway H91H6KX
- Tuam Regional Office & Public Library, High Street, Tuam, H54F627
- Ballinasloe Civic Office & Public Library, Ballinasloe H53A7K7
- Loughrea Area Office & Public Library, Barrack St., Loughrea H62K065
- Clifden Public Library, Market St., Clifden H71Y892
- Carraroe Public Library, Carraroe H91 HY76,
- Portumna Public Library, Castle Avenue H53WN23

A copy of the Draft Noise Action Plan is available to download on the Galway County Council consultation portal <https://consult.galway.ie/>

Submissions in relation to the Draft Plan may be made by any of the following options:

- a) Electronically through Galway County Council's Consultation Portal at the following address: <https://consult.galway.ie/> and select the Draft Galway Noise Action Plan 2024-2028
- b) Via email to: noiseactionplan@galwaycoco.ie
- c) In writing marked "Submission - Draft Noise Action Plan 2024-2028" to Roads Section, Galway County Council Offices, County Hall, Prospect Hill, Galway

In addition to seeking submissions from the general public, the following stakeholders are being invited to comment on this Noise Action Plan.

- All Galway County Council Elected Representatives and relevant Special Policy Committees (SPCs);
- Galway County Public Participation Network (PPN)
- Environmental Protection Agency
- Transport Infrastructure Ireland
- Department of the Environment, Climate and Communications;
- Department of Transport
- Department of Housing, Local Government and Heritage
- Northern & Western Regional Assembly (NWRA)
- Galway City Council
- Mayo County Council
- Roscommon County Council
- Clare County Council
- Individuals/Groups who made submissions/sought information on the previous Noise Action Plan 2019-2023

Galway County Council will examine and reflect upon the comments received, and complete the Noise Action Plan, including a description of the comments received during the consultation process, and a reasoned justification for the response to the issues raised will be summarised in Appendix D of the finalised Noise Action Plan.

1.5 Noise Action Plan Timetable

A timetable for the development and implementation of the County Galway Noise Action Plan (NAP) for Round 4, and delivery to the European Environment Agency (EEA) by the Authority, is set out below:

- April-June 2024: Prepare draft Galway NAP;
- July-August 2024: Public consultation for County Galway NAP (8 weeks);
- Sept/Oct 2024: Review submissions and submit County Galway NAP to the EPA;
- October 2024: Publish final County Galway NAP;
- October 2024: Summary of the County Galway NAP to be submitted to the EPA;
- 18 January 2025: NAPs for all of Ireland to be reported to the EEA by the EPA.

1.6 Acknowledgements

The background mapping used in the figures presented in this report are taken from Tailte Éireann (© National Mapping Division of Tailte Éireann . All rights reserved. Licence number CYAL50333446 and OpenStreetMap (© OpenStreetMap contributors. See: <https://www.openstreetmap.org/copyright>)

2. NOISE AND EFFECTS ON HEALTH AND QUALITY OF LIFE

2.1 Noise Level Indicators

Noise maps for County Galway are presented in terms of two noise indicators; L_{den} and L_{night} , as specified in Article 6.2 of the END. L_{den} is the day-evening-night noise indicator and it represents the noise indicator for overall annoyance. It is based on day (07:00-19:00), evening (19:00-23:00) and night (23:00-07:00) time periods and it is weighted to account for extra annoyance in the evening and night periods. L_{night} is the night time noise indicator and is used in the assessment of sleep disturbance. It is based on night (23:00-07:00) time period. Both of these indicators are based on year-long averages of the day, evening and night time periods and each are plotted separately for the required roads in the County. Table 2.1 summarises the noise level indicators commonly used for environmental noise measurement, all expressed in terms of decibels (dB).

Table 2.1. Noise Level Indicators

Indicator	Details
L_{den}	• Day-evening-night noise indicator • Representative of 24hr period • 5 dB penalty applied to evening levels and 10 dB penalty to night levels to reflect people's extra sensitivity to noise during these periods • Noise indicator for overall annoyance
L_{night}	• Night-time equivalent sound level • Representative of night period (2300-0700 hr) • Noise indicator for sleep disturbance
$L_{Aeq, T}$	• Equivalent sound level of period of T hours • Most common are $L_{Aeq, 16hr}$, $L_{Aeq, 24hr}$
L_{Amax}	• Maximum sound level during measurement period
$L_{Aeq, 16hr}$	• The overall daytime noise level (07:00-23:00) used in planning and noise management decisions
SEL	• Numerically equivalent to the total sound energy of an event normalised to 1-second

2.2 Effects on Health and Quality of Life

Environmental noise exposure from transportation noise sources including road, rail and aircraft can significantly impact human health and research from the World Health Organisation (WHO) and the European Environment Agency (EEA) shows that environmental noise can contribute to:

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

The World Health Organisation (WHO) Environmental Noise Guidelines for the European Region (October 2018) sets L_{den} 53dB and L_{night} 45dB guide levels for annoyance, above which adverse health effects and adverse effects on sleep may occur. EPA DRAFT guidelines adopt the same guide levels. Therefore this Noise Action Plan will consider Important Areas (IAs) where people are exposed to the following noise level, as determined by the strategic noise maps.

Road Traffic Noise – Important Area (IA)

- **L_{den} - 53 dB (outside)**
- **L_{night} - 45 dB (outside)**

Research on exposure to environmental noise and health impacts is ongoing and further guidelines from WHO issued during the course of this Noise Action Plan will be considered, where relevant to road traffic noise

3. EU LEGAL AND POLICY FRAMEWORK

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

3.1 EU Policy 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.

3.2 Zero Pollution Action Plan

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

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

3.3 EEA Reports

EU Regulation 2019/1010

Regulation 2019/1010 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 on a voluntary basis through the European Environment Agency (EEA) Reportnet 2.0 system.

Regulation 2019/1010 establishes the 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 European Environment Agency (EEA) has now developed Reportnet 3 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).

Commission Implementing Decision (EU) 2021/1967

Commission Implementing Decisions (EU) 2021/1967 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.

3.4 EU Regulations and Directive

Environmental Noise Directive “END”

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

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

- Strategic noise maps (SNM) are to be made or revised showing the situation in the preceding calendar year in 2007, 2012, 2017, 2022, 2027 etc.
- Noise action plans (NAP) are to be drawn up, and designed to manage noise issues and effects, including noise reduction, if necessary, in 2008, 2013, 2018, 2024, 2028 etc. The public are to be consulted about proposals for action plans.
- Strategic noise maps and noise action plans are to be made available to the public and disseminated in accordance with relevant Community legislation. This information shall be clear, comprehensible, and accessible. 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

EU Directive 2015/996

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 2018 (S.I. 549/2018) transposed Commission Directive (EU) 2015/996 into Irish law.

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

EU Directive 2020/367

Directive 2020/367 amending Annex III of the END and establishing health impact assessment methods. EU Directive 2020/367 was transposed into the Second Schedule of the regulations through European Communities (Environmental Noise) (Amendment) Regulations 2021. In 2020, Ireland fully transposed the revised Annex III of the END. Directive 2020/637 establishes assessment methods for the harmful effects of environmental noise based on the dose-response relationship established in the WHO ENG 2018. The health impacts to be assessed and reported are: no. of people Highly Annoyed (HA) & no. 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.

Commission Delegated Directive (EU) 2021/1226

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

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

Within this guidance, 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.

EU Regulation 598/2014

Regulation EU No.598/2014 establishes rules and procedures with regard to the introduction of noise-related operating restrictions at EU airports within the International Civil Aviation Organisation (ICAO) Balanced approach.

This legislation applies to aircraft movements at Dublin International Airport. Regulation 598/2014 applies to all airports in Europe with more than 50,000 movements, take-offs or landings, per year. This is the same threshold used within Directive 2002/49/EC to define a “major airport”. In Ireland as Dublin International Airport is currently the only airport with more than 50,000 movements per year, it is designated as a major airport under the END, and is within the scope of Regulation 598/2014. Therefore this regulation is not applicable in county Galway under the Round 4 NAP.

EC Directive 2006/93/EC

EC Directive 2006/93/EC sets out requirements of EU Member States for the regulation of civil subsonic aircraft to Chicago Convention Annex 16 Volume 1, Chapter 3 ("ICAO Chapter 3" aircraft) and replaces the repealed EU Directive 92/14/EEC. The EU Member States are required to ensure that all civil subsonic aircraft operating from airports in their territory comply with the ICAO Chapter 3 requirements, barring specific exemptions, such as those of specific historical interest.

Union Type-Approval Legislation ('automotive approval')

Type approval describes the process applied by Type Approval Authorities to certify that a model of a vehicle meets all EU safety, environmental and conformity of production requirements before authorising it to be placed on the EU market. A manufacturer can obtain type approval certification for a vehicle type in one EU country and market it EU-wide without further tests. The certification is issued by a Type Approval Authority and the tests are carried out by the designated technical services. The applicable legislation for the automotive industry is listed below:

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

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

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

For the purpose of wider harmonisation that extends beyond the borders of the European Union, which fosters technical progress and results in access to larger markets, avoidance of duplication of standards, and avoidance of repeated certification processes, where appropriate, Union type-approval is required. This legislation makes reference to those Vehicle Regulations of the United Nations Economic Commission for Europe (UNECE) adopted by the Union. Similar to Union type-approvals, UNECE approvals are issued and accepted by the relevant Contracting Parties (which include the EU, where relevant, and external countries).

Under Irish legislation:

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

Each of the 'automotive' sectors relevant within the context of noise has specific regulations and provisions concerning noise emissions. Legislation pertaining to each relevant sector includes, amongst others, vehicle specific sound level requirements that are applicable during Union type-approval according to dedicated test procedures carried out in specified test sites.

Regulation (EU) No 168/2013 prohibits the use of defeat devices that reduce the effectiveness of, amongst others, sound abatement systems during normal vehicle operation and use.

UNECE Regulation 41 applies to noise emission from motorcycles. This Regulation requires the sound emissions of the motorcycle type submitted for approval to be measured by the two methods. The first method is when the motorcycle is in motion and the second is when the motorcycle is stationary. In the case of a motorcycle where an internal combustion engine does not operate when the motorcycle is stationary, the emitted noise is measured when the motorcycle is in motion. This Regulation requires that all exhaust or silencing systems are constructed in a way that do not easily permit removal of baffles, exit-cones, and other parts whose primary function is part of the silencing chambers. This Regulation requires that where incorporation of such a part is unavoidable, its method of attachment shall be such that removal is not facilitated and should also be attached such that removal causes permanent damage to the assembly.

Regulation (EU) 2019/2144 concerning type-approval requirements for motor vehicles and their trailers, systems, components and separate technical units intended for such vehicles, as regards to their general safety and the protection of vehicle occupants and vulnerable road users, lays down fundamental provisions on vehicle safety, carbon dioxide (CO₂) and rolling noise emissions from tyres.

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

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

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

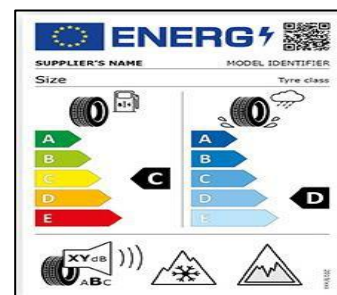
UNECE Regulation No 51 on noise of M and N categories of vehicles contains provisions on the sound emitted by motor vehicles and applies to vehicles of categories M and N. The specifications in this Regulation are intended to reproduce sound levels which are generated by vehicles during normal driving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

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

Regulation (EU) 2020/740

Regulation (EU) 2020/740 sets out requirements through labelling of tyres to allow end-users to make an informed choice when purchasing tyres, for the purpose of increasing safety, the protection of health, and the economic and environmental efficiency of road transport, by promoting fuel-efficient, long-lasting and safe tyres with low noise levels. This Regulation applies to tyres produced from May 2021, for passenger cars (C1 tyres), buses and coaches, light and heavy goods vehicles, and light and heavy trailers (C2 and C3 tyres). However, this Regulation does not apply to a certain specialised category of tyres, such as those for off-road professional use, vehicles first registered before 1st October 1990 or second-hand tyres, unless imported from a non-EU country. The label below shows the required format for the tyre label, required on C1, C2 and C3 tyres produced from May 2021 and which must include certain aspects of the tyre performance such as:

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



Using the same design as used for familiar energy labelling such as those on fridges, washing machines, and lights, the tyre label shows the tyre's fuel efficiency and wet grip classes on sliding scales from A (best) to E (worst). In the bottom part of the label, the external noise level relates to the noise produced by the tyre when the vehicle passes by and is measured in decibels (dB).

The range of external rolling noise classes (A to C) have the following interpretation:

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

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

Directive 2014/45/EU

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

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

Under this legal instrument, motor vehicles registered in a European Union (EU) country and their trailers must undergo periodic roadworthiness tests to ensure that they are fit to be used on the road. Annexes I and II to this directive detail the categories of vehicles to be tested, the frequency of the roadworthiness tests and the items which must be tested. Under the periodic roadworthiness test, the vehicle's noise suppression system (including exhaust silencers and under bonnet noise) is inspected. Maximum permissible exhaust sound limits for different vehicle categories and fuel types are set out in the directive and the vehicle is tested at revolutions that are at three-fourths of the maximum rated speed.

Directive 2014/47/EU

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

EC Directive 2010/75/EU

Directive 2010/75/EU on industrial emissions (Integrated Pollution Prevention and Control) is the main EU instrument regulating pollutant emissions, including noise from industrial installations. The Industrial Emissions Directive (IED) aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques (BAT). Around 50,000 installations undertaking the industrial activities listed in Annex I of the IED are required to operate in accordance with a permit (granted by the authorities in the Member States). This permit should contain conditions set in accordance with the principles and provisions of the IED. In Ireland, Directive 2010/75/EU is transposed under European Union (Industrial Emissions) Regulations 2013, S.I. No. 138/2013, with the EPA designated as the competent authority for permitting under the Regulations.

4. NATIONAL LEGAL AND POLICY FRAMEWORK

4.1 National Policy and Guidance

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.

Project Ireland 2040 - National Planning Framework

In 2018, the Government issued the National Planning Framework 2040, which includes Policy Objective 65 to: *“Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans.”*

EPA Guidance

The EPA Draft Guidance Note for Noise Action Planning For the European Communities (Environmental Noise) Regulations 2018 DRAFT Version 2 January 2024 provides practical information, advice and guidance to designated Action Planning Authorities on the development of noise action plans under the Environmental Noise Regulations.

TII Guidance

The Transport Infrastructure Ireland published document *“Guidelines for the Treatment of Noise and Vibration in National Road Schemes”* while not mandatory, are recommended to achieve appropriate consistency with respect to the treatment of noise and vibration during the Constraints, Route Corridor Selection, Environmental Impact Assessment and construction phases of road scheme planning and development undertaken in accordance with Authority’s National Roads Project Management Guidelines (NRPMG). There are currently no Irish standards or limits governing the assessment of noise and/or vibration associated with either new or existing roads.

National Climate Action Plan

CAP includes targets to reduce the total vehicle kilometres of travel by 20 percent by 2030 which will also influence reductions in noise from road transport.

4.2 National Legislation

Environmental Noise Regulations 2018

The END is transposed into law separately in each Member state of the EU. In Ireland, this Directive is transposed by the European Communities (Environmental Noise) Regulations 2018 (as amended), S.I. No. 549 of 2018 (Regulations), and this guidance makes specific reference to articles in these Regulations. The regulations both revise and revoke the Environmental Noise Regulations 2006, S.I. 140/2006, & transpose Directive 2015/996. This guidance is issued by the Environmental Protection Agency, pursuant to the Regulations. The Regulations were amended through the European Communities (Environmental Noise) (Amendment) Regulations 2021, S.I. No. 663 of 2021. The amendment to the Regulations:

- Transposes Directive 2020/367 to the Second Schedule “Assessment Methods for Harmful Effects”;
- Transposes Commission Delegated Directive (EU) 2021/1226, amending Annex II of the END;

- Transposes EU Regulation 2019/1010 and the associated Commission Implementing Decision (EU) 2021/1967 relating to mandatory reporting under the END to the EEA Reportnet platform;
- The Sixth Schedule sets out revised definitions for the agglomerations of Cork, Dublin and Limerick, in light of urban developments over the last 15 years.

Environmental Protection Agency Act 1992

In Ireland, statutory provisions relating to environmental noise pollution come primarily from the Environmental Protection Agency Act (1992). The Act identifies noise as a form of environmental pollution and contains provisions for dealing with noise deemed 'a nuisance or would endanger human health or damage property or harm the environment'. Sections 106 to 108 of the Act are of direct relevance, and may be summarised as follows:

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

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

IED/IPPC Licensing

Certain activities that are required to be licensed under the IED/IPPC regulations may be subject to noise conditions. The relevant guidance is set out in the EPA publication *Guidance Note for Noise in Relation to Scheduled Activities (NG4)*⁴⁸. This document contains suggested general noise limits of 55 dB(A) L_{Ar,T} for daytime, 50 dB(A) L_{Ar,T} for evening, and 45dB(A) L_{Aeq,T} for night-time; with lower noise limit criteria suggested for areas of low background noise, and quiet areas.

National Planning Guidance

In general, there are no national mandatory noise limits in force in Ireland, and no obligatory sector-specific limits. Two notable exceptions are:

- those referenced in the Planning and Development Regulations 2008, S.I. No. 235/2008, which specifies a 43 dB noise limit in relation to small scale energy production sources such as boilers, wind turbines, heat pumps and CHP plants, and
- by-laws issued in relation to busking.

Other than IED/IPPC facilities regulated by the EPA, most facilities are controlled by Local Authorities, through planning permission and permits. Where limits attached to such consents have been proven to be breached a Local Authority may use the Planning & Development Acts 2000-2020 and/or the EPA Act as described above.

Sustainable Development in the Urban Environment

The Department of the Environment, Heritage and Local Government (DoEHLG, now the DHLGH) has published the following documents relating to sustainable development in the urban environment:

- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), March 2018
- Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities, May 2009;
- Urban Design Manual: A best practice guide (A companion document to the Draft Planning Guidelines on Sustainable Residential Development in Urban Areas), 2009.
- The document dealing with Design Standards for New Apartments calls for *“attention at the design and construction stages to prevent undue noise transmission between units”*.

Wind Energy Planning Guidelines

With specific regard to wind energy developments, the 2006 DEHLG document suggests a “lower fixed limit of 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations”. The latter requirement may be relaxed in areas with low background levels. A fixed limit of 43dB(A) at night-time is deemed appropriate as there is no requirement to protect external amenity. A draft revised version was published in 2019, however a final version has not been published at the time of this guidance (January 2024).

Quarries and Ancillary Activities

The Quarries & Ancillary Activities: Guidelines for Planning Authorities, DoEHLG, 2004 publication contains a discussion of the primary sources of noise associated with quarrying and offers guidance in relation to the correct approach to be followed in respect of assessment and mitigation. Suggested noise limit values are 55 dB LAeq,1hr and 45 dB LAeq,15min for daytime and night-time respectively, although more onerous values may be appropriate in areas with low levels of pre-existing background noise. In respect of blasting, reference is made to EPA guidance to the effect that *“blasting should not give rise to air overpressure values at the nearest occupied dwelling in excess of 125 dB(Lin) max. peak with a 95% confidence limit”*.

Building Regulations

The current Irish Building Regulations call for certain constructions to offer “reasonable resistance” to both airborne and impact sound. For buildings constructed in the vicinity of noise sources it would be appropriate for specific façade noise insulation values, based upon a target internal noise level, to be a stated requirement of the construction, potentially with a pre-completion sound insulation test required prior to habitation. This would help to ensure that the design targets of the construction are met in practice.

4.3 Regional and Local Policy

In addition to EU Regulations, national legislation and policy, it will also be necessary to consider Regional and local policies and strategies which relate to noise management or may affect local noise management.

NWRA Regional Spatial and Economic Strategy 2020-2032 (RSES)

The Northern & Western Regional Assembly (NWRA) has developed its Regional Spatial and Economic Strategy 2020 -2032 (RSES) to support the economic policies and objectives of the Government by providing a detailed strategic planning and economic framework for the development of the North West Region, of

which County Galway forms a part. It focuses on the delivery of housing, job creation, infrastructure, community facilities and ensuring that the region remains attractive for investment.

The RSES supports transition from the private car to alternatives and promotes greater efficiency in the use of the transport networks. Of particular relevance to Galway for this Noise Action Plan

- Regional Policy Objective (RPO) 3.6.7 supports the delivery of the Galway City Ring Road which represents a key priority for the Galway metropolitan area, and also the Galway Transport Strategy
- RPO 6.27 supports the preparation of Local Transport plans for Ballinasloe and Tuam
- RPO 3.6.13 supports the delivery of a Greenway Network which includes National Dublin to Galway Cycleway, Oranmore to Bearna Coastal Greenway and the Galway to Clifden Greenway

Galway County Development Plan 2022-2028

The Galway County Development Plan (GCDP) 2022-2028 has, as one of its mandatory objectives, the promotion of sustainable settlement and transportation strategies in urban and rural areas having regard to the location, layout and design of new development, and incorporates the objectives of the NWRA RSES 2020-2032. It sets out a range of proposed policy objectives with supporting narrative for development up to 2028. In accordance with national policy, the plan is seeking to develop in a sustainable and environmentally sensitive manner. It promotes the climate change agenda, and it sets out the housing and economic priorities for the relevant period.

The objectives of the existing (2019-2023) and future Noise Action Plans for County Galway are incorporated into the Noise Policy (NP) objectives for noise pollution in the current Galway County Development Plan 2022-2028 i.e.

NP 1 Galway County Council Noise Action Plan 2019-2023

To implement the Galway County Council Noise Action Plan 2019-2023 (and any subsequent Plan) in order to avoid, prevent and reduce the harmful effects, including annoyance, due to environmental noise exposure.

NP 2 Developments within Noise Maps (Noise Action Plan 2019-2023)

To require that where new developments are proposed within the noise limits of the noise maps for the designated sections of roads in the County, appropriate mitigation measures are undertaken so as to prevent harmful effects from environmental noise.

These policy objectives are further reflected in the Development Management (DM) Standards through DM 33(b):

DM Standard 33: Traffic Impact Assessment, Traffic & Transport Assessment, Road Safety Audit & Noise Assessment

DM Standard 33b) Noise Assessment

Require all new proposed developments, within 300m of roadways with traffic volumes greater than 8,220 AADT to include noise assessment and mitigation measures, if necessary, with their planning application documentation.

The Metropolitan Area Strategic Plan (MASP) forms Volume 2 of the GCDP 2022-2028 and sets out the settlement strategy for the county. The MASP area is identified to grow considerably in population within the plan period and must be in a planned, co-ordinated manner where residential and employment areas are adequately serviced with infrastructure and services such as access to public transport and a good range of community facilities.

5. RESPONSIBLE AUTHORITY FOR ACTION PLANNING

5.1 Name and Contact Details

The Environmental Noise Regulations designated Action Planning Authority for County Galway for the making of strategic noise maps and noise action plan areas is Galway County Council c/o :

Mr. Uinsinn Finn

Director of Service / Physical Development, Fire & Emergency, Climate Change Directorate

Galway County Council

County Hall

Prospect Hill

Galway

E-Mail: noiseactionplan@galwaycoco.ie

5.2 Other bodies of relevance

Collaboration took place with external bodies which provided support to the Council in its journey to develop the Round 4 NAP.

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-action-plans/>

Transport Infrastructure Ireland (TII) is the designated noise mapping body for national roads identified as major roads within the County and Galway 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 Galway. Further details can be found at:

<https://www.tii.ie/technical-services/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. Galway County Council is responsible for the planning, design, improvement and upkeep of the road network within the county, including road opening licences, temporary road closures, road safety, winter maintenance, traffic management, public lighting, winter maintenance and 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 and from the Council's own resources.

5.3 Review of County Galway Noise Action Plan (2019-2023)

The Noise Action Plan 2019-2023 for County Galway was prepared to address environmental noise from major roads in the county with more than three million vehicles per annum. The action planning area covered sections of the M6, M17 and M18 Motorways, N6 and N17 National Primary Roads, N59, N65, N67, N83, N84 National Secondary Roads and R336, R339, R354 R381, R446, R458 and R939 Regional Roads and adjoining lands. The actions taken were strategic and represented the best practice approach to environmental noise mitigation and the limitation of exposure to environmental noise. These included:

- N59 Maigh Cuilinn Bypass – Delivery completed in Quarter 4 2023 with the opening of the bypass leading to reduced traffic volume passing through the village by XX% and consequent reduction in noise from road traffic
- N17 Milltown to Claremorris – Ongoing progress of this project continues with development consent given by An Bord Pleanála in 2023 for the Milltown to Gortnagunned section
- N17 Baile Chláir Inner Relief Road – A county-wide study of towns requiring traffic relief is to be undertaken in 2024 and Claregalway Inner Relief Road could progress from its findings
- Athenry Ringroad – The CPO for the Northern Ring Road section was confirmed in 2023. Advance works are currently ongoing with the main construction contract to commence in Q3 2024

In addition to these strategic projects there was further mitigation through the re-surfacing of roads with lower noise SMA, in particular, sections of the of R338 and R446 around Oranmore during 2022 and 2023.

A Decision Support Matrix was used to identify and prioritise actions. While no area was found to exceed the threshold set in the matrix two locations were identified for further assessment through the public consultation process and local complaints. Noise monitoring surveys were carried out to determine the actual noise levels at these locations in order to establish further mitigation measures if required.

Ongoing collaboration with the Planning Section in the Council ensured that the objectives of the existing (2019-2023) Noise Action Plan for County Galway are incorporated into the Noise Policy (NP) objectives for noise pollution in the current Galway County Development Plan 2022-2028 – see section 4.3 Galway County Development Plan 2022 – 2028

6 DESCRIPTION OF THE ACTION PLANNING AREA

6.1 Extent of the area

Galway County Council is responsible for noise action planning relating to sections of major roads passing through its administrative area (**Figure 1.1**). The sections of relevant roads which qualified for strategic noise mapping (i.e. carrying >3 million vehicles per year) and, as such, are subject to consideration for noise action planning are given in **Table 6.1.** and Appendix C.

Table 6.1. Sections of Major Roads for Noise Mapping (i.e. Action Planning Area) in administrative area of Galway County Council

Road	Length (km)	Location Description
M6	55	From Jn 19 Oranmore to County Boundary at Balinasloe
M17	25	From Jn with M6/M18 to Tuam
M18	25	From Jn 17 to County Boundary with Clare
N6	2	From Jn 19 Oranmore to Galway City Boundary
N17	22	From Jn with N83 to Mayo County Boundary
N59	8	From Galway City Boundary to Moycullen
N67	10	From Carrowmoneash roundabout at Oranmore to Kilcolgan
N83	27	From Galway City Boundary to Tuam
N84	10	From Galway City Boundary to Jn with L2119 Corrandulla
R336	12	From Galway City Boundary to Spiddal
R338	3	From Galway City Boundary to Dublin road roundabout Oranmore
R339	4	From Galway City Boundary to Jn with R381 Carnmore
R381	5	From Jn with N83 at Claregalway to Jn 19 with M6/N6
R446	2	From Galway City Boundary to Carrowmoneash roundabout Oranmore
R446	5	From Dublin road roundabout Oranmore to Derrydonnell
R458	4	From Kilcolgan to Jn 17 M18
L4103	1	From Jn with R338 to Jn with N67 at Oranmore
Total	220	

6.2 Topography / geographical location

County Galway is located on the west coast of Ireland in the province of Connacht and extends to an area of 6,148km². County Mayo is located to its north, Counties Roscommon and Offaly to its east, County Tipperary to its south east and County Clare to its south. Its natural boundaries are Galway Bay to the west, the River Shannon to the east and Lough Derg to the south east. The County is characterised by a diverse, natural landscape that includes the spectacular mountainous Conamara region west of the River Corrib, rich agricultural lands to the east and a more varied limestone area to the south. These topographical attributes combine to give Galway its outstanding and widely varied landscape setting. It also boasts four permanently inhabited offshore islands, Inis Mór, Inis Meáin, Inis Óírr and Inisbofin as well as a large number of other islands with transient inhabitants. The climate is temperate and dominated by the Gulf Stream, with warm, damp summers and mild wet winters.

6.3 General population exposed to Traffic Noise

The population of County Galway is approximately 193,300 based on the 2022 census. The main population centres exposed to transportation noise from major sections of roads for this NAP lie within towns and villages and are also associated with ribbon developments.

6.4 Location of Noise Sensitive Groups

Certain locations and non-residential building types are considered to be more sensitive to noise pollution than others. The main priority of the END is to reduce environmental noise exposure in residential areas. It is also recommended that competent authorities designate buildings such as educational and health care facilities as being noise sensitive.

Non-residential buildings and locations which are viewed as being noise sensitive near the major roads within the administrative area of the Council have been identified based on a review of the strategic noise maps. Buildings including hospitals and schools have been considered in this plan.

6.5 Main infrastructure/services

The main infrastructure/services in county Galway relate to the road and rail network. The road network consists of the M6, M17 and M18 motorways, and a number of national primary/secondary roads.

The rail network consists of the mainline rail service to Dublin with connections to Cork and Waterford in the south (via Limerick), and Castlebar/Ballina in the north west (via Athlone).

7. EXISTING NOISE MANAGEMENT FRAMEWORK

7.1 Roads

The definition of a major road for the fourth Noise Action Plan is a road with more than 3 million vehicles per annum. The roads in county Galway which meet this requirement are shown in Figure 1 and listed in Table 6.1. They include sections of the M6, M17 and M18 motorways, sections of the national primary and secondary roads, and a number of regional roads.

7.2 Railways

The national rail network traversing through county Galway is below the threshold required (greater than 30,000 rail passages per year) to be defined as a major railway for the purpose of inclusion in this Noise Action Plan.

7.3 Licensed industrial facilities

There are six licensed industrial facilities in the action planning area along the routes relevant to this Noise Action Plan and none of these are considered 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/>

7.4 Airports

The number of movements per year at Galway Airport and at Connemara airport is lower than the threshold required for Action Planning.

8. SUMMARY OF THE RESULTS OF THE NOISE MAPPING

8.1 Overview of the preparation of the noise map

Transport Infrastructure Ireland (TII) carried out noise mapping for the County and produced the strategic noise map for all major roads. This was done following the EPA Round 4 Strategic Noise Mapping of Major Roads For the fourth round of the Environmental Noise Regulations 2018 (March 2021 - V2). 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.

A strategic noise map is a graphical representation of the predicted noise level in a given area. A noise map has different colour coded bands, which represent the predicted decibels (dB(A)) within a certain range, also detailed on the map.

A noise map is produced using a computer software package - Predictor Noise Model was used in this case. To develop a noise map, a number of variables must be determined in order to correctly represent the amount of noise generated by traffic driving on the road. For road traffic noise, the noise level at the source is primarily influenced by the speed at which traffic is travelling, the overall quantity of vehicles in the traffic flow, the proportion of heavy commercial vehicles (HCVs) in the flow and the type of road surface in the area. The nominal assessment year for traffic data for Round 4 of the strategic noise mapping was 2021. For R4 a new common EU noise calculation methodology was used, CNOSSOS-EU 2015, which is different from the UK CRTN 1988 method used for previous noise mapping. The CNOSSOS-EU method groups road vehicles into different classes compared to CRTN.

The manner in which the noise level decreases with distance must then be calculated, which involves determining the reduction in noise level as it propagates from the source. Distance, ground cover and the presence of barriers such as walls, noise barriers etc will all influence the level of noise attenuation.

Noise maps for County Galway are presented in terms of two noise indicators; L_{den} and L_{night} . L_{den} is the day-evening-night noise indicator and it represents the noise indicator for overall annoyance. It is based on day (07:00-19:00), evening (19:00-23:00) and night (23:00-07:00) time periods and it is weighted to account for extra annoyance in the evening and night periods. L_{night} is the night time noise indicator and is used in the assessment of sleep disturbance. It is based on night (23:00- 07:00) time period. Both of these indicators are based on year-long averages of the day, evening and night time periods and each are plotted separately for the required roads in the County.

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.

Because of the change to the calculation methods to the common European CNOSSOS-EU for R4 noise maps, it is difficult to compare these noise maps to the previous ones undertaken for Round 3. In addition, for Round 4 noise mapping, the terrain model is based on more detailed and accurate data, which has in turn has led to more reliable noise results with much less tendency to over predict the impact.

8.2 Presentation of Results

Two noise maps were produced by TII in 2021 for the County's major roads; one showing the L_{den} (dB) and one showing the L_{night} (dB) noise contour bands. Each map presents the noise levels in 5dB contour bands as outlined below

Noise Band (dB)	Colour	Description
30 – 34		Dark blue-green
35 – 39		Blue-green
40 – 44		Light blue-green
45 – 49		Light green
50 – 54		Yellowish green
55 – 59		Light orange
60 – 64		Orange
65 – 69		Dark orange
70 – 74		Magenta
75 – 79		Purple
80 – 99		Dark purple

A summary of the noise maps for county Galway are shown in Appendix C, while more detailed maps are also available online, on a national basis, at the following website:

<https://gis.epa.ie/EPAMaps/>

(select Environment & Wellbeing/Noise/Noise Round 4 Road National L_{den} for day/evening/night or Noise Round 4 Road National – L_{night} for night-time)

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. Noise from major sources is regarded as affecting an area if it causes either an L_{den} value of 53dB(A) or greater or an L_{night} value of 45dB(A) or greater anywhere within the area. The extent of the orange band (55-59dB) in the L_{den} map and the pale yellow band (45-49dB) in the L_{night} map is the approximate extent of the area eligible for inclusion in the assessment stage of this Noise Action Plan. This area extends approximately 500m from the centre line of the main road. On some stretches of road, the extent is much less and some areas, it may be slightly greater.

A summary of the Round 4 noise exposure statistics for County Galway are presented in Tables 8.1 - 8.3 and rounded to the nearest 100 as required under the regulations.

Table 8.1 Number of people in dwellings exposed to L_{den} and L_{night} from major roads.

Noise Exposure Band (dB)	Major Roads	
	L_{den}	L_{night}
45 – 49	N/A	7,600
50 – 54	N/A	3,700
55 – 59	6,300	2,300
60 – 64	3,000	1,400
65 – 69	2,200	700
70 – 74	1,300	N/A
75 – 79	400	N/A

* Exposure statistics rounded to the nearest 100

Table 8.2 Percentage of population exposed to L_{den} and L_{night} from major roads.

Noise Exposure Band (dB)	Major Roads	
	L_{den}	L_{night}
45 – 49	N/A	4%
50 – 54	N/A	2%
55 – 59	3%	1%
60 – 64	2%	1%
65 – 69	1%	0%
70 – 74	1%	N/A
75 – 79	0%	N/A

* Total population for County Galway = 193,323

Table 8.3 Number of educational buildings exposed to L_{den} and L_{night} from major roads

Noise Exposure Band (dB)	Major Roads	
	L_{den}	L_{night}
45 – 49	N/A	13
50 – 54	N/A	3
55 – 59	10	5
60 – 64	4	3
65 – 69	5	1
70 – 74	1	N/A
75 – 79	1	N/A

The Environmental Noise (Amendment) Regulations, 2021, set out the equations to be used for calculating harmful effects and noise thresholds above which health effects should be calculated and reported in noise action plans. For road traffic noise the calculations for harmful effects should be undertaken in 1 dB assessment bands and should be undertaken above the following thresholds:

- 53 dB L_{den}
- 45 dB L_{night}

The calculated harmful effects from high annoyance (HA), high sleep disturbance (HSD) and ischaemic heart disease (IHD) are shown in Table 8.4 for traffic-related noise in County Galway from the major roads qualifying for strategic noise mapping.

Table 8.4 Number and percentage of the population in County Galway exposed to harmful effects of noise from major roads.

Harmful Effect	Number of People	% of Population*
Ischaemic Heart Disease (IHD)	3	0.00
High Annoyance (HA)	2,789	1.44
High Sleep Disturbance (HSD)	857	0.44

* Total population for County Galway = 193,323

It is important to note that the numbers presented do not represent the actual number of people suffering from harmful effects but estimated numbers based on the equations set out in the Environmental Noise (Amendment) Regulations.

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 results indicate that the greatest impact of traffic-related noise from major roads on the population in County Galway is high annoyance(HA), followed by high sleep disturbance (HSD). The impact of traffic-related noise from major roads on the population causing ischaemic heart disease (IHD) is considered to be very low.

The implementation of measures to reduce the populations exposure to noise from major roads aims to reduce the associated health effects.

9. IDENTIFICATION OF AREAS TO BE SUBJECTED TO NOISE MANAGEMENT ACTIVITIES

9.1 Regulatory Background

The Environmental Noise Regulations require that the Action Planning Authorities 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”. The EPA Guidance provides further guidance on these concepts, and sets out a recommended approach following a three-step approach to identifying priorities:

1. **Important Areas (IAs)** – these are locations exposed to environmental noise which may be harmful to human health, as indicated by international guidance;
2. **Most Important Areas (MIAs)** – these locations are a subset of the IAs where the health effects are highest, typically through a product of noise exposure levels and the number of people exposed to noise; and
3. **Priority Important Areas (PIAs)** – between 5 and 10 MIAs or group of similarly affected MIAs, identified as those which will be addressed during the implementation of the NAP.

9.2 Overview of Process

The process of identifying Important Areas (IAs), Most Important Areas (MIAs) and Priority Important Areas (PIAs) within County Galway 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 involves using the results of the strategic noise mapping to identify noise sensitive residential buildings and the estimated number of people exposed to L_{den} levels above the guideline values set by the EPA Guidance which are in line with the 2018 WHO *Environmental Noise Guidelines for the European Region* (WHO ENG 2018). This is followed by an automated process within Geographic Information System (GIS) software to identify areas with the highest concentrations of people highly annoyed, referred to as the MIAs. The MIAs that are to be addressed during the implementation of the NAP 2024-2028 are referred to as PIAs.

It is important to emphasise that the approach to identifying MIAs 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 MIAs definitive. Instead, they are indicative for the identification of areas with a relatively high number of people highly annoyed due to noise.

Stage 2 of the process takes place during the implementation of the NAP, focusing on undertaking an assessment of noise mitigation measures for each of the identified Priority Important Areas.

An overview of the two-stage process is set out diagrammatically in Figure 9.1 overleaf

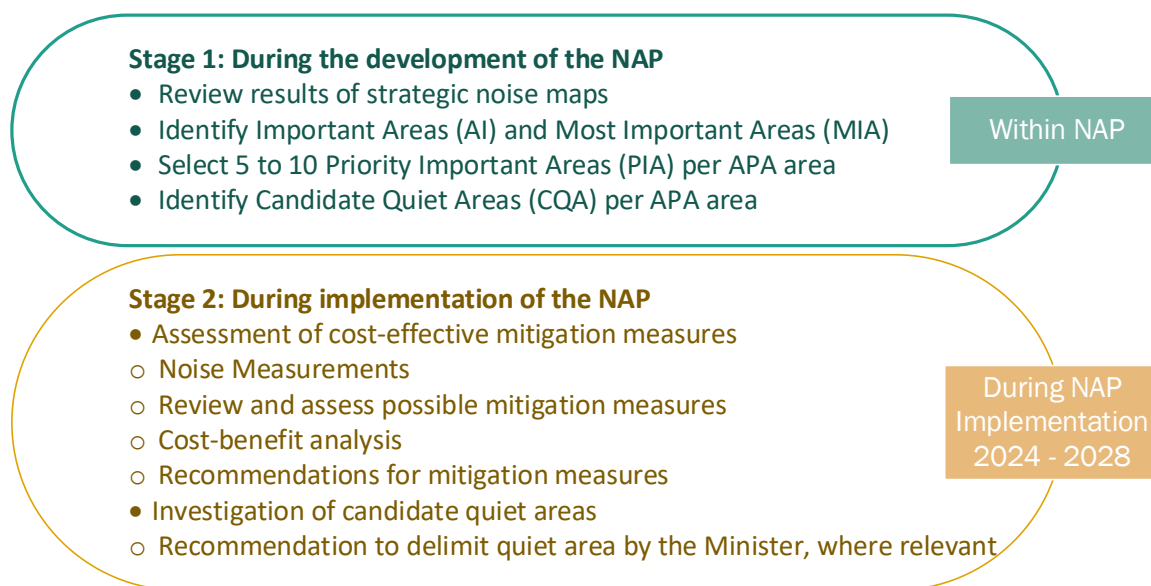


Figure 9.1 : Overview of recommended approach to actions to be undertaken during development and implementation of the NAPs

A summary of the Most Important Areas identified along the major routes in county Galway using the EPA Guidance density criteria (Highly Annoyed Threshold) of 7.5, 10 and 15 or more people per 100m² is provided in Table 9.1 (Note numbers rounded to the nearest whole number).

Table 9.1. Most Important Area (MIA) Summary

HIGHLY ANNOYED (HA) THRESHOLD/100M ²	NO. OF MIAS NEAR MAJOR ROADS	NO. PEOPLE IN MIA			
		Total	Highly Annoyed (HA)	Highly Sleep Disturbed (HSD)	Ischaemic Heart Disease (IHD)
15	8	539	131	43	0
10	13	1,491	320	104	0
7.5	20	2,754	534	171	1

The MIA calculation process identified 41 MIAs along major routes in the county. Eight of the MIA locations occurred at the highest density criterion of 15 or more people per 100m² being Highly Annoyed., while a further 13 MIAs are at the density criterion of 10 people per 100m² being Highly Annoyed.

The next stage in the process is to rank these and to determine 5-10 Priority Important Areas (PIAs), where there would be a commitment to undertake an assessment of noise mitigation measures within the life cycle of the NAP.

The EPA Guidance requires consideration be given to the following aspects, where information is available:

- Number of people exposed to noise, and the harmful effects
- Level of noise exposure
- Potential for grouping adjacent Most Important Areas into a larger Priority Important Area
- The main source of transport noise
- Competent body to carry out any proposed mitigation measures
- History of complaints
- Planned road maintenance and resurfacing programme
- Planned speed or traffic calming measures
- Planned nearby developments
- Existing noise reduction measures

To inform APA decisions on the selection of Priority Important Areas, consistent with the requirements of the EPA Guidance, associated statistical information has been developed for each Most Important Area, including:

- Noise source identifying the Most Important Area, i.e., railways or roads
- Area (m²)
- Total population
- Number of people highly annoyed (HA)
- Number of people highly sleep disturbed (HSD)
- Population increased risk of ischaemic heart disease (IHD)
- Number of dwellings
- Population noise exposure above END threshold values: o road traffic noise exposure in 5 dB bands (L_{den} 55 → 75 dB, L_{night} 50 → 70 dB)

9.3 Identified Most Important Areas (MIAs) and Selected Priority Important Areas (PIAs)

Ten PIAs have been identified along the roads in County Galway which exceed the threshold for traffic flow (greater than 3 million vehicles per year). These are located in the villages of Moycullen, Barna, Oranmore and Claregalway and are based on a criterion of 15 or more people expected to be highly annoyed per 100 m², apart from two which have 10 or more people expected to be highly annoyed per 100 m² (See Table 9.2 and PIA maps in Appendix C). These towns have been selected as PIAs for the NAP 2024-2028, with actions to be identified to reduce noise from the roads that pass through or adjacent to them. The PIAs represent where the harmful effects on the population are likely to be most concentrated and not where there is likely to be the most harmful effects caused.

Table 9.2. Indicative List of Priority Important Areas (PIA) Summary from Major Roads

PIA ID Ref	PIA Location	Total Pop	MIA Criterion (People HA/100 ²)	Area (m ²)	Number of People		
					HA	HSD	IHD
GCC_4	Moycullen (Shopping Centre)	60.27	15	1,300	12.53	4.08	0.01
GCC_7	Moycullen (Ballyquirke)	12.01	15	600	4.63	1.57	0.01
GCC_3	Barna (Creagan)	67.53	15	4,900	15.5	4.88	0.02
GCC_5	Oranmore (Ashbrook)	47.02	15	4,600	10.77	3.59	0.01
GCC_10	Oranmore (Tudor Vale)	29.93	10	5,600	6.25	2.05	0.01
GCC_1	Oranmore (Frenchpark)	226.91	15	21,300	57.78	19.2	0.07
GCC_6	Oranmore (Clochog)	39.09	15	5,300	9.87	3.31	0.01
GCC_8	Oranmore (Clochog - behind Lidl SC)	7.42	15	600	1.32	0.42	0
GCC_2	Claregalway (Cois Chlair)	78.42	15	4,800	18.5	6.21	0.02
GCC_9	Claregalway (An Mhainistir)	35.14	10	4,100	5.42	1.7	0.01

PIA – Priority Important Area, HA – Highly Annoyed, HSD – Highly Sleep Disturbed, IHD – Ischaemic Heart Disease

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

9.4 Identification of Quiet Areas

Under the Regulations APAs may delimit quiet areas within agglomerations. As there are no qualifying agglomerations within County Galway there is no statutory requirement to identify quiet areas. A quiet area in open country is defined as an area delimited by the Action Planning Authority following consultation with the agency and approval by the Minister, that is undisturbed by noise from traffic, industry, or recreational activities. At present, no quiet areas have been identified in the action plan area however quiet areas may be considered and reviewed as part of the implementation of the noise action plan. Any possible designations which may be recommended would go to public consultation prior to submission to the Minister for adoption. This work would be carried out as part of the programme of works for the Action plan

10. MITIGATION AND PROTECTION MEASURES

10.1 Investigation of PIAs

Following the identification of PIAs, the second stage of the overall process is undertaken during implementation of the NAP. There are several approaches that can be taken to reduce noise from major roads for existing dwellings:

- Relocating major roads from high density residential settlement through the provision of new road schemes is the most effective method of minimising the numbers of dwellings likely to be affected by the road noise. In this regard strategic road projects have the potential to segregate and remove large volumes of traffic (and associated environmental noise impacts) from built up residential areas. In doing so such projects also help to free up road space for active travel and public transport modes in these urban areas thus offering the potential to further reduce traffic related environmental noise.
- The provision/enhancement of new walking and cycling infrastructure, public transport services, and park and ride facilities, can encourage a greater uptake of active and sustainable transport modes, decrease car dependency, and thus can reduce traffic volumes and associated environmental noise on major roads leading to urban areas.
- Traffic calming measures can be employed where the major road passes through a built-up area.
- Reduction in speed limits where appropriate and in accordance with the legislation and DOT guidelines.
- Where areas are identified by further assessment as requiring possible mitigation, it may be possible to install noise barriers on major roads.
- Changes to the road surface to use porous asphalt may be appropriate in some instances; the road surface must be regularly cleaned to keep the pores free of sediment otherwise the sound absorbing properties of the surface are reduced. Porous surfaces are more effective at higher vehicle speeds and are not as effective within 50kph speed restriction zones.

For each of the Priority Important Areas, an assessment of cost-effective noise mitigation measures is undertaken during implementation of the NAP. The guidelines recommend that this assessment includes:

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

10.2 Investigation of Candidate Quiet Areas

As there are no qualifying agglomerations within County Galway there is no statutory requirement to identify quiet areas. A quiet area in open country is defined as an area delimited by the Action Planning Authority following consultation with the agency and approval by the Minister, that is undisturbed by noise from traffic, industry or recreational activities. There are currently no quiet areas identified in the County Development Plan.

The strategic noise mapping undertaken for this Noise Action Plan does not provide a resource which may be extensively 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 Quiet Areas would be discussed with the EPA for approval.

10.3 Management of Noise Impact on Future developments within the Action Planning Area

Several measures can be implemented to prevent noise from major roads impacting on future noise sensitive developments such as residential properties including:

- Locating zonings for future large scale urban residential developments away from the major strategic roads covered by the END Directive.
- Locating less noise sensitive development zonings (e.g. industrial, commercial etc) in the vicinity of major roads.
- Include acoustical planning measures in development layouts such as locating access roads, green areas and planting/landscaping between residential developments and major roads.
- Managing the quantum of rural housing in the vicinity of major strategic roads.
- Facilitating active travel and public transport infrastructure and services to reduce traffic volumes and associated environmental noise.
- Implementing the building line setbacks from National and Regional roads.
- Review of Speed Limits in accordance with the legislation and DOT Guidelines.
- Using a higher standard of insulation for new dwellings adjacent to major roads and using higher standards of insulation for the exposed façades of new dwellings.

10.4 Confirmation of extent of noise exposure levels

(i) *Ambient noise monitoring*

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

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

(ii) *Review strategic noise model*

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

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

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

10.5 Review Possible Mitigation Measures for PIAs

Once the extent of the existing noise exposure levels have been confirmed for a PIA, the potential noise mitigations measures may be investigated, and a cost benefit analysis undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action. There are a range of actions which may be feasible, some may need to be implemented on or directly alongside the sources, others may be in the region between the roads and the dwellings, and others may be at the noise sensitive locations.

The following are an indication of the types of measures which may be relevant to consider for noise sensitive locations exposed to noise from road sources:

- Re-surface roads with 10mm stone mastic asphalt (SMA);
- Re-surface roads with low noise road surfaces, or thin surface treatments;
- Vehicle speed management, or speed limit reductions;
- Traffic management – routes and HGVs;
- New road construction (bypass); and
- Roadside noise barriers and screening measures
- Earthworks, such as earth bunds, mounds or cuttings;
- Acoustic windows or secondary glazing;
- Acoustics ventilation, passive or active; and
- Chimney caps and dampers.

Review of other documents as set out in the EPA Noise Action Plan guidelines may highlight some other possible mitigation measures which may be considered. The actions which the action planning authorities intend to take in the fields within their competence may for example include:

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

The following were shown to offer the most cost-effective noise mitigation measures in the context of the ZPAP target of a 30% reduction in the number of people chronically exposed to environmental noise by 2030 for road traffic noise:

- Reducing the road traffic noise through road resurfacing and low noise road surfaces;
- Speed restriction or speed limit reductions;
- Car-free zones;
- Dwelling façade insulation, either new build or retrofit; and
- Planning new developments with quiet facades.

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

It is a statutory requirement that Galway County Council liaise and consult with the relevant noise mapping bodies, for example TII, when selecting feasible noise mitigation measures for detailed assessment.

10.6 Assessment of noise reduction effects of potential measures

At present there is no recommended Irish methodology for the assessment of the monetised benefits to health of noise mitigation. EPA Guidelines recommended to use the UK WebTAG workbooks - Department for Transport (UK), Transport Analysis Guidance (TAG), TAG: environmental impacts worksheets, Noise workbook, November 2023, with adjustments to suit Irish settings, which enables the noise impact of a proposed scheme to be monetised to support a cost benefit assessment. The valuation of the change in noise level due to the proposed noise mitigation scheme considers the long-term effects on sleep disturbance, amenity (annoyance), AMI (acute myocardial infarction), stroke, and dementia during the daytime, and sleep disturbance at night. The assessment requires noise calculation results for all the dwellings within 600m of the scheme, for the opening year, and forecast year (typically 15 years after opening), both with and without the proposed noise mitigation measures.

The most cost-effective noise mitigation measures, or combination of measures will be proposed to the relevant departments, agencies and fund holders to be incorporated within their future work plans. Where funding is available and approved, the recommended noise mitigation measures will be implemented. After implementation, post-completion noise measurement surveys will be conducted to confirm the predicted noise reduction.

The objective of this NAP is to reduce the number of people affected (annoyed, sleep disturbed, or other) by road traffic noise. If feasible noise mitigation measures are implemented over the lifetime of the NAP, the health effects will be assessed and reported in the annual NAP progress report and in the Noise Action Plan when next revised. It is anticipated that the next round of TII national noise modelling will provide the updated data necessary to assess any improvements gained from mitigation measures introduced at PIA's during the lifetime of this Noise Action Plan.

11. IMPLEMENTATION PLAN

11.1 Roles and Responsibilities

(i) Galway County Council

- Noise Mapping Body responsible for making and approving strategic noise maps for non-national major roads in County Galway
- Action Planning Authority responsible for making and approving action plans, in consultation with NMBs
- Detailed evaluation of Priority Important Areas, in consultation with Noise Mapping Bodies, including identification of noise mitigation measures and implementation of those measures within their areas of competence and responsibility, subject to resources and budget

(ii) Transport Infrastructure Ireland

- Noise Mapping Body responsible for making and approving strategic noise maps for major roads designated as national roads in County Galway
- 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.
- Consult and engage with Galway County Council to identify and agree noise mitigation measures for locations within their areas of competence and responsibility and implementation of same subject to resources and budget

11.2 Targets and Objectives

This 4-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.

11.3 Programme of Works

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

2025

- Conduct noise monitoring and validate noise model for PIA ID GCC_4 and GCC_7 in Moycullen
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for these PIAs if applicable and conduct cost benefit analysis
- Provide NAP annual report to EPA

2026

- Conduct noise monitoring and validate noise model for PIA ID GCC_1, GCC_5, GCC_6, GCC_8 and GCC_10 in Oranmore
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for these PIAs if applicable and conduct cost benefit analysis
- Provide NAP annual report to EPA

2027

- Conduct noise monitoring and validate noise model for PIA ID GCC_2 and GCC_9 in Claregalway
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for these PIAs and conduct cost benefit analysis
- Provide NAP annual report to EPA

2028

- Conduct noise monitoring and validate noise model for PIA ID GCC_3 in Barna
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for this PIA and conduct cost benefit analysis
- Undertake full cost benefit analysis for all PIAs
- If applicable seek approval from TII to implement mitigation measures, subject to funding
- Provide NAP annual report to EPA
- Participate in review process for R5 NAP

11.4 Evaluation, Review and Corrective Action Programmes

A review of this Noise Action Plan will be carried out by Galway County Council to assess progress against the programme of works. An interim summary report will be prepared annually. This report will highlight progress in implementation of action plan measures and will also identify areas where corrective action is required or where the proposed measures must be modified for reasons unforeseen at present.

There are a number of risk factors associated with the delivery of this Noise Action Plan, particularly financial risks. Some elements of the Action Plan are outside the control of Galway County Council and will require the approval of other statutory bodies. Also, the financial resources required to deliver the programme has yet to be determined and the delivery of the noise action plan will be contingent on adequate funding being available. In view of these uncertainties, it is important that the programme is subject to an ongoing review so as to alert all relevant parties to any change in circumstances.

In 2028 the Council will carry out a review of the programme of works implemented under this action plan. Progress and results will be evaluated using information gathered through local assessment of environmental noise exposure. This will include “before and after” evaluations of any noise mitigation measures. A review of new noise maps will also be carried out by TII, giving an indication of the change in environmental noise levels and the numbers of people exposed.

12. SUMMARY AND CONCLUSIONS

The Galway Noise Action Plan (2024-2028) has been undertaken in consultation with the EPA and the noise mapping bodies. It follows the EPA guidance note for Noise Action Planning and is based upon the results of strategic noise mapping carried out by the designated Noise Mapping Body, Transport Infrastructure Ireland (TII).

In County Galway traffic noise on major roads in excess of 3 million vehicles per year applies to this Noise Action Plan. This includes sections of the following routes:

- M6, M17 and M18 motorways
- N6 and N17 national primary roads
- N59, N67, N83, and N84 national secondary roads
- R336, R338, R339, R381, R446 and R458 regional roads
- L4103 local road

Strategic noise mapping in respect of those roads was carried out by TII in 2021.

This Noise Action Plan, which is based on the results of these noise maps, was prepared by Galway County Council. The Noise Action Plan describes the action planning area and the responsible authorities. It discusses existing noise management legislation and guidance. The plan is relevant to Important Areas (IAs) that are exposed above the outdoor noise levels of L_{den} 53dBA and/or L_{night} 45dBA, above which adverse health effects and adverse effects on sleep may occur. Harmful health effects of environmental noise are measured by the number of people Highly Annoyed (HA), number of people Highly Sleep Disturbed (HSD) and instances of Ischemic Heart Disease (IHD).

The Most Important Areas (MIAs) calculation process identified 41 MIAs along major routes in the County. Eight of the MIA locations occurred at the highest density criterion of 15 or more people per 100m² being Highly Annoyed., while a further 13 MIAs are at the density criterion of 10 people per 100m² being Highly Annoyed.

From the list of 41 MIAs ten Priority Important Areas (PIAs) have been selected for which Galway County Council give a commitment to undertake an assessment of noise mitigation measures within the life cycle of the NAP. These PIAs are located in the villages of Moycullen, Barna, Oranmore and Claregalway and are based on a criterion of 15 or more people expected to be highly annoyed per 100 m² in the case of eight of them, with two having 10 or more people expected to be highly annoyed per 100 m².

Potential mitigation options for road traffic noise are included in the plan and once the noise level in the PIAs has been confirmed by monitoring to be as predicted in the noise model, a cost benefit analysis for potential mitigation measures will be undertaken.

The Noise Action Plan covers a four-year period beginning in 2024 and will be reviewed every five years thereafter in 2028. The views of the public will be taken into account by conducting an 8-week public consultation process on the Draft Plan. The results of the public consultation will be taken into account when preparing this document.

The following key actions are proposed over the lifetime of the NAP:

- Conduct noise monitoring and validate noise model for all ten PIAs
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for the PIAs and cost benefit analysis
- If applicable seek funding and approval to implement mitigation measures.

All proposals for development/works under the Action Plan will be required to demonstrate compliance with the requirements of environmental and planning legislation and planning and licensing processes, including existing provisions of relevant land use plan(s) and policy documents such as the National Planning Framework, the Regional Spatial and Economic Strategy 2020-2032 for the Northern and Western Region and Galway County Development Plan 2022-2028.

The EPA guidelines recommend that SEA pre-screening checks are carried out for the NAP. This process was undertaken by Galway County Council Planning Department and it was determined that no formal SEA 'screening' is required.

The EPA guidelines also recommended that appropriate assessment (AA) is undertaken. This is termed AA screening. Its purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives. The need to apply the precautionary principle in making any key decisions in relation to the tests of AA has been confirmed by European Court of Justice case law. Therefore, where significant effects are likely, uncertain or unknown at screening stage, AA will be required. AA screening was also undertaken by the Council's Planning Department and it was determined that no AA will be required in relation to the NAP.

Appendix A: Glossary of Acoustic and Technical Terms

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

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

Term	Definition
TAG	English Department for Transport, Transport Analysis Guidance
TII	Transport Infrastructure Ireland
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organisation
ZPAP	Zero Pollution Action Plan

Appendix B: Bibliography and References

EU Legislation

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Appendix C: Strategic Noise Maps & Priority Important Areas for Co. Galway

Overview – Round 4 Strategic Noise Maps

Map No.	Noise Indicator	Road No
1	Sections of major roads in County Galway that qualified for the Noise Action Plan 2024-2028 (i.e. Action Planning Area)	
2	L _{den}	M18, N6, N67
3	L _{night}	M18, N6, N67
4	L _{den}	R338, R339, R381, R446 and L4103
5	L _{night}	R338, R339, R381, R446 and L4103
6	L _{den}	N59 and R336
7	L _{night}	N59 and R336
8	L _{den}	M17, N17, N83, and N84
9	L _{night}	M17, N17, N83, and N84
10	L _{den}	M18, N67, and R458
11	L _{night}	M18, N67, and R458

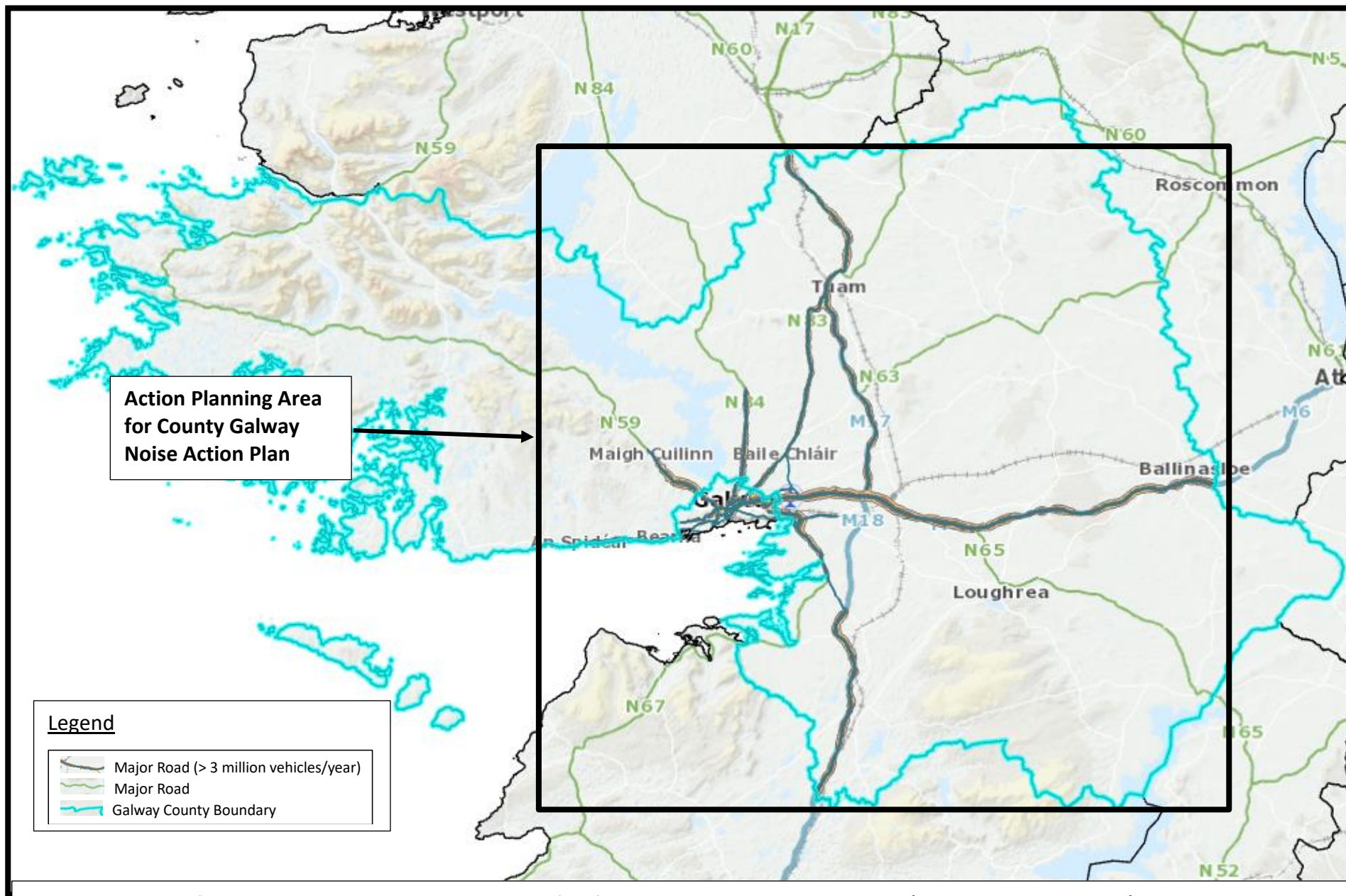
Notes: Refer to Table 6.1 (pg. 20) for road description

For further map details see EPA website <https://gis.epa.ie/EPAMaps/>

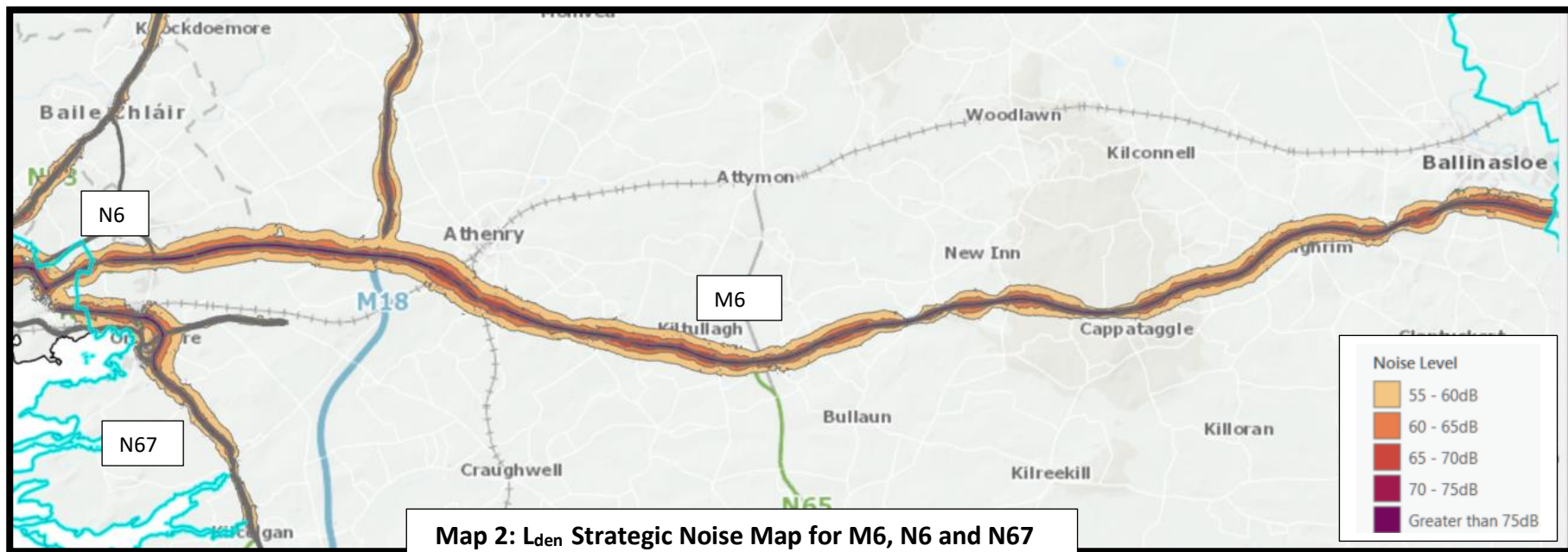
(select Environment & Wellbeing/Noise Round 4 Road National L_{den} for day/evening/night or Noise Round 4 Road National – L_{night} for night-time)

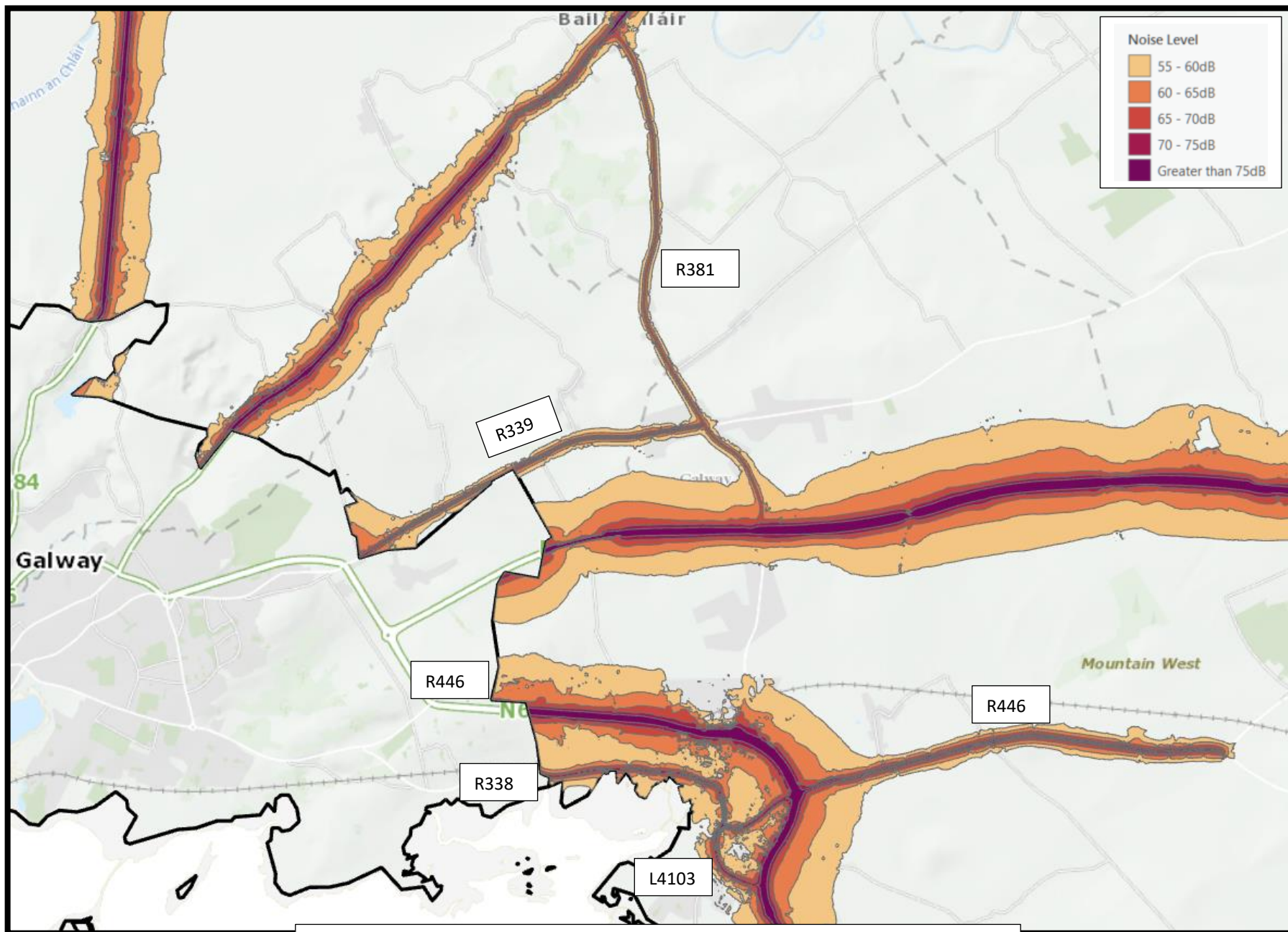
Priority Important Areas (PIAs) Maps

Map No.	Priority Important Area (PIA)
12	Moycullen – Work Programme 2025
13	Oranmore – Work Programme 2026
14	Claregalway – Work Programme 2027
15	Barna – Work Programme 2028

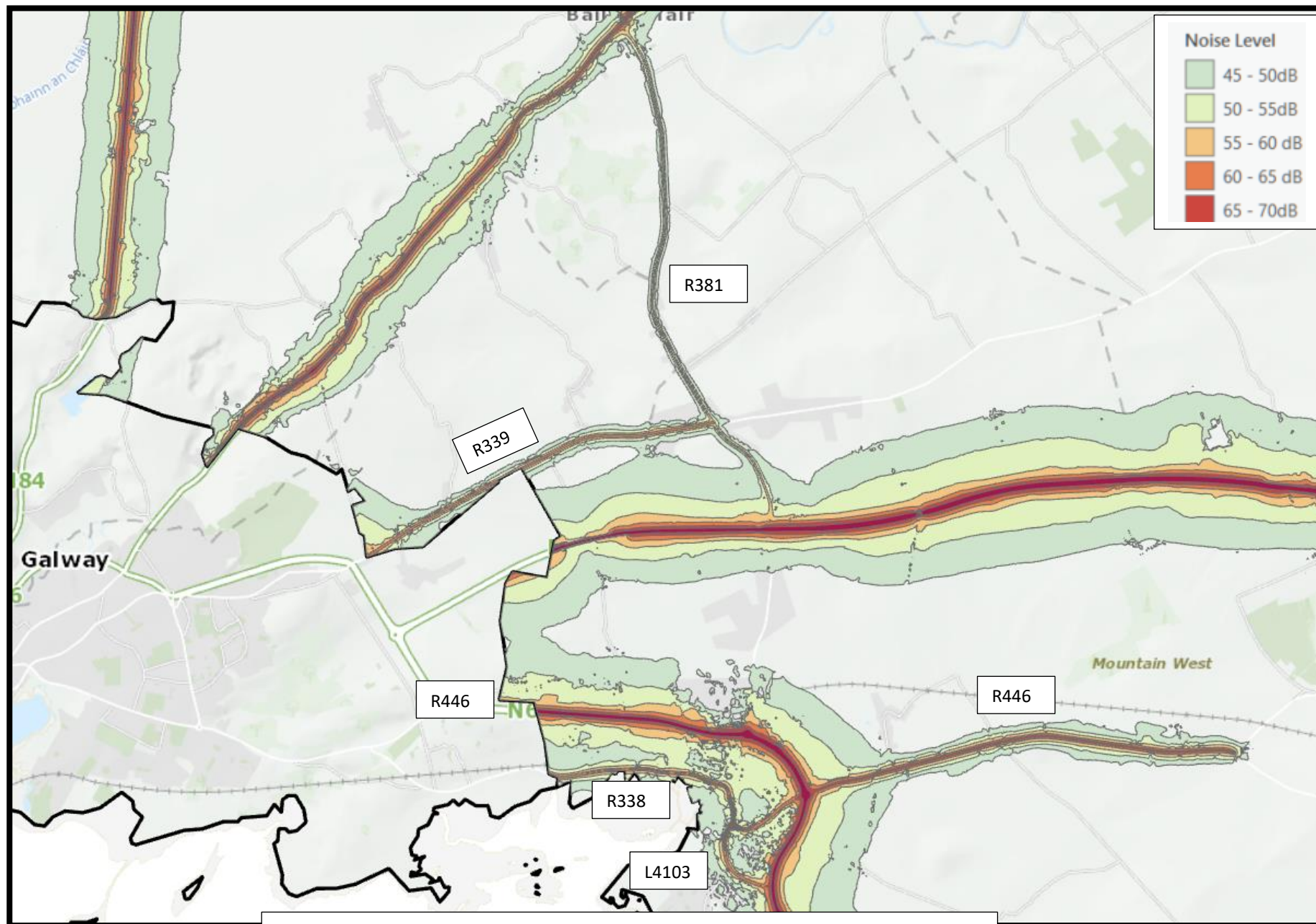


Map 1: Sections of major roads in County Galway that qualified for the Noise Action Plan 2024-2028 (i.e. Action Planning Area)

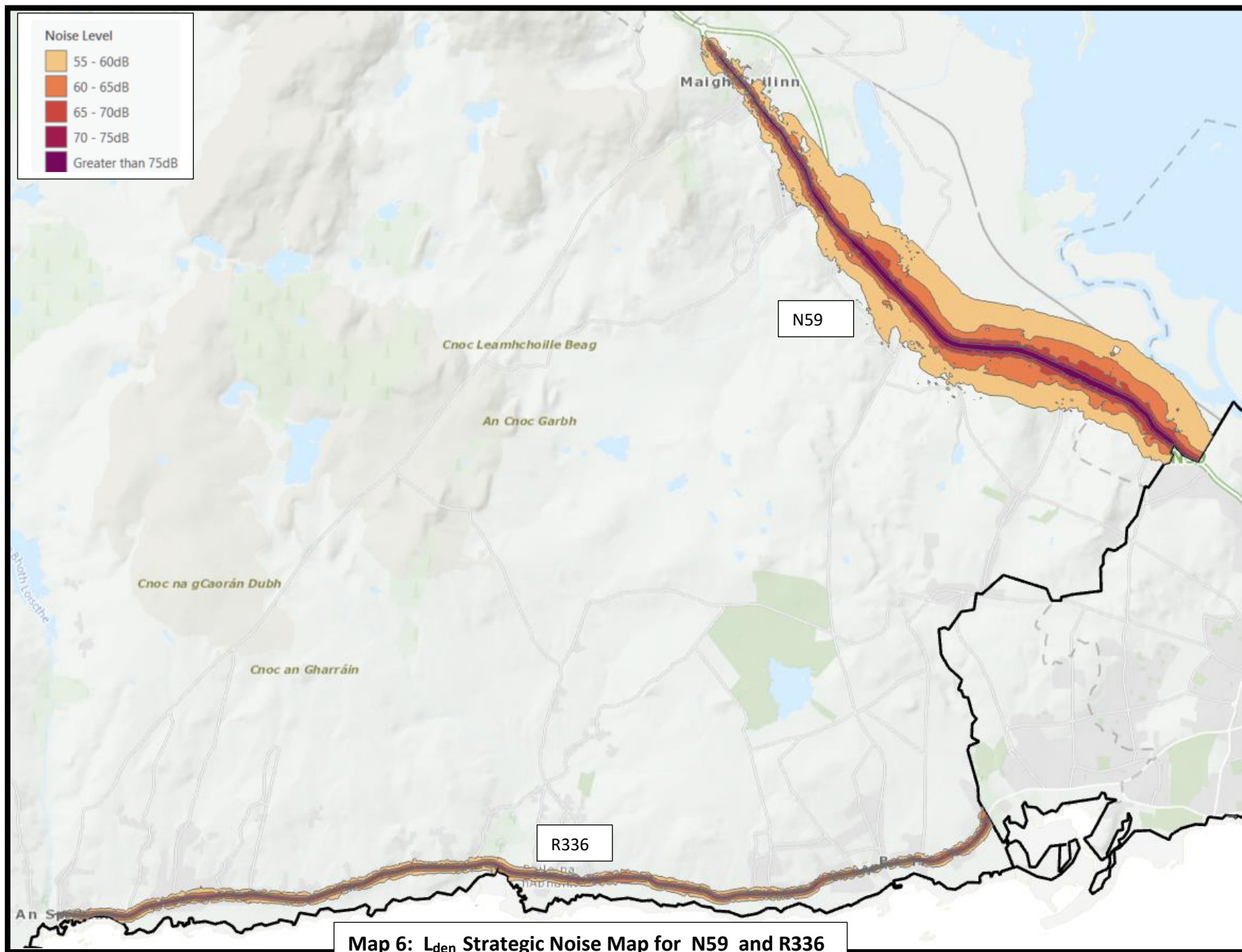


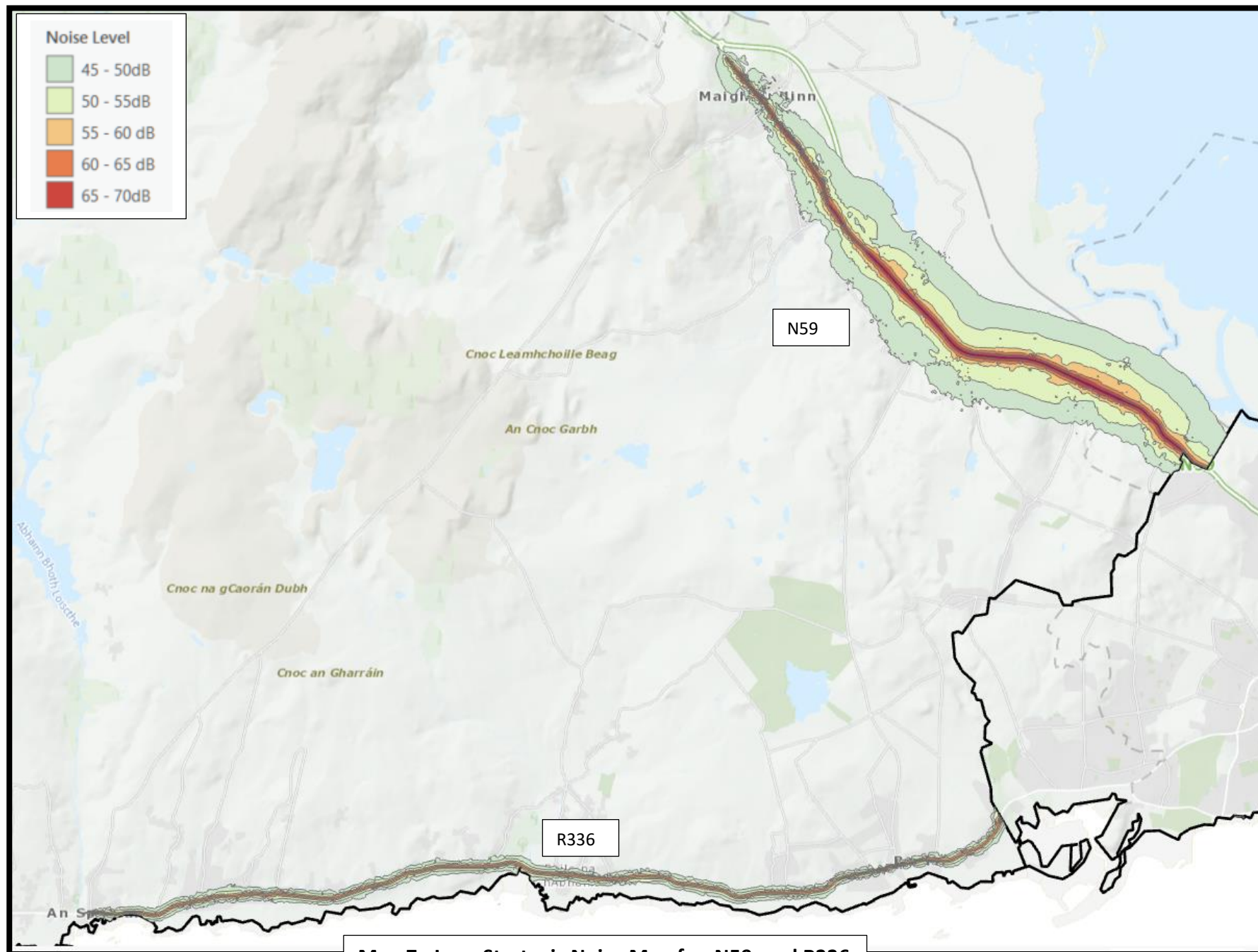


Map 4: L_{den} Strategic Noise Map for R338, R339, R381, R446, and L4103

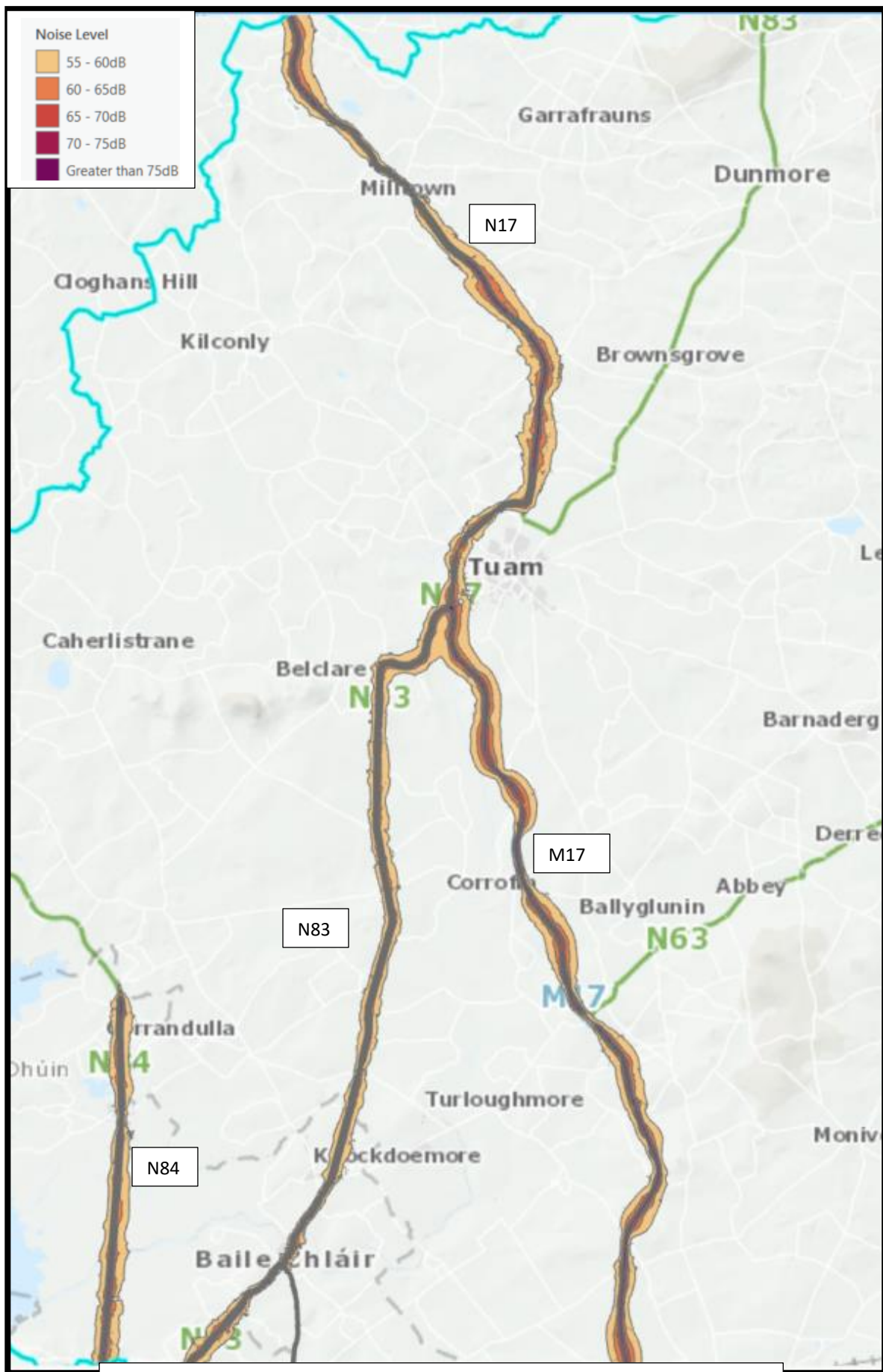


Map 5: L_{night} Strategic Noise Map for R338, R339, R381, R446, and L4103

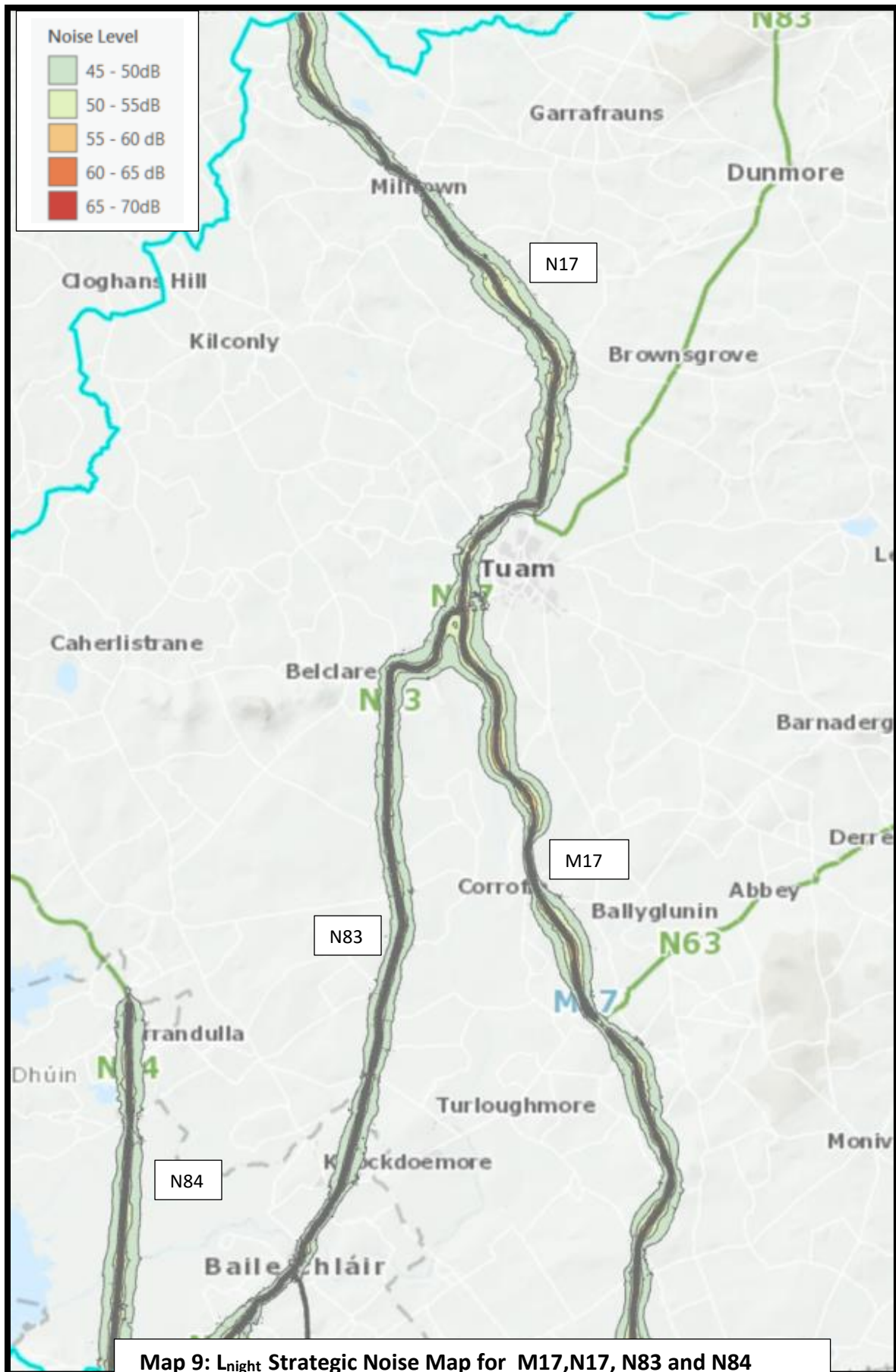


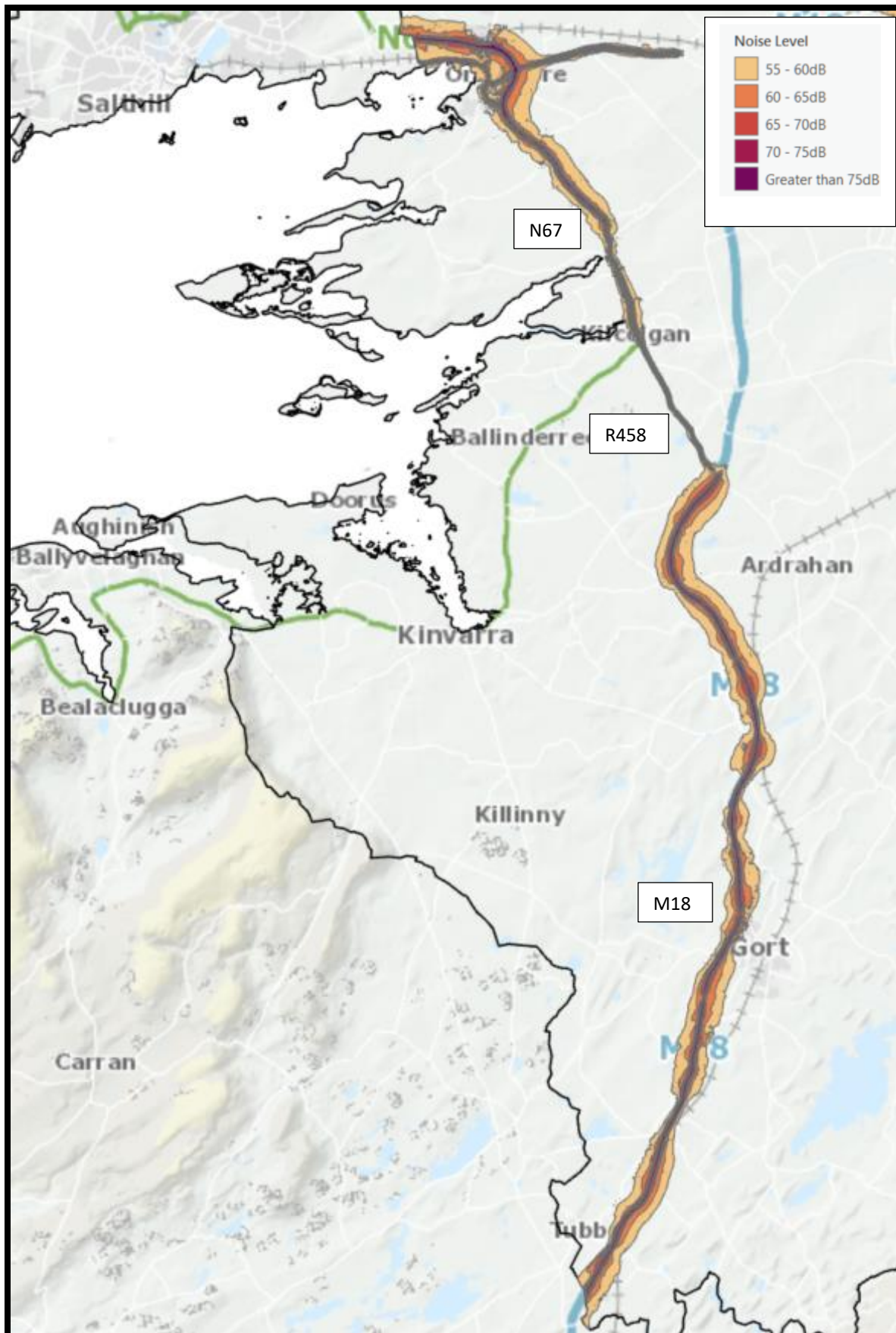


Map 7: L_{night} Strategic Noise Map for N59 and R336

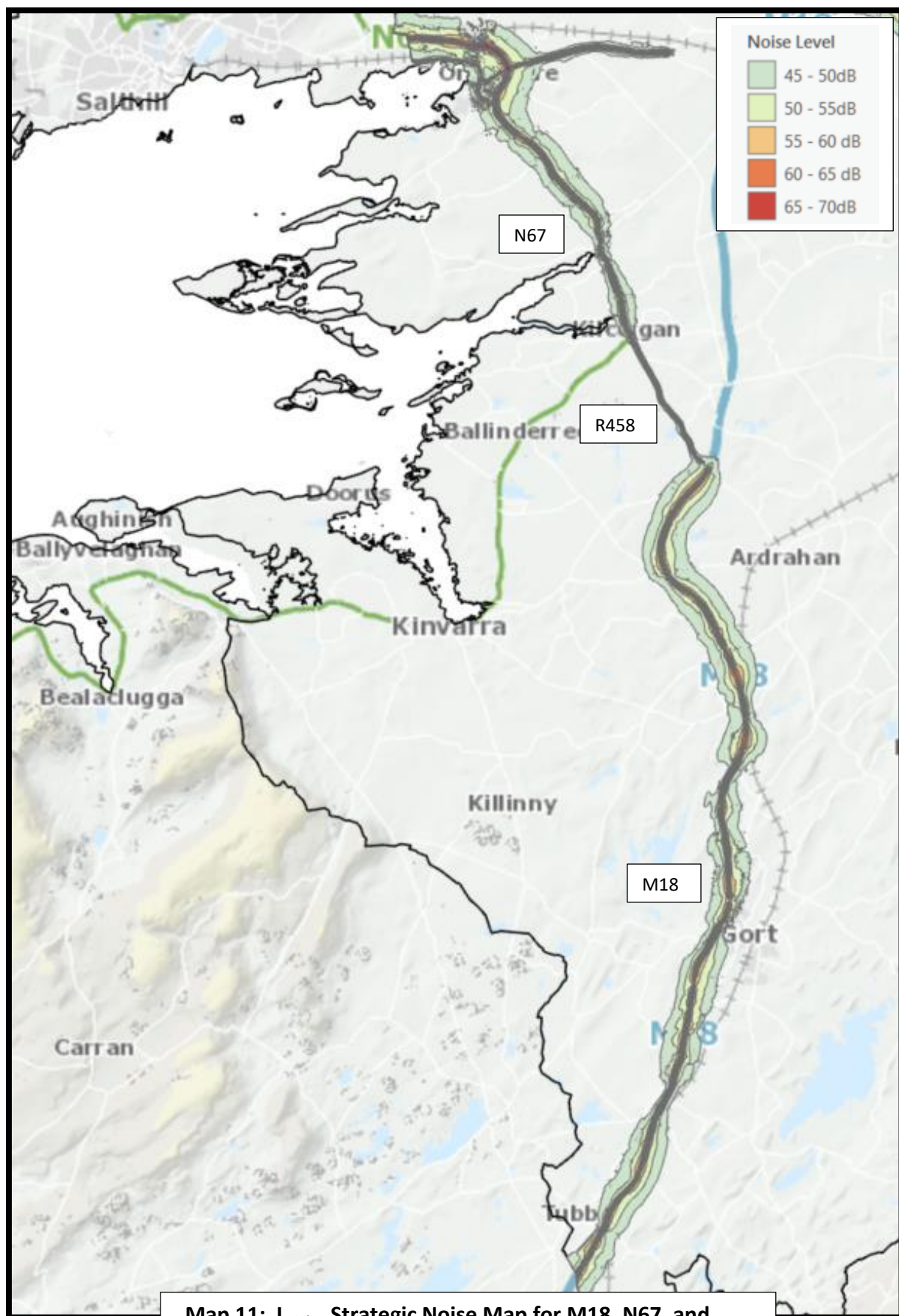


Map 8: L_{den} Strategic Noise Map for M17, N17, N83 and N84



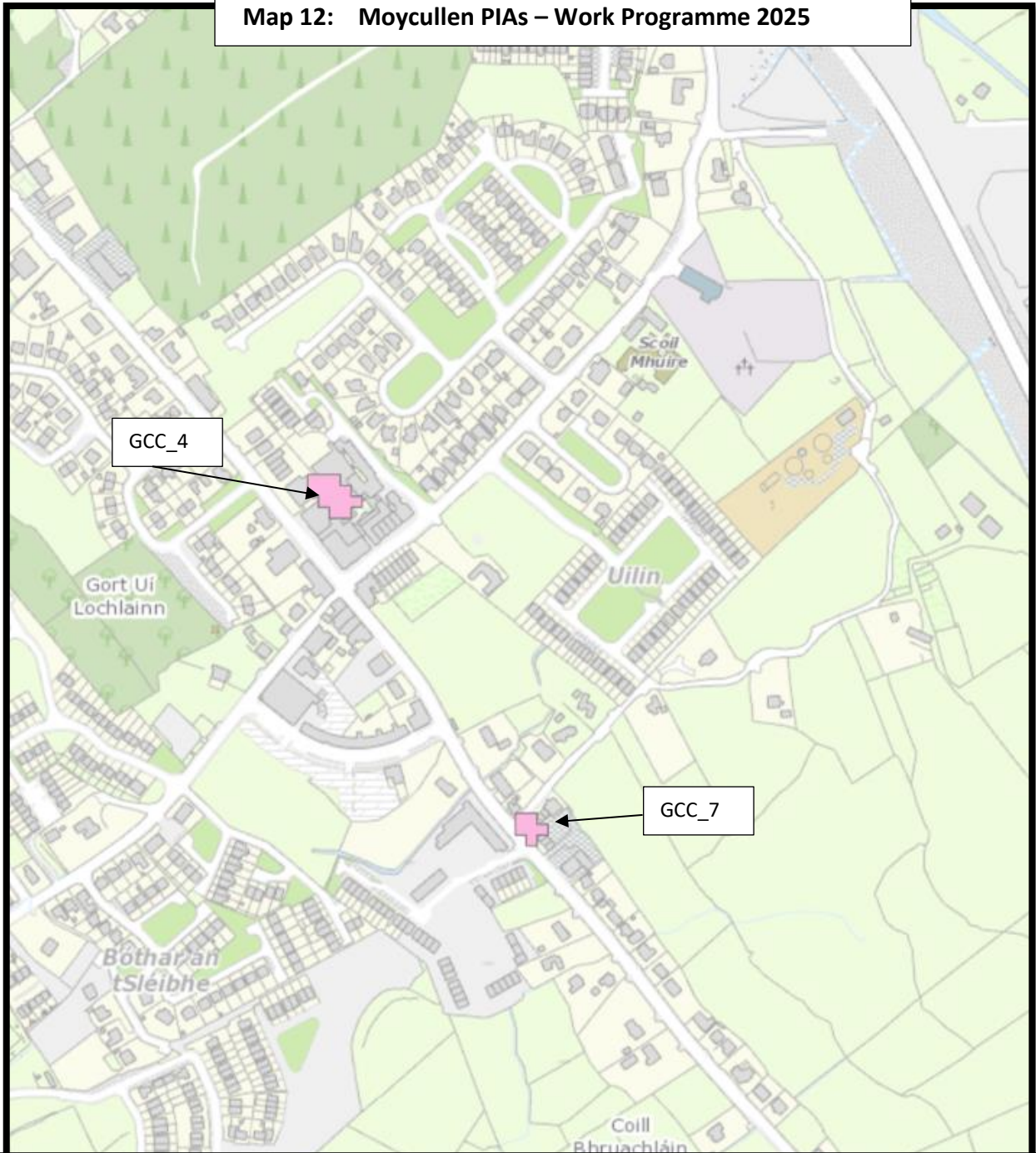


Map 10: L_{den} Strategic Noise Map for M18, N67, and R458



Map 11: L_{night} Strategic Noise Map for M18, N67, and

Map 12: Moycullen PIAs – Work Programme 2025



PIA ID Ref	PIA Location	Total Pop	MIA Criterion (People HA/100 ²)	Area (m ²)	Number of People		
					HA	HSD	IHD
GCC_4	Moycullen (Shopping Centre)	60.27	15	1,300	12.53	4.08	0.01
GCC_7	Moycullen (Ballyquirke)	12.01	15	600	4.63	1.57	0.01

PIA – Priority Important Area, HA – Highly Annoyed, HSD – Highly Sleep Disturbed, IHD – Ischaemic Heart Disease

Map 13: Oranmore PIAs – Work Programme 2026



PIA ID Ref	PIA Location	Total Pop	Area (m ²)	Number of People		
				HA	HSD	IHD
GCC_1	Frenchpark	226.91	21,300	57.78	19.2	0.07
GCC_5	Ashbrook	47.02	4,600	10.77	3.59	0.01
GCC_6	Clochog	39.09	5,300	9.87	3.31	0.01
GCC_8	Clochog -behind Lidl SC	7.42	600	1.32	0.42	0
GCC_10	Tudor Vale	29.93	5,600	6.25	2.05	0.01

PIA – Priority Important Area, HA – Highly Annoyed, HSD – Highly Sleep Disturbed, IHD – Ischaemic Heart Disease

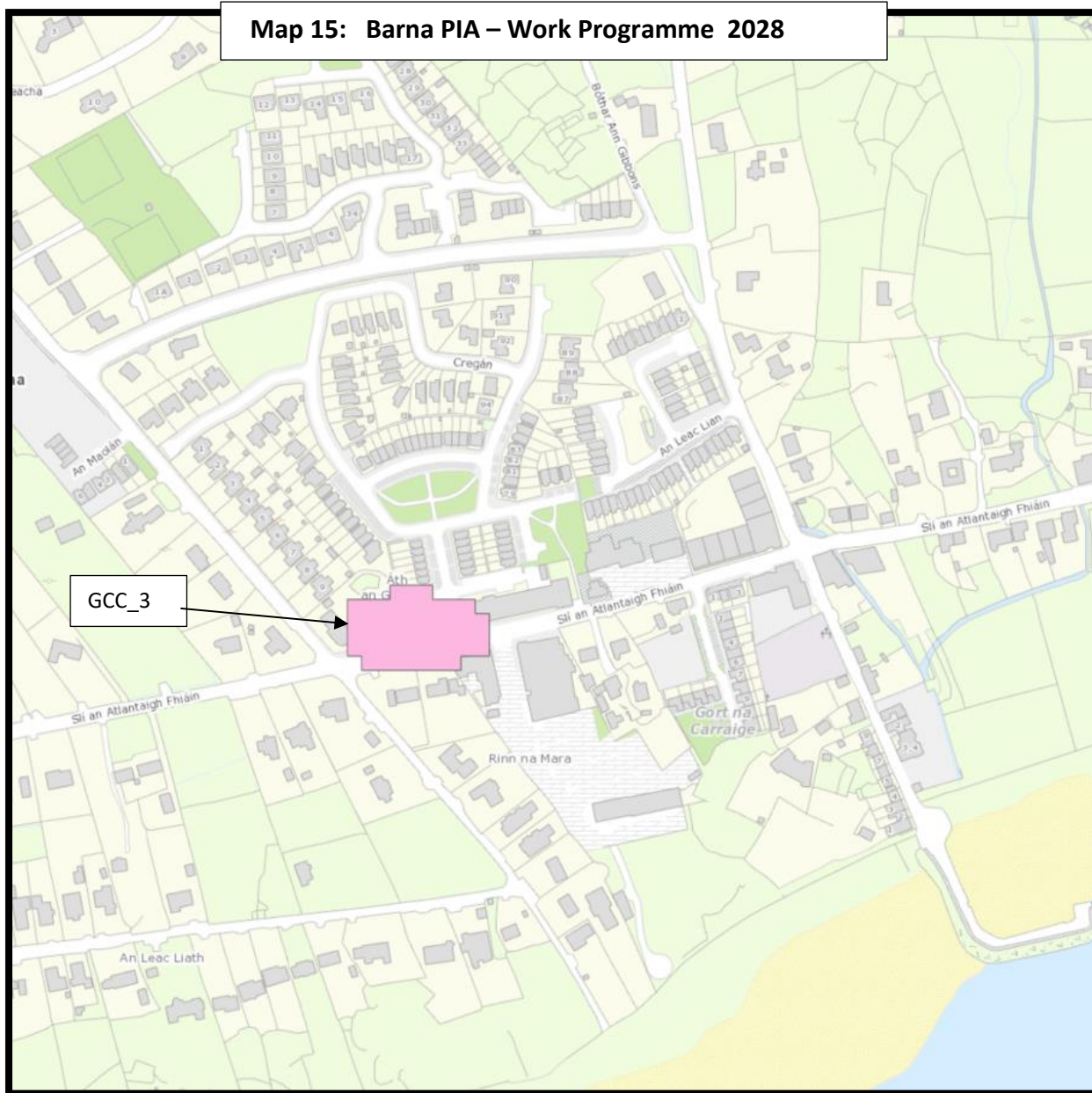
Map 14: Claregalway PIAs – Work Programme



PIA ID Ref	PIA Location	Total Pop	MIA Criterion (People HA/100 ²)	Area (m ²)	Number of People		
					HA	HSD	IHD
GCC_2	Claregalway (Cois Chlair)	78.42	15	4,800	18.5	6.21	0.02
GCC_9	Claregalway (An Mhainistir)	35.14	10	4,100	5.42	1.7	0.01

PIA – Priority Important Area, HA – Highly Annoyed, HSD – Highly Sleep Disturbed, IHD – Ischaemic Heart Disease

Map 15: Barna PIA – Work Programme 2028



PIA ID Ref	PIA Location	Total Pop	MIA Criterion (People HA/100 ²)	Area (m ²)	Number of People		
					HA	HSD	IHD
GCC_3	Barna (Creagan)	67.53	15	4,900	15.5	4.88	0.02

PIA – Priority Important Area, HA – Highly Annoyed, HSD – Highly Sleep Disturbed, IHD – Ischaemic Heart Disease

Appendix D: Review of Public Consultation

This appendix will be completed after the draft plan has been out for public consultation for a period of 8 weeks and will include details of the public consultations organised including the following:

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