

**Leitrim County Council
Comhairle Chontae Liatroma**



**Draft Noise Action Plan
(2024-2028)**



***Relating to Major Roads
Within County Leitrim
Carrying More Than 3,000,000
Vehicle Passages Per Year***

October 2024

Executive Summary

This Noise Action Plan has been prepared by Leitrim County Council for major roads carrying more than three million vehicles per annum, which in County Leitrim comprises four small sections of the N4 (Dublin-Sligo) national road. This is the third Noise Action Plan devised for Co. Leitrim and it supersedes the 2018-2023 Noise Action Plan. The method of assessment of noise for this plan (Round 4 Noise Mapping) uses the common EU noise calculation methodology, CNOSSOS-EU 2015, which is different from the UK CRTN 1988 method used for the previous Noise Action Plan.

The plan was prepared in accordance with the (Environmental Noise) Regulations 2018, S.I. No. 549 of 2018 and the (Environmental Noise) (Amendment) Regulations 2021 (S.I. No. 663/2021). These Regulations give effect to the EU Directive 2002/49/EC relating to the assessment and management of environmental noise (END Directive). The aim of the Directive and the Regulations is to provide for the implementation of an EC common approach to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise. Adverse health effects of noise from road traffic can cause High Annoyance (HA), High Sleep Disturbance (HSD) and Ischaemic Heart Disease (IHD).

Environmental noise can be defined as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic and noise in agglomerations over a specified size. Types of noise **not** included in 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.

Noise Mapping Bodies and Action Planning Authorities were assigned responsibility under the Regulations to draw up noise maps and prepare Action Plans for noise from the following sources:

- Major railways with more than 30,000 trains per annum (not applicable to Leitrim)
- Major airports with more than 50,000 flights per annum (not applicable to Leitrim)
- Major Roads with more than 3 million vehicles per annum (applicable to four small sections of the N4 (Dublin-Sligo) national road) and
- Agglomerations of greater than 100,000 habitants (not applicable to Leitrim)

In 2022 Transport Infrastructure Ireland (TII), as the designated Noise Mapping Body for major national roads, prepared noise maps and population exposure assessments for national roads. Leitrim County Council, as the designated Noise Mapping Body for major non-national roads, engaged in a centralised approach with a number of other Local Authorities to commission TII to prepare noise maps and population exposure assessments for major non-national roads carrying more than 3 million vehicles per annum. In this assessment TII mapped four small sections of the N4 (Dublin-Sligo) national road within Co. Leitrim comprising; 1.5km along the N4 in the townland of Fearnaght; 0.5km near the village of Drumsna; 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border.

Noise maps for County Leitrim 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 TII noise maps for the N4 in Leitrim are provided in Appendix C and also available on <https://experience.arcgis.com/experience/372c33090f2740a5909ca068bf83cd42>. The maps presents the noise levels in 5dB contour bands.

The results of the strategic noise mapping provide information on the predicted noise levels at all noise sensitive properties within the assessment area, along with an estimate of the number of inhabitants. This data is then used to identify **Important Areas (IAs)**, as required under the Regulations, where long term exposure to noise from infrastructure is likely to produce negative health effects on the exposed population. **Important Areas (IAs)** are all areas exposed above the outdoor noise levels of $L_{den} = 53\text{dBA}$ and $L_{night} = 45\text{dBA}$.

A summary of the number of people in dwellings and number in noise sensitive receptors (schools and hospitals) in Leitrim, which experience environmental noise from major roads, above the guide levels is provided here and the numbers are relatively low.

Numbers Exposed to Noise Levels above Guide Level

Guide Level	No. People in Dwellings Exposed	No. School Buildings (& Hospital Buildings)
>53 dBA L_{den}	105	0
>45 dBA L_{night}	103	0

For each Important Area i.e. noise sensitive location that comes within the L_{den} 53dBA limit value and/or L_{night} 45dBA limit value, the population exposure at that noise sensitive location was assessed along with the harmful effects. This data was then used to determine **Most Important Areas (MIAs)**, which are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure level and the number of people highly annoyed at geographically specific locations. This is done using the criterion of number of people Highly Annoyed per 100m². Guide density criteria of 15 or more people per 100m² was used to determine Most Important Areas in main urban areas, with lower criterions of 10 and 7.5 people per 100m² appropriate on the edge of urban areas or in rural areas. For Leitrim, this method did not generate any MIA's that achieve a density criterion of 15, 10 or 7.5 or more people per highly annoyed per 100m².

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

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)
7.5	0	0	0	0	0
10	0	0	0	0	0
15	0	0	0	0	0

If a MIA is identified, then the next stage in the process is to pick out Priority Important Area (PIA). In Leitrim, whilst no MIAs and therefore PIAs have been identified, additional analysis was undertaken on the data to identify where the greatest concentrations of people in dwellings exposed to levels of noise above the L_{den} 53dBA and L_{night} 45dBA guide level are. This identified three Most Important Areas are shown in Appendix C and include:

1. MIA1 – Jamestown Drumsna Bypass
2. MIA2 - Quay Road, Bridge Street, Carrick-on-Shannon
3. MIA3 – Mount St Joseph near the Shannon Roundabout, Carrick-on-Shannon

It is accepted that the methodology used for selection of MIAs and PIAs may result in locations with similar or even higher noise exposure levels and lower levels of population density not being identified as MIAs. However, Leitrim County Council may consider examining locations along major routes and including them as MIAs/PISs under the lifetime of this NAP, in cases where complaints relating to road traffic noise emanated prior to the adoption of this NAP.

The previous Noise Action Plan (2018-2023) used a different approach to assess locations for consideration for noise mitigation using a decision matrix. The decision matrix tool was applied during the year one to two (2018 to 2019) at two locations along the N4 in Carrick-on-Shannon as at another Noise Sensitive Location on the N4. All locations scored 14, below the threshold of 17 hence no further assessment was required. In 2019 approximately 1.2km of the N4 in Carrick-on-Shannon was resurfaced with Stone Mastic Asphalt (SMA-14), a low noise road surface. Subsequent noise monitoring in 2022 at the Noise Sensitive Location identified a reduction of noise levels by 4-5dB compared to 2019 levels before the road surface upgrade works. During the previous Noise Acton Plan, non-national roads within Leitrim County Council were assessed and traffic counts were below the 3million vehicle per annum, therefore noise mapping for round 4 was not required.

A major N4 Carrick-on-Shannon to Dromod Project is underway by Leitrim County Council, which will entail a by-pass of Carrick-on-Shannon. This will direct traffic away from the town and provide a positive impact to residents. MIA2 and MIA3 will directly benefit from the by-pass due to reduced traffic hence reduced noise. In addition, low noise road surface (SMA-14) was placed on the N4 through Carrick-on-Shannon in 2019 and MIA2 & MIA3 are on this route. Therefore, no additional works are currently proposed under this Noise Action Plan for MIA2 & MIA3 as the N4 route alignment works will impact significantly on them, so separate

studies and assessment of noise mitigation under this Noise Action Plan will be superseded by the route alignment works, due for completion in 2031.

Therefore one PIA is identified under this Noise Action Plan: **PIA1 – Jamestown Drumsna Bypass**. In addition, noise from the new N4 Carrick-on-Shannon to Dromod Project will be considered at planning and development stages of this project for any new sensitive locations that may be impacted by the new by-pass routes. This Noise Action Plan outlines potential mitigation options for road traffic noise. A cost benefit analysis for potential mitigation measures for PIA1 will be undertaken in conjunction with the N4 Road upgrade works.

The purpose of the Noise Action Plan is to endeavour to manage the existing noise environment on the N4 and protect the future noise environment within the action planning area. Management of the existing noise environment will be achieved by verifying noise in PIA1 that Leitrim has selected and undertake a cost-benefit analysis for noise mitigation, where required. Protection of the future noise environment will be achieved through the planning process such as land-use planning, development planning, sound insulation measures, traffic planning and control of environmental noise sources.

A pre-screening check on this Noise Action Plan was carried out in line with Strategic Environmental Assessment (SEA) Directive which requires that assessment of the effects of certain plans and programmes on the environment be carried out. The SEA Screening concluded that no further SEA is required. It has been determined that the NAP will operate at a high level and therefore a full SEA would not be proportionate relative to the NAP itself. A Statement of Screening for Appropriate Assessment (AA) was also conducted, which concluded that an AA of the plan is not required as it can be excluded, on the basis of objective information provided, that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on any European sites.

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. Other bodies including Transport Infrastructure Ireland, adjacent Local Authorities and other relevant organisations will be consulted on the draft document. Guidance and advice was obtained from the designated national authority, the EPA, at all stages of the process.

The following key actions are proposed over the lifetime of the NAP, which will be done in conjunction with the N4 Carrick-on-Shannon to Dromod Project;

- Conduct noise monitoring and validate noise model for PIA1.
- Review potential mitigation measures for PIA1 and cost benefit analysis.
- If applicable seek funding and approval to implement mitigation measures.

All proposals for development/works under the Noise 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 and the Regional Spatial, the Economic Strategy for the Northern and Western Region and Leitrim County Development Plan 2023-2029.

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1. Introduction

1.1 Policy Objective

This Noise Action Plan is aimed at strategic long term management of environmental noise from traffic on major routes within the County, particularly where the noise exposure levels have the potential to induce harmful effects on human health. This will require reduction of existing environmental traffic noise where practical and also protection of the future noise climate in areas not currently impacted by traffic noise.

1.2 Purpose

The objective of this Noise Action Plan is to comply with The EU Environmental Noise Directive (END), EC 2002/49/EC, transposed into Irish law as under The European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549/2018) and The European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. No. 663/2021).

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 third produced by Leitrim County Council and it replaces the previous Noise Action Plan 2018-2023.

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

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.

Within County Leitrim some sections of road fall within the definition of a major road, as defined in the Regulations and it is these areas that the Noise Action Plan has been devised and they comprise; 1.5km along the N4 in the townland of Fearnaght; 0.5km on the Jamestown Drumsna bypass; 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border.

This Noise Action Plan is prepared in line with the EPA DRAFT Version 2 (March 2024) - *Guidance Note for Noise Action Planning for the European Communities (Environmental Noise) Regulations 2018 (amended)*. The EPA is the national authority for overseeing the implementation of the Environmental Noise Regulations and Leitrim County Council is the Action Planning Authority (APA) assigned with devising and implementing this Noise Action Plan. Strategic Noise Maps prepared for this Noise Action Plan were undertaken by Transport Infrastructure Ireland (TII), the designated Noise Mapping body.

1.4 Consultation

As required under the Regulations, the Public are invited to participate in the development of the Leitrim 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 public consultation for the Noise Action Plan was undertaken in Quarter 4 – 2024, comprising 6 weeks for consultation, and a further 2 weeks for submissions, which allows the general public to have adequate time to participate in this process.

The Draft Noise Action Plan will be put on public display for 6 weeks, beginning on 29th October 2024, with a further 2 weeks for submissions, ending at 4pm on 9th December 2024. A notice regarding the public consultation will be placed in the local paper, the Leitrim Observer and on social media advising the public of where the plan can be viewed online and at Leitrim County Council offices, Áras An Chontae, St. Georges Terrace, Carrick on Shannon, Co Leitrim, N41 PF67.

A copy of the Draft Noise Action Plan is available to download on the Leitrim County Council website <https://www.leitrim.ie/>. The Draft plan will be accompanied by Screening Reports for Strategic Environmental Assessment and Appropriate Assessment.

Submissions in relation to the Draft Plan are to be made

1. By email to environment@leitrimcoco.ie or
2. In writing to: Noise Action Plan, Leitrim County Council, Environment Department, Áras an Chontae, Carrick-on-Shannon, Co. Leitrim

In addition to seeking submissions from the general public, the following stakeholders were asked to comment on this Noise Action Plan.

- All Leitrim County Council Elected Representatives
- Roscommon County Council
- Sligo County Council

- Donegal County Council
- Longford County Council
- Department of Environment, Climate and Communications
- Department of Transport
- Transport Infrastructure Ireland
- Iarnród Éireann
- Environmental Protection Agency
- Public Participation Networks

Outcome of Public Consultation and Consultation with Statutory Bodies and Other Bodies –
to be complete after Public Consultation Period

1.5 Noise Action Plan Timeline

Under the Regulations, Leitrim County Council will adhere to timelines indicated in Table 1 regarding the publishing of its Noise Action Plan.

Table 1. Noise Action Plan Timeline

Date	Requirement
Q4 2024	Draft Noise Action Plan
Q4 2024	Public consultation (6 weeks) on Draft Noise Action Plan
January 2025	Publish Noise Action Plan
January 2025	Summary of Noise Action Plan to be submitted to the EPA
18 Jan 2025	Summary of all Noise Action Plans to be reported by the EPA to the European Environmental Agency

2. Noise and effects on Health and Quality of Life

2.1 Noise Level Indicators

Noise maps for County Leitrim 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 summarises the noise level indicators commonly used for environmental noise measurement, all expressed in terms of decibels (dB).

Table 2. Noise Level Indicators

Indicator	Details
L_{den}	<ul style="list-style-type: none"> ➤ Day-evening-night noise indicator ➤ Representative of 24hr period ➤ 5 dB penalty applied to evening levels and 10 dB penalty to night levels to reflect people's extra sensitivity to noise during these periods ➤ Noise indicator for overall annoyance
L_{night}	<ul style="list-style-type: none"> ➤ Night-time equivalent sound level ➤ Representative of night period (23:00-07:00 hr) ➤ Noise indicator for sleep disturbance
$L_{Aeq, T}$	<ul style="list-style-type: none"> ➤ Equivalent sound level of period of T hours ➤ Most common are $L_{Aeq, 16hr}$, $L_{Aeq, 24hr}$
L_{Amax}	<ul style="list-style-type: none"> ➤ Maximum sound level during measurement period
$L_{Aeq, 16hr}$	<ul style="list-style-type: none"> ➤ The overall daytime noise level (07:00-23:00) used in planning and noise management decisions
SEL	<ul style="list-style-type: none"> ➤ 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 infraction (AMI) and stroke;
- Cognitive impairment – including the impact on children’s reading and education;
- Sleep disturbance – i.e., interference with sleep and awakenings;
- Annoyance – i.e., becoming or increasingly disturbed or bothered by noise; and
- Wellbeing – i.e., impacts on quality of life and mental health.

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

Noise management measures outlined in this Action Plan must reflect EU Policies and guidelines, along with EU Regulations. A summary of relevant EU Regulations are outlined in this section.

3.1 EU Policy and Guidance

3.1.1 Zero Pollution Action Plan

The EU Zero Pollution Action Plan (ZPAP), launched in 2021 has a vision for 2050 that air, water and soil pollution is reduced to levels no longer harmful to health and natural ecosystems. This is translated into key 2030 targets to speed up reducing pollution at source, one of which is *reducing the share of people chronically disturbed by transport noise* by 30%, compared to 2017 levels.

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, an EU study on the *Assessment of Potential Health Benefits of Noise Abatement Measures in the EU – Phenomena Project* was undertaken to identify cost-effective noise mitigation measures which may help competent authorities to achieve noise reductions across large parts of the exposed population.

3.1.2 EEA Reports

The European Environment Agency publication *Good practice guide on quiet areas - EEA Technical report No 4/2014* makes recommendations based on examples of good practice in assessing and managing quiet areas in Europe. It uses Ireland in its example of applying a “suitability for quietness index map” at country level and it is planned to develop this for the whole of Europe.

3.2 EU Regulations and Directive

The management and control of environmental noise is enacted through International, European, national and local legislation, regulation and guidance. European Union directives and regulations most relevant to noise are outlined in this section.

3.2.1 Environmental Noise Directive – END - 2002/49/EC

EU Directive 2002/49/EC on the assessment and management of environmental noise is commonly referred to as the Environmental Noise Directive or END. This Directive is transposed into Irish law as under The European Communities (Environmental Noise)

Regulations 2018 (S.I. No. 549/2018) and The European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. No. 663/2021).

The Directive aims to “define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.”

The Directive requires that Member States:

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

A number of Regulations to amend the END 2002/49/EC have been introduced and are detailed in the following sections.

3.2.2 Common Noise Assessment Methods – CNOSSOS-EU - 2015/996 & Directive 2021/1226 Amending, for the Purposes of Adapting to Scientific and Technical Progress, Annex II to Directive

Directive 2015/996 establishing common noise assessment methods according to Directive 2002/49/EC replaced Annex II of the END, removed the recommended Interim Methods, and established the common noise assessment methods. It 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. The CNOSSOS-EU methods set out within the Directive are to be used for strategic noise maps under the END (since December 2018). A Corrigendum to Directive 2015/996 was published in January 2018 to address errors in the original Directive.

Directive 2021/1226 introduces a number of amendments to CNOSSOS-EU (Annex II of the END), some of which relate to road traffic noise modelling required to produce strategic noise maps. Both Directives were transposed into the Irish Regulations under The European Communities (Environmental Noise) Regulations 2018 (S.I. No. 549/2018).

3.2.3 Alignment of Reporting Obligations in the Field of Legislation Related to the Environment – 2019/1010 & Mandatory Data Repository and a Mandatory Digital Information Exchange Mechanism in Accordance with Directive 2002/49/EC - 2021/1967

Regulation 2019/1010 on the alignment of reporting obligations in the field of legislation related to the environment and amending Directive 2002/49/EC outlines the mandatory reporting requirements to the European Environment Agency (EEA) and it provides for an additional 12 months for the development of R4 noise Action Plans (this one), which are due before 18 July 2024.

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.

Both 2019/1010 and 2021/1967 were transposed into Irish law via the European Communities (Environmental Noise) (Amendment) Regulations 2021.

3.2.4 Establishment of Assessment Methods for Harmful Effects of Env. Noise – 2020/367

Directive 2020/367 amends Annex III of the END and establishes health impact assessment methods i.e. assessment methods for the harmful effects of environmental noise based on the dose-response relationship established in the WHO *Environmental Noise Guidelines for the European Region* (2018). The health impacts to be assessed and reported for major sources specified in the END are:

- Number of people Highly Annoyed (HA)
- Number of people Highly Sleep Disturbed (HSD) for roads, railways and aircraft; and
- Instances of Ischemic Heart Disease (IHD) for roads.

This Directive was transposed into Irish Regulations via the European Communities (Environmental Noise) (Amendment) Regulations 2021

3.2.5 Industrial Emissions (Integrated Pollution Prevention and Control) – 2010/75/EU

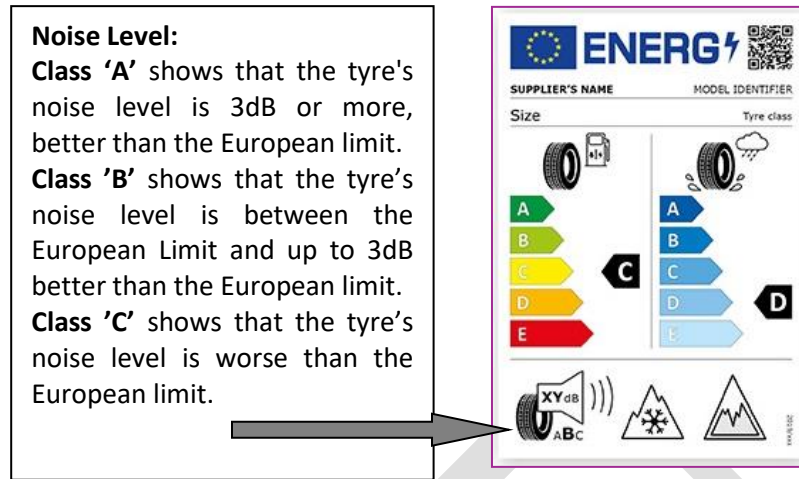
Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) (recast) is the main EU instrument regulating pollutant emissions, including noise from industrial installations. The Industrial Emissions Directive (IED) aims to achieve a high level of protection of human health and the environment taken as a whole by **reducing harmful industrial emissions (including noise)** across the EU, in particular through better application of Best Available Techniques (BAT). 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.

3.2.6 Vehicle / Tyre Regulations Relating to Noise

A range of legislation for the automotive industry is in place and each of the ‘automotive’ sectors has specific regulations and provisions concerning noise emissions.

- Regulation (EU) 2020/740 on labelling of tyres with respect to fuel efficiency and other parameters 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 Directive was transposed into Irish Legislation through European Union (Tyre Labelling) (Energy Efficiency) Regulations 2022, S.I. No. 670 of 2022.

Figure 1: Label Required on C1, C2 & C3 Tyres (from May 2021)



- Regulation (EU) 2019/2144 (which amends 2018/858) 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**. These regulations were transposed into Irish Regulations via the European Union (Road Vehicles: Type-Approval and Market Surveillance) Regulations 2020, S.I. No. 556/2020. Regulation (EU) 2019/2144, and the requirements for tyre performance included therein are replaced by the equivalent in UN Regulation Number 117 of the Economic Commission for Europe of the United Nations (UNECE) — 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 [2016/1350]. 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 No 51 of the Economic Commission for Europe of the United Nations (UNECE) — Uniform provisions concerning the approval of motor vehicles having at least four wheels with regard to their **sound emissions** [2018/798] 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.
- Regulation (EU) No 540/2014 on the **sound level of motor vehicles** and of **replacement silencing systems** 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**. This Regulation came into force in July 2016 and has been amended by Commission Delegated Regulation (EU) 2017/1576 regarding the **Acoustic Vehicle Alerting System** requirements for vehicle EU-type approval and Commission Delegated Regulation (EU) 2019/839 regarding the **sound level of motor vehicles and of replacement silencing systems**.
- Directive 2014/45/EU regarding periodic roadworthiness tests for motor vehicles and their

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

- Directive 2014/47/EU on the technical roadside inspection of the roadworthiness of commercial vehicles sets out requirements for carrying goods and passenger transport vehicles carrying more than eight passengers. 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.
- Regulation (EU) No 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles is transposed into Irish Regulations via European Union (Two or Three Wheel Motor Vehicles and Quadricycles Type-Approval) Regulations 2015, S.I. No. 614/2015. This Regulation prohibits the use of defeat devices that reduce the effectiveness of, amongst others, **sound abatement systems during normal vehicle operation and use**.
- Regulation (EU) No 167/2013 on the approval and market surveillance of agricultural and forestry vehicles is transposed into Ireland via the European Union (Agricultural or Forestry Vehicle Type Approval and Entry into Service) Regulations 2017, S.I. No. 645/2017
- Regulation No 41 of the Economic Commission for Europe of the United Nations (UN/ECE) Uniform provisions concerning the **approval of motorcycles with regard to noise** (2012)

In Ireland, the general safety and the protection of vehicle occupants and vulnerable road users comes within the remit of the Road Safety Authority (RSA) and the authority responsible for issuing all national approvals for brand new unregistered vehicles is the National Standards Authority of Ireland (NSAI). They are responsible for issuing type-approval, which is the process to certify that a model of a vehicle meets all EU safety, environmental and conformity of production requirements before allowing it to be placed on the EU market. The regulations typically include test procedures for vehicle **specific sound level requirements** and a Certificate of Conformity is required for each vehicle.

4. National Legal and Policy Framework

4.1 National Policy and Guidance

4.1.1 Project Ireland 2040 - National Planning Framework

The Government of Ireland produced a report - Project Ireland 2040 - National Planning Framework (2018) and this included National Policy Objective 65 relating to Environmental Noise.

National Policy Objective 65

Promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life and support the aims of the Environmental Noise Regulations through national planning guidance and Noise Action Plans.

In addressing these issues, the National Planning Framework will support:

Noise Management and Action Planning

Measures to avoid, mitigate, and minimise or promote the pro-active management of noise, where it is likely to have significant adverse impacts on health and quality of life, through strategic noise mapping, noise action plans and suitable planning conditions.

Noise, Amenity and Privacy

This includes but is not limited to, good acoustic design in new developments, in particular residential development, through a variety of measures such as setbacks and separation between noise sources and receptors, good acoustic design of buildings, building orientation, layout, building materials and noise barriers and buffer zones between various uses and thoroughfares.

Quiet Areas

The further enjoyment of natural resources, such as our green spaces, through the preservation of low sound levels or a reduction in undesirably high sound levels, is particularly important for providing respite from high levels of urban noise. As part of Noise Action Plans, an extra value placed on these areas, in terms of environmental quality and the consequential positive impact on quality of life and health, due to low sound levels and the absence of noise, can assist in achieving this.

Transport Initiatives

National and regional transport initiatives that may arise from implementation of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) for the Northern and Western Region have the potential to result in adverse health effects that will need to be mitigated and/or beneficial effects with regard to preserving environmental noise quality. Such issues will be considered during the implementation of the NPF and RSES,

including as part of the environmental assessments, where required, for individual transport initiatives.

The National Planning Framework lists noise management as one of its Environment and Sustainability Goals for creating a clean environment for a healthy society.

Noise Management: *Incorporating consistent measures to avoid, mitigate and minimise or promote the pro-active management of noise.*

The inclusion of noise as a national policy objective ensures that it is considered in all future developments within the country.

4.1.2 National Planning Guidance

Local Authorities have it within their powers to set conditions relating to noise as part of a planning permission however, there is currently no national policy or guidance which addresses the issue of noise during planning, 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 43dB 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.

DoECLG Spatial Planning and National Roads Guidelines (2012) requires Planning authorities to engage with applicants and their agents to address, as an integral element of their development proposals, potential negative impacts (including noise and vibration) arising from existing or planned national roads. This could include mitigating impacts through appropriate design of buildings, landscaping features and site layout as part of the development proposal.

Other than IED/IPPC facilities regulated by the EPA, most facilities are controlled by Local Authorities, through planning permission and permits, which may have conditions relating to noise. 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 for enforcement purposes.

The current Irish Building Regulations (1997-2017) require that new dwellings and existing altered dwellings achieve a reasonable level of sound insulation from sound transmission emanating from attached dwellings or differently occupied parts of the same building. The Technical Guidance Document E on Sound relating to the Building Regulations/ 2014 (S.I. No.606 of 2014) outlines sound transmission values for airborne and impact sound. It is mandatory for new attached dwellings and altered dwellings built after 1st July 2015 to be sound tested by competent testers and adhere to the sound insulation values set in Technical Guidance Document E on Sound.

4.1.3 National Sustainable Mobility Policy

The National Sustainable Mobility Policy (2022) supersedes the previous national transport policy, Smarter Travel: A Sustainable Transport Future, A New Transport Policy for Ireland 2009–2020 and sets out the strategic framework to 2030 for active travel (walking and cycling)

and public transport journeys to help Ireland meet its climate obligations. The policy is accompanied by an action plan running from 2022 to 2025, which sets out a range of actions to deliver overarching policy goals of delivering at least 500,000 additional daily active travel and public journeys by 2030 and a 10% reduction in the number of kilometres driven by fossil fuelled cars.

4.1.4 TII Guidance

Transport Infrastructure Ireland (TII) has published the Guidelines for the Treatment of Noise and Vibration in National Road Schemes, October 2004. These guidelines are based on TII's phased approach to road scheme planning and development. They cover the Constraints, Route Corridor Selection and Environmental Impact Assessment stages. The Guidelines also set out a "design goal" for noise to ensure that the current roads programme proceeds on a path of sustainable development. The design goal is that all new national road schemes should be designed, where feasible, to meet a day-evening-night sound level of 60dB Lden (free-field residential façade criterion), to be met both in the year of opening and in the design year, typically 15 years after projected year of opening. The guide levels of 53dB Lden and 45dB Lnight will supersede the TII 2004 60dB Lden guide level and future road developments within the County should aim to meet the guide levels set out in this NAP.

TII accepts that it may not always be sustainable to provide adequate mitigation in order to achieve the design goal. Therefore, a structured approach should be taken in order to ameliorate, as far as is practicable within the particular circumstances of a given scheme, road traffic noise through the consideration of measures such as horizontal and vertical alignment, barriers, low noise road surfaces, etc. The Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014 expands and supplements the advice already provided in the 2004 Guidelines.

TII is also in the processes of producing one additional 'Standards Document' relating to noise, which is scheduled to be published in Q4 2024; A Standard Document on the noise impact for national roads.

4.1.5 Wind Energy Planning Guidelines

The Department of Environment, Heritage and Local Government *Wind Energy Development Guidelines* (2006) provides recommended noise limits for houses near wind turbine developments which recommends a "lower fixed noise 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.

Draft Revised Wind Energy Development Guidelines were produced in December 2019 and propose new robust noise restriction limits which are consistent with World Health Organisation standards, proposing a relative rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A) for both day and night, with 43dB(A) being the maximum noise limit permitted. The rated limit will take account of certain noise characteristics specific to wind turbines (e.g. tonal, low frequency and amplitude modulation)

and where identified, the noise limit permitted will be further reduced to mitigate for these noise characteristics. The noise limits will apply to outdoor locations at any residential or noise sensitive properties. Local authorities will enforce the noise limits as conditioned in the planning permission, in conjunction with the Environmental Protection Agency who will provide independent noise monitoring of wind farms. It is proposed that where there is evidence of non-compliance with noise limits, wind turbines will be required to be turned off until compliance with the noise limits is proven.

The EPA *Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites* (NG3) (2011) proposes the following Cumulative Site and Turbine Noise Limits

- Daytime 55 dB $L_{Ar,T}$
- Night-time 45 dB L_{Aeq}
- Wind turbine noise not to exceed 45 dB L_{Aeq} at any time, or to contain any significant tonal components

4.1.6 Quarries & Ancillary Activities Planning Guidelines

The Department of the Environment, Heritage and Local Government have published *Guidelines for Planning Authorities on Quarries and Ancillary Activities* (2004). This 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 $L_{Aeq,1hr}$ and 45 dB $L_{Aeq,15min}$ for daytime and night-time respectively, although more onerous values may be appropriate in areas with low levels of pre-existing background noise.

4.2 National Legislation

4.2.1 Environmental Noise Regulations 2018 & 2021

The END Directive 2002/14/EU is transposed into Irish Regulations under the European Communities (Environmental Noise) Regulations 2018, S.I. No. 549 of 2018 and the European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. No. 663/2021). The regulations also transpose Directives 2015/996, 2019/1010, 2020/367, 2021/1226, 2021/1967, as outlined in Section 3.2.

The European Communities (Environmental Noise) Regulations 2018 replace Environmental Noise Regulations 2006 (S.I. No.140 of 2006). The Regulations set out a two-stage process for addressing environmental noise. Firstly, noise must be assessed through the preparation of strategic noise maps for areas and infrastructure falling within defined criteria, e.g. large agglomerations major roads, railways and airports. Secondly, based on the results of the mapping process, the Regulations require the preparation of noise action plans for each area concerned. Every five years from the date of preparation of the noise maps and action plans, and whenever there is a major development affecting noise, the maps and plans are required to be reviewed and revised, if necessary. The fundamental objective of action plans is the

prevention and reduction of environmental noise. The Regulations designate noise-mapping bodies and action planning authorities for the making and reviewing of strategic noise maps and action plans. Primary responsibility for both noise mapping and action planning is assigned to local authorities. While a number of other bodies also have noise mapping functions, they will be carried out on behalf of the local authorities concerned. The Regulations designate the Environmental Protection Agency as the National Authority for the purposes of the Regulations. The Agency's role includes supervisory, advisory and coordination functions in relation to both noise mapping and action planning, as well as reporting requirements for the purpose of the Directive. The Regulations provide for strategic noise maps and action plans and revised noise maps and action plans to be made available to the general public. They also provide for public consultation on proposed action plans and the review of action plans and for the results of public consultation to be taken into account in finalising action plans or reviews of action plans.

The European Communities (Environmental Noise) (Amendment) Regulations 2021 give further effect to the implementation of Directive 2002/49/EC. The Regulations transpose EU Directive 2020/367 as regards the establishment of dose-effect relations to be introduced by way of adaptations to technical and scientific progress. The Regulations also transpose Commission Delegated Directive (EU) 2021/1226, for the purposes of adapting to scientific and technical progress Annex II to Directive 2002/49/EC. The Regulations also transpose EU Regulation 2019/1010 and the associated Commission Implementing Decision (EU) 2021/1967, which develop a mandatory data repository and a mandatory digital information exchange mechanism to enable Member States to share information on strategic noise maps and noise action plans. The Regulations also update agglomeration definitions in light of expansions in the urban landscape over the last 15 years.

4.2.2 EPA Act 1992

Environmental Noise Regulations in Ireland have come about on foot of the Environmental Protection Agency Act of 1992. Three Sections of the Act are of direct relevance to noise, 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* gives powers to local authorities and the EPA to serve notice to take steps to control noise.
- *Section 108* sets out a process whereby noise issues may be taken to the District Court, which may make an order requiring that the person or body responsible for the noise takes steps to eliminate or ameliorate the noise in question.

The powers set out within the EPA act largely relate to the control of noise nuisance which may include neighbourhood nuisance, music, industry or other activities.

4.2.3 IED/IPPC Regulations

Certain activities that fall under the requirements for an Industrial Emissions(IE) Licence, Integrated Pollution Prevention Control (IPPC) Licence or Waste Licence from the EPA may be subject to noise conditions. The EPA *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Jan 2016)* sets out the

requirements for noise assessments and sets the typical limit values for noise from licensed sites as;

- Daytime (07:00 to 19:00hrs) – 55dB $L_{Ar,T}$
- Evening (19:00 to 23:00hrs) – 50dB $L_{Ar,T}$
- Night-time (23:00 to 07:00hrs) – 45dB $L_{Aeq,T}$

Lower noise limit criteria is suggested for areas of low background noise and quiet areas. Noise limits are generally set at nearby noise sensitive locations to the development and an annual noise survey is typically required by the licence holder.

4.3 Regional or Local Policy and Guidance

4.3.1 Regional Spatial and Economic Strategy

The Northern and Western Regional Assembly Regional Spatial and Economic Strategy 2020-2032, produced by the Government of Ireland Project Ireland 2040 will be considered by Leitrim County Council for future Noise Action Planning in areas relating to Transport and the Road Network and all areas relating to national roads in Leitrim.

4.3.2 Leitrim County Development Plan

The Leitrim County Development Plan 2023-2029, Chapter 9.12 establishes the requirements for Noise Pollution and sets out **Noise Pollution Objective 1**

To implement the actions contained in the Leitrim Noise Plan 2018-2023 (or any replacement Plan) which seeks to address environmental noise from major roads in the county and which endeavours to maintain satisfactory noise environments where they exist.

The following four Noise Pollution Policies are also established under the plan:

Noise Pollution Policy 1 To support the implementation of the Noise Directive 2002/49/EC and associated Environmental Noise Regulations 2006.

Noise Pollution Policy 2 To require industrial and warehousing development proposals to be assessed against the Noise Assessment Criteria contained in Section 13.12.2 of Chapter 13, Development Management Standards.

Noise Pollution Policy 3 To have regard to acoustical planning in the planning process to ensure that future developments include provisions to protect the population from the effects of environmental noise in the interests of residential amenity and public health.

Noise Pollution Policy 4 Development proposals should identify and implement noise mitigation measures, where warranted, for development proposed in the vicinity of existing or proposed national roads. The costs of implementing mitigation measures shall be borne by the developer, as the Authority will not be responsible for the provision of additional noise mitigation.

The Plan also states that “*Management of the existing noise environment may be achieved by prioritising areas for which further assessment and possible noise mitigation may be required. The Council will seek through the Development Management process to reduce noise levels*”

and/ or vibration effects at site boundaries or within adjacent sensitive areas, especially residential areas, to acceptable limits/levels by measures such as layout, design and/or attenuation mechanisms. The Council will require the submission of Noise Impact Assessments where it is proposed to introduce noise creating uses in proximity to noise sensitive uses, such as residential areas, and may impose conditions mitigating such impacts where permission is being granted. Similarly, where noise sensitive uses are proposed within proximity to a noise source, such as national roads, rail lines, etc., proposals shall include noise and/or vibration attenuation measures in any planning application. The assessment of individual proposals will be governed by the criteria contained in Chapter 13 - Development Management Standards of this Plan.”

Reducing traffic density is the most effective way to reduce road noise emissions. The Leitrim County Development Plan 2023 – 2029 sets out objectives in relation to sustainable mobility, public transport, roads, walking and cycling as follows:

Objectives for Integration of Land Use Planning & Transportation in the current Development Plan include:

ILU Objective 1: To transition towards sustainable and low carbon transport modes, through the promotion of alternative modes of sustainable transport and ‘walkable communities’ together with the achievement of compact settlement forms close to established public transport.

ILU Objective 2: To promote and deliver a sustainable, integrated and low carbon transport system with ease of movement throughout Co. Leitrim by enhancing the existing transport infrastructure in terms of road, bus, rail, cycling and pedestrian facilities.

Objectives for Modal Share and Sustainable Mobility include:

MSSM Objective 1: To prepare a Local Transport Plan in collaboration with the National Transport Authority (NTA), Transport Infrastructure Ireland (TII), Roscommon County Council and other relevant stakeholders for the Key Town of Carrick-on-Shannon and establish specific modal share targets for the town to be incorporated into the forthcoming Carrick-on-Shannon Local Area Plan. This will include devising and implementing an effective monitoring programme for the achievement of the modal share targets contained therein.

MSSM Objective 2: To prepare a transport strategy for the county in co-operation with other transport agencies to include the National Transport Authority, Transport Infrastructure Ireland and the Department of Transport within 2 years of the publication of the POWSCAR data from the 2022 Census. The transport strategy will outline measures, if implemented, to achieve an agreed modal share target for private car for total commuter journeys within the county and a target of total commuter journeys to be undertaken by sustainable mobility modes such as walking, cycling and public transport within the life of this Plan. This will include devising and implementing an effective monitoring programme for the achievement of the modal share targets contained therein.

Objectives for Walking and Cycling include:

WC Objective 1: To support the establishment of a network of interlinked cycle ways and walkways in the county and linking with the adjoining counties, having regard to best practice standards including the Design Manual for Urban Roads and Streets and the NTA Cycle Manual or any amending/superseding national guidance or manuals.

WC Objective 2: To enhance placemaking and improve pedestrian and cycle connectivity to existing train stations (Carrick-on-Shannon and Cortober) and improve bus stops/future transport interchanges.

WC Objective 3: To improve the streetscape environment for pedestrians, cyclists, and people with special mobility needs by providing facilities to enhance safety and convenience, including separation for pedestrian infrastructure from vehicular traffic.

WC Objective 4: To investigate the feasibility of providing a 'Bike Sharing Scheme' for Carrick-on-Shannon to facilitate and encourage modal shift.

WC Objective 5: To identify and implement a programme of footpath extensions in towns and villages to ensure that all multiple housing developments are connected to their respective urban centres to promote walking as a sustainable mode of transport. The implementation of this programme is dependent on funding programmes being identified.

WC Objective 6: To work with the Active Travel Initiative of the National Transport Authority to deliver a network of cycle routes in towns in order to encourage cycling as an everyday mode choice, in particular to provide cycling infrastructure near schools.

4.3.3 Leitrim Climate Action Plan

Leitrim Climate Action Plan 2024-2029 acknowledges that one of the ecosystem service benefits of protecting the natural environment and developing green infrastructure includes attenuating noise. The plan outlines how Carrick-on-Shannon is chosen as a Decarbonising Zone, which will be a focus for sustainable place-based climate action opportunities including mitigation, adaptation and biodiversity enhancement, to deliver the National Climate Objective at local and community levels to provide a test bed of learning and understanding on the scale of the challenge, that can be applied elsewhere in County Leitrim. This Decarbonisation Zone should also address the wider co-benefits of lower noise levels.

4.3.4 Active Travel Investment Programme

The Active Travel Department of Leitrim County Council was established in 2021 to promote walking, cycling, scooting and use of public transport by reallocation of overall road space to include segregated cycling lanes, widening footpaths, raised pedestrian crossings, reducing road width at crossing points, junction tightening and increased bus shelters. The aim of Leitrim County Councils Active Travel Team are:

- To create a modal shift towards non-motorised transport within our county.
- To reduce dependency on cars for short journeys.
- To give people an attractive and safe option to leave the car at home on daily commutes.
- To nurture an Active Travel culture amongst the school going generations.
- To give greater priority to pedestrian and cyclist on our roads.

The Active Travel Team improve cycling and pedestrian infrastructure under the Active Travel Investment Programme, Safe Routes to School Programme and the Bus shelter Programme which is funded by the National Transport Authority. To date 36 individual schemes have been designed and fully constructed throughout County Leitrim and a further 20 are planned.

5. The Responsible Authority for Action Planning

5.1 Name and contact details for the Responsible Authority

Leitrim County Council is the Action Planning Authority for this Noise Action Plan. In County Leitrim, the noise source to be considered in this Noise Action Plan, as required under the Regulations relates to major roads carrying in excess of 3 million vehicles per year. The Action Planning Authority contact details are;

**Noise Action Plan
Leitrim County Council
Environment Department
Áras an Chontae,
Carrick-on-Shannon
Co. Leitrim
Tel: 071 9620005
Email: environment@leitrimcoco.ie**

5.2 Description of other bodies of relevance

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 Leitrim 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 Leitrim. 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. Leitrim County Council Roads Department is responsible for the planning, design, improvement and upkeep of the road network within the county. They provide a number of services 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 Previous Noise Action Plan

The previous Noise Action Plan (2018-2023) used a different approach to assess locations for consideration for noise mitigation. In the previous plan, locations that exceeded the proposed onset levels of 70dBA L_{den} and 57dBA L_{night} noise due to road traffic were considered. The recommended approach at that time was to use a decision matrix to obtain a score for individual locations, based on three variables:

1. The calculated environmental noise level (from the noise mapping data).
2. The type of location (e.g. town centre, commercial, residential).
3. The noise source (i.e. road, rail, airport, agglomeration)

The decision matrix tool was applied during the year one to two (2018 to 2019) at two locations along the N4 in Carrick on Shannon as at another Noise Sensitive Location on the N4. All locations scored 14, below the threshold of 17 hence no further assessment was required.

Noise improvement measures were implement over the lifetime of the previous plan. In 2019 the N4 was resurfaced with Stone Mastic Asphalt (SMA-14), a low noise road surface on 1.2km of road within Carrick-on-Shannon between the Cumann na mBan Bridge (border with Roscommon) and Summer Hill roundabout. Subsequently noise monitoring in 2022 concluded that a 4-5dB noise reduction was achieved with this measure, compared to 2019 levels before the road surface upgrade works.

Additionally, during the previous NAP, non-national roads within Leitrim County Council were assessed and traffic counts were below the 3million vehicle per annum, therefore noise mapping for round 4 was not required.

6. Description of the Action Planning Area

6.1 Extent of the area

In County Leitrim, the only noise source to be considered by the Action Planning Authority relates to major roads carrying >3 million vehicles per year, as defined in the Regulations. There are 2,157km of public road in Co. Leitrim of which 56km is national road, comprising three national primary routes: the N4 along the south western boundary of the County; the N16 in the northern half of the county and a small section of the N15 along the northern boundary of the County, as shown in Figure 2. Four sections of the N4 is included in this Noise Action Plan and the total road area considered in this Plan is approximately 3km.

Strategic Noise Maps have been produced that include the following Roads:

- ❖ 1.5km along the N4 in the townland of Fearnaght;
- ❖ 0.5km on the Jamestown Drumsna bypass;
- ❖ 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and
- ❖ 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border

Maps of the areas included in the Noise Action Plan are provided in Appendix C.

Once all required areas to be included in the strategic noise map was determined, the TII noise model looked at receivers in the region of a major road, within approximately 2km each side of the centreline of the road. The Regulations require the Action Plan to cover places near major roads affected by noise from the major sources. 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. For noise modelling purposes, TII took this to be within about 1km of the centreline of the major road as beyond this road traffic noise will not be a significant contributor in the background noise of an area. In practice, the $L_{den} \geq 55$ dB(A) zone and the $L_{night} \geq 45$ dB(A) zone will extend approximately 500-600m from the centre line of the major road. Therefore, for the purposes of noise action planning, all lands within 500-600m of the centreline of the major road are considered 'near' a major road. Properties within this band will be seen as eligible for inclusion in the assessment stage of noise action planning.

This definition of proximity will not hold for sections of major road passing through developed areas as factors such as reduced vehicle speed and more complex sound propagation will influence the results in these areas. This can reduce the noise exposure distance significantly. Therefore, it is proposed that, within a built-up area only properties in the immediate vicinity of the road be designated as being 'near' the source.

6.2 Description of the topography/geographical location

Co. Leitrim has a varied landscape and a high-quality natural environment, which contributes to the county's character. Leitrim can be divided into a northern and southern half, generally separated by Lough Allen. The northern half of the county is characterised by mountains, expansive lakes and deep glacial valleys which forms a spectacularly scenic landscape. The southern half of the county is characterised by a drumlin belt interspersed with small lakes and rolling hillocks. The River Shannon with its associated lake systems forms the county's

southwestern boundary with Co. Roscommon whilst Donegal Bay demarcates the northern extremity of the county along its 4.6 kilometre long coastline.

The section of the N4 relevant to this Noise Action Plan lies in the South Leitrim Drumlins and Shannon Basin Landscape Character area and the Drumlin Farmland with Peat Bog Landscape Character Type, as defined in the County Development Plan.

Leitrim is bordered by six counties: Donegal to the north, Fermanagh to the north-east, Cavan to the east, Longford to the south, Roscommon to the south-west and Sligo to the west. Two of these counties are significant in terms of this Noise Action Plan as the N4 adjoin them; Longford and Roscommon.

Figure 2: Location of Leitrim



6.3 Description of the general population

County Leitrim has a population of 35,199 (2022 census), which increased 10% since the previous census in 2016. It is the smallest county in Connacht in both size and population and has the smallest population in Ireland by County. Approximately 89% of the population reside in a rural area and outside of defined urban areas (i.e. towns with population in excess of 1,500). Carrick-on-Shannon is the largest town in the county and is the only defined urban centre in the county having recorded a population of 4,743 in the 2022 Census (including the village of Cortober, Co. Roscommon). Carrick-on-Shannon is the predominant driver of employment with a very significant employment base. It is strategically positioned on the N4 Dublin to Sligo National Primary Road and on the Dublin to Sligo rail line.

The housing units in the county are predominantly single dwelling with multi-unit development generally confined to larger towns and some villages. Within the Noise Action Plan area there are some areas of ribbon development adjacent to sections of national and non-national roads near built up areas, which are continually exposed to environmental noise from road traffic. In general, the houses closest to the road are older dwellings which likely existed before the road existed or was upgraded, which brought increased traffic volumes past them on a daily basis.

6.4 Location of Noise Sensitive Groups

A noise sensitive location is any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels. For the purposes of this Noise Action Plan, the following locations are considered noise sensitive within the Action Plan area detailed in Section 6.1.

- All residential properties within 600m of the centreline of the N4.
- In a built-up area, only residential properties in the immediate vicinity of the major road.

6.5 Description of the main infrastructure/services

Leitrim provides an important road transport link and there are three national primary routes which pass through the County: the N4 – Dublin to Sligo, N15 – Sligo to Letterkenny and the N16 - Sligo to Enniskillen. TII have included some sections of the N4 within the strategic noise maps due to the fact that they have an excess of 3 million cars movements per year. The majority roads in Leitrim are made up of regional and local roads, a reflection of the predominantly rural nature of the county. Latest traffic counts have indicated that none of these roads reach the threshold of 3 million vehicle movements per year and therefore are excluded from the noise mapping/action plan.

The Sligo-Dublin rail network passes through Leitrim, via Carrick-on-Shannon and Dromod. The volume of trains falls below the threshold of 30,000/year, therefore this is not included in the noise mapping/action plan, as is not required in Co. Leitrim. There are no airports within the county and therefore air transport is not a consideration for the noise mapping/action plan.

7. Existing Noise Management Framework

7.1 Roads

Noise Impact Assessments are undertaken for all major road upgrades in the County. In addition, a Noise Impact Assessment is requested for all major planning developments in the County, particularly those along major routes that may be impacted by existing noise levels. The current Planning and Licensing system will manage potential development within the Leitrim area, where noise impact of developments is required to be assessed before planning is granted.

The N4 Carrick-on-Shannon to Dromod Project is a major road realignment scheme in planning by Leitrim County Council, to bypass Carrick-on-Shannon to the North and South. This will significantly reduce traffic volumes (hence traffic noise) in the town for residential areas. The scheme will include noise mitigation measures for all areas that may be impacted by it at planning stage and the proposed by-pass road is scheduled for completion in 2031.

In 2019 the laying of a low noise road surface - Stone Mastic Asphalt (SMA-14) was carried out along the N4, through the town of Carrick-on-Shannon, between the Cumann na mBan Bridge (border with Roscommon) and Summer Hill roundabout, extending for approximately 1.2km. This resulted in a noise reduction of 4-5dB, comparing 2019 to 2022 noise levels.

In 2007, in conjunction with the NRA, a design and build contract was carried out a section of the N4 by-passing the villages of Dromod and Rooskey, a distance of approximately 10km. These works included environmental noise mitigation works as prescribed within the scheme's Environmental Impact Assessment, including 400m of environmental noise barriers at numerous locations throughout the 10km scheme, which range from 1m to 2.5m in height. Minor realignment works were also been carried out on the N16.

7.2 Licensed Industrial Facilities

There is one licensed industrial facilities along the N4 major route relevant to this Noise Action Plan and this facility is not thought to significantly contribute to environmental noise. The facility is licensed and managed by the EPA and noise management conditions are set in the relevant licence for the site. <https://gis.epa.ie/EPAMaps/>.

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 Leitrim 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 2022 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 and are shown in Appendix C.

The L_{den} and L_{night} maps show the loudest noise is the road itself, while moving out from the road, the noise level reduces. As detailed in Section 6.1, 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 and 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.

The results of the strategic noise mapping provide information on the assessed noise levels at all noise sensitive properties within the assessment area, along with an estimate of the number of inhabitants. These resultant datasets are then used to identify **Important Areas (IAs)**, as required under the Regulations, where long term noise exposure to noise from infrastructure is likely to produce negative health effects on the exposed population. **Important Areas (IAs)** are all areas exposed above the outdoor noise levels of;

- $L_{den} = 53\text{dBA}$
- $L_{night} = 45\text{dBA}$

A summary of the number of people in dwellings and number in noise sensitive receptors (schools and hospitals) in Leitrim, which experience environmental noise from major roads, above the guide levels is summarised in Table 3. Just over 100 people were identified as being exposed above the guide levels and no school or hospital buildings were identified in the noise mapping exercise above the guide levels.

Table 3. Numbers Exposed to Noise Levels above Guide Level

Guide Level	No. People in Dwellings Exposed	No. School Buildings (& Hospital Buildings)
>53 dBA L_{den}	105	0
>45 dBA L_{night}	103	0

Harmful effects of environmental noise from road traffic need to be assessed in line with the Regulations, by means of the dose effect relations. WHO Guidelines (2018 and 1999) specify that adverse health effects of noise from road traffic can cause:

- High Annoyance (HA),
- High Sleep Disturbance (HSD) and
- Ischaemic Heart Disease (IHD).

These harmful effects are also considered in SI No. 663, which provides calculations for Relative Risk (RR) of the harmful effect and the Absolute Risk (AR) of the harmful effect.

For each Important Area i.e. noise sensitive location that comes within the L_{den} 53dBA limit value and/or L_{night} 45dBA limit value, the population exposure at that noise sensitive location was assessed and also the harmful effects. This data was then used to determine **Most Important Areas (MIAs)**, which are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure levels and the number of people highly annoyed, as discussed in the following section.

9. Identification of areas to be subjected to Noise Management Activities

9.1 Description of approach to identify IAs, MIAs and PIAs

The Regulations require that Leitrim County Council as the Action Planning Authority 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 sets out the following three-step approach to identifying priorities:

1. **Important Areas (IAs)** – these are locations exposed to environmental noise which exceed the relevant noise limit, as discussed in the previous section.
2. **Most Important Areas (MIAs)** – these locations are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure levels and the number of people highly annoyed; and
3. **Priority Important Areas (PIAs)** – between 5 and 10 Most Important Areas or group of similarly affected Most Important Areas, identified, through a prioritisation process, as those which will be evaluated and addressed during the implementation of the NAP.

Identified Important Areas have been used to inform the identification of Most Important Areas and this process was done by external consultants for Local Authorities outside agglomerations. The process of identifying MIAs is set out in the EPA Guidance and is an automated process within GIS software which uses the results of the strategic noise maps assigned to population statistics in areas with exposures greater than the Important Area guide levels.

The assignment of population to the calculated noise levels is set out within Annex II of the END (CNOSSOS-EU), where harmful effects due to noise are statistically assessed at geographically specific locations. The EPA Guidance sets out the process for using the calculated number of people Highly Annoyed to generate a gridded “heatmap” of values which represent (approximately) the number of people 100m². Using the heatmap, the areas of higher concentrations of people highly annoyed (HA) are identified and delineated as a digital polygon. The EPA Guidance sets a density criterion of 15 or more people per 100m² as being the most appropriate for Most Important Areas in main urban areas, with lower criteria of 10 and 7.5 people per 100m² appropriate on the edge of urban or in rural areas.

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

In this Round of Noise Mapping, the number of people exposed to noise above the guide values indicated in Table 3 is very low and **No** Most Important Areas (hence No PIAs) were identified in Leitrim when adopting the standard EPA Guidance approach of 15, 10 or 7.5 or more people per 100m², as shown in Table 4.

Table 4. 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)
7.5	0	0	0	0	0
10	0	0	0	0	0
15	0	0	0	0	0

EPA Guidelines permit the selection of priority areas using alternative methods, providing suitable justification is given. In this case, where no MIA's/PIA's were identified using the standard method, further analysis of the data was conducted by Noise Consultants Ltd to indicate where the greatest concentrations of people in dwellings exposed to levels of noise above the guidance level are. Three Most Important Areas were identified using this method.

- ❖ MIA1 – Jamestown Drumsna Bypass
- ❖ MIA2 - Quay Road, Bridge Street, Carrick-on-Shannon
- ❖ MIA3 – Mount St Joseph near the Shannon Roundabout, Carrick-on-Shannon

The N4 Carrick-on-Shannon to Dromod Project entails a by-pass of Carrick-on-Shannon. This will direct traffic away from the town and provide a positive impact to residents. MIA2 and MIA3 will directly benefit from the by-pass due to reduced traffic hence reduced noise. In addition, low noise road surface (SMA-14) was placed on the N4 through Carrick-on-Shannon in 2019 and MIA2 & MIA3 are on this route. Therefore no additional works are currently proposed under this Noise Action Plan for MIA2 & MIA3 as the N4 route project works will positively impact on them.

Therefore one PIA is identified under this Noise Action Plan:

- ❖ **PIA1 – Jamestown Drumsna Bypass .**

In addition, noise from the new N4 Carrick-on-Shannon to Dromod Project will be considered at planning and development stages of this project for any new sensitive locations that may be impacted by the new by-pass routes. Potential mitigation options for PIA1 and others that may arise on the proposed by-pass will be assessed within the lifetime of this NAP.

It is accepted that the methodology used for selection of MIAs and PIAs may result in locations with similar or even higher noise exposure levels and lower levels of population density not being identified as MIAs. However, Leitrim County Council may consider examining locations along major routes and including them as PIAs under the lifetime of this NAP, in cases where complaints relating to road traffic noise emanated prior to the adoption of this NAP.

9.2 Description of approach to identify Quiet Areas

A Quiet Area is an area where environmental noise levels are deemed to be good. An area where the exposure to noise is below the $L_{den} < 53\text{dBA}$ and $L_{night} < 45\text{dBA}$ should be preserved.

Under the Regulations there is a requirement to delimit Quiet Areas within agglomerations. However, as there are no agglomerations (population $>100,000$) within County Leitrim, this is not relevant. The Regulations also require to delimit quiet areas in the open country. The requirement for such an area is that it is “undisturbed by noise from traffic, industry or recreational activities”. The strategic noise mapping undertaken by TII for this Noise Action Plan is not suitable to delimit quiet areas in open countryside as it did not take into account industrial noise or noise from recreational activities and it was undertaken near major noise sources (major roads) and not at locations which will be undisturbed by them.

The EPA *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* outline how to undertake Quiet Area Screening of a Development Location, according to the Agency publication *Environmental Quality Objectives - Noise in Quiet Areas*. This Guidance Note only applies to Scheduled Activities that require a licence with the EPA and not to other potential noise sources which could impact upon a currently quiet area in open countryside. However, it can be used as a guideline for this purpose, in the absence of other Guidelines on this issue.

Quiet Area Screening involves determining of the following criteria are satisfied:

- At least 3km from urban areas with a population $>1,000$ people;
- At least 10km from any urban areas with a population $>5,000$ people;
- At least 15km from any urban areas with a population $>10,000$ people;
- At least 3km from any local industry;
- At least 10km from any major industry centre;
- At least 5km from any National Primary Route, and
- At least 7.5km from any Motorway or Dual Carriageway.

If the site does not meet these criteria it is not considered to be a quiet area as per the Agency definition.

Based in the current TII noise maps, there is not sufficient information on the acoustic environment to show quiet areas in open country, to enable specific areas to be delimited for approval. The EPA Quiet Area Screening Method could be used by Leitrim County Council Planning Department for future developments. Any proposals to designate Quiet Areas would be discussed with the EPA for approval.

10. Mitigation and protection measures

10.1. Investigation of PIA

PIA1 will be investigated over the timeframe of this NAP (2024-2028) as shown in Figure 3. This assessment will include:

- Noise monitoring,
- Noise modelling calculations if required, and
- Cost-benefit analysis

Figure 3. Proposed N4 Carrick-on-Shannon to Dromod Project



10.2. Investigation of candidate Quiet Areas

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.

The EPA Quiet Area Screening Method could be used by Leitrim County Council Planning Department for future developments. Any proposals to designate Quiet Areas would be discussed with the EPA for approval.

10.3. Future Developments and Noise Impact

The measures available for the protection of future developments from exposure to noise from major roads include acoustical planning measures in land use zoning and development layout, design and specifications, such as:

- Locating residential developments away from major roads
- Using the lands around major roads feeding into towns for commercial/industrial development
- Incorporating noise issues into the design of housing developments by locating the access roads and green areas on the major road side of the development, thus increasing the separation distance between the houses and the roads
- Using a higher standard of insulation for new dwellings adjacent to major roads and also using higher standards of insulation for the exposed façades of new dwellings

These are acoustical planning measures although not all are within the control of the planning authority.

The N4 Carrick-on-Shannon to Dromod Project is planned to address transportation issues within Carrick-on-Shannon, which include congestion on the main routes approaching and within the town centre. This will be further developed in a Local Transport Plan, to be prepared in tandem with the Carrick-on-Shannon/Cortober Local Area Plan which shall seek to maximise the consideration of opportunities to improve public transportation options and improved non-motorised modal shift. The project comprises:

- (1) Active Travel Component
- (2) Public Transport Component
- (3) Demand Management Measures and
- (4) Road Component.

The non-road components (1-3 above) advocate improvements to the walking and cycling infrastructure within Carrick-on-Shannon and Cortober, in addition to enhancements to local bus services and specific interventions to control demand and reduce trips, all of which would support an increase in sustainable trip making. This, in turn, could lead to a reduction in traffic levels and congestion in the town.

The road component of the Preferred Transport Solution is shown in Figure 3 and includes the development of a new urban street in Carrick-on-Shannon, linking the Castlecara Road just south of St. Mary's GAA club to the Leitrim Road (R280) north of Lis Cara housing development, in addition to a Preferred Option Corridor in which the existing road infrastructure can be upgraded or new infrastructure can be built. The corridor deviates from the existing N4 to the west of Cortober, Co. Roscommon where it progresses off-line south of the existing N4, north of the Dublin-Sligo railway line. The corridor progresses east, crossing the R368 and subsequently crossing the River Shannon in the townland of Cordrehid on the Cortober side of the River Shannon over to the townland of Attirory on the Carrick-on-Shannon side of the River Shannon. The corridor joins the existing N4 again in the townland of

Lisseeghan. The corridor then progresses eastwards along the line of the existing N4 and ceases in the townland of Faulties. The realignment of the N4 south of Carrick-on-Shannon and the new route North of the town will divert a large volume of traffic (hence noise) away from MIA2 & MIA3.

Leitrim County Council will engage with TII Network Management to explore solutions if applicable for PIA's, during the lifetime of the 2024-2028 Noise Action Plan.

10.4. Confirmation of Noise Exposure Levels

Leitrim County Council will, in conjunction with the N4 Carrick-on-Shannon to Dromod Project :

- Undertake ambient noise monitoring at representative locations within the PIA1.
- Review and refine the noise model, where necessary, against the local situation at the Priority Important Area.

Ambient noise monitoring will be undertaken at an appropriate number of locations, based on the size of the Priority Important Area and the noise source. 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.

Measurement results will be reviewed and any spurious noise events, periods of rain, or excessive wind speeds, removed from the average levels. The long-term average L_{day} , $L_{evening}$, L_{night} and L_{den} , measured levels will then be compared with calculated results. If possible, road traffic flow data will be captured near the measurement locations during the survey period to validate the noise model.

If necessary after noise monitoring is complete, Leitrim County Council will review the noise models for the PIAs, based upon information captured through field survey work, with particular attention being paid to aspects such as:

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

This will be done in conjunction with the requirements and design of the N4 Carrick-on-Shannon to Dromod Project.

The Leitrim Local Authority will endeavour to ensure that sufficient traffic count data is collected on a continuous basis and will liaise with adjoining Local Authorities and TII to ensure that adequate expertise is available between the authorities to enable the next phase of noise mapping to be carried out. This expertise may be sourced within the local and regional authority or via TII or external consultants.

10.5. Review of possible mitigation measures, where necessary

Once the extent of the existing noise exposure levels have been confirmed for PIA1, potential noise mitigations measures will be investigated and if required, a cost benefit analysis undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action. The N4 Carrick-on-Shannon to Dromod Project will create a bypass of Carrick-on-Shannon, so will directly impact on MIA2 & MIA3 as traffic numbers will be reduced. All works will be done in conjunction with the N4 Carrick-on-Shannon to Dromod Project. Residential areas that will potentially be impacted by noise from road realignment and upgrade works will also be assessed as part of the Project.

Noise mitigation measures can be implemented on or directly alongside the sources, in this case the road (source control), others may be in the region between the roads and the dwellings (pathway control) and others may be at the noise sensitive locations (receiver control). For locations located directly along busy transport routes within towns, the traditional options for road traffic noise mitigation via pathway control (barrier etc.) may be limited. An indication of the types of mitigation measures which may be relevant to consider for noise sensitive locations exposed to noise from road sources is provided in the following list.

Source Control

Technical Measures

- Re-surface roads with 10mm stone mastic asphalt (SMA)
- Re-surface roads with low noise road surfaces, or thin surface treatments
- Road surface maintenance

Traffic Planning

- Vehicle speed management, or speed limit reductions
- Speed bumps to reduce speed and deter vehicles from travelling on route
- Traffic management – looking at routes and HGVs to reduce traffic volume
- Bans on HGV's/trucks
- Redesigning junctions - roundabouts may create a steadier driving pattern
- Co-ordinated signalisation at intersections for smoother driving

Land Use Planning

- New road construction (bypass)
- Car-free zones – redesign of street space
- Quiet Façade i.e. ensure dwelling have at least one quiet side e.g. (garden/balcony)
- Safe cycle lanes along major routes

Quieter Sources

- Quieter tyres
- Specific lower vehicle sound limits
- Increased electrification of the road vehicle fleet
- Low-noise waste collection vehicles
- Low-noise night time delivery
- Check on noisy vehicles

Local Organisational Measures

- Liaise with residents in PIA's regarding road traffic noise perceptions
- Awareness raising campaign regarding driver behaviour in PIA's
- Increased signage in PIA's relating to traffic noise or traffic speed

National Measures

- Regulatory measures to require the selection of quieter sources
- Increase in EV charging stations
- Economic measures and incentives to support the selection of quieter sources
- Increase in public transport fleet
- Enforcement of speed limits

Pathway Control

Reduction of Sound Transmission

- Earthworks, such as earth bunds, mounds or cuttings
- Roadside noise barriers and screening measures
- Coverage, including baffles or tunnels

Receiver Location Control

Building Control Measures

- Dwelling insulation, either new build or retrofit
- Acoustic windows or secondary glazing
- Acoustics ventilation, passive or active
- Chimney caps and dampers
- Specify building construction details for new developments exposed to environmental noise

The Draft EPA guidance provides relevant documents regarding road noise mitigation and these will be reviewed by the council when considering possible mitigation measures for PIAs. For road traffic noise, the most cost-effective scenarios may comprise a combination of complementary noise mitigation measures. For example, in the context of the ZPAP target of a 30% reduction in the number of people chronically exposed to environmental noise by 2030, the following measures were shown to offer the most cost-effective noise mitigation measures 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.

Cost-benefit analysis is undertaken in three stages:

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

Measures and options for noise control and costs for PIA1 will be examined in conjunction with the N4 Carrick-on-Shannon to Dromod Project and evaluated over the lifetime of this NAP. It is a statutory requirement that Leitrim County Council liaise and consult with TII when selecting feasible noise mitigation measures for detailed assessment.

Leitrim Local Authority will undertake to utilise the planning process as necessary:

- To incorporate the aims of the present and future noise action plans into the County Development Plan and the Local Transport Plan or relevant local area plans, protecting larger areas from road noise. Special consideration should be given to zoning objectives, speed limits and established settlements within the area.
- Developers are encouraged (or required at the discretion of the Planning Authority) to produce a sound impact assessment and implement mitigation measures as follows:
 - For new developments proposed within the current action planning area or
 - For developments proposed near major roads (i.e. traffic volumes in excess of 3 million vehicles per annum or otherwise on a case by case basis).
- Where developments are planned adjacent to major roads, to incorporate acoustical planning into the development design e.g. designing the development so that the access road is adjacent to the major road noise source. It may also involve the use of buffer zones and/or noise barriers and traffic calming measures.
- To ensure that all future developments are designed and constructed so as to minimise noise disturbance.

The above measures may be restricted under the existing provisions of the current Planning, Building and Fire Acts.

10.6. Assessment of Noise Reduction Effects

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. This work will be done in conjunction with the N4 Carrick-on-Shannon to Dromod Project.

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 national noise modelling will provide the updated data necessary to assess any improvements gained from mitigation measures introduced at the PIA during the lifetime of this Noise Action Plan.

DRAFT

11. Implementation Plan

11.1 Roles and Responsibilities.

Leitrim County Council is the designated Action Planning Authority for this Noise Action Plan and will oversee the implementation of the plan.

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

TII is the key external stakeholder during the implementation of this Action Plan. Review of the strategic noise maps will be carried out in consultation with TII and the EPA. TII also allocates and administers funding for the construction, maintenance and improvement of national roads. Non-national roads are solely the responsibility of the local authority and TII is not responsible for their upkeep.

11.2 Targets

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 PIA1. This may be done in conjunction with the N4 road upgrade works.
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures PIA1
- Provide NAP annual report to EPA

2026

- Ensure noise is adequately considered for new areas that may be impacted by noise from N4 Carrick-on-Shannon to Dromod Project.
- Conduct cost benefit analysis where necessary for noise mitigation measures
- Provide NAP annual report to EPA

2027

- If applicable seek approval from TII to implement mitigation measures, subject to funding.
- Provide NAP annual report to EPA

2028

- 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 Leitrim 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 and resource risks. Some critical elements of the Action Plan are outside the control of Leitrim 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 program 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 future noise maps (noise modelling for Round 5) will also give an indication of the change in environmental noise levels and the numbers of people exposed.

12. Summary and Conclusions

The European Communities (Environmental Noise) Regulations 2018, S.I. No. 549 of 2018 and the European Communities (Environmental Noise) (Amendment) Regulations 2021 (S.I. No. 663/2021), which gives effect to the EU Environmental Noise Directive, requires that Noise Action Planning Authorities prepare Noise Action Plans for their functional areas in respect of specified environmental noise sources. Noise Action Plans must be based upon the results of strategic noise mapping carried out by the designated noise mapping body, TII.

In County Leitrim traffic noise on an estimated 3km of major roads in excess of 3 million vehicles per year are relevant to this Noise Action Plan. TII mapped four small sections of the N4 (Dublin-Sligo) national road within Co. Leitrim comprising; 1.5km along the N4 in the townland of Fearnaght; 0.5km in the village of Drumsna; 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border.

This Noise Action Plan, which is based on the results of these noise maps, was prepared by Leitrim 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).

From the list of Important Areas (IAs) derived from the Strategic Noise Maps, no Most Important Areas (MIAs) were provided to Leitrim County Council, based on locations with a density of 15/10/7.5 people per 100m². Therefore, no Priority Important Areas (PIA's) were derived from this method. A further assessment of the data using a lower density threshold identified three Most Important Areas (MIAs) under this plan. The three PIAs include:

- ❖ MIA1 – Jamestown Drumsna Bypass
- ❖ MIA2 - Quay Road, Bridge Street, Carrick-on-Shannon
- ❖ MIA3 – Mount St Joseph near the Shannon Roundabout, Carrick-on-Shannon

A major N4 Carrick-on-Shannon to Dromod Project is underway by Leitrim County Council, which will entail a by-pass of Carrick-on-Shannon. This will direct traffic away from the town and provide a positive impact to residents. MIA2 and MIA3 will directly benefit from the by-pass due to reduced traffic hence reduced noise. In addition, low noise road surface (SMA-14) was placed on the N4 through Carrick-on-Shannon in 2019 and MIA2 & MIA3 are on this route. Therefore no additional works are currently proposed under this Noise Action Plan for MIA2 & MIA3 as the N4 route alignment works will impact significantly on them, so separate studies and assessment of noise mitigation under this Noise Action Plan will be superseded by the route alignment works, due for completion in 2031.

Therefore one PIA is identified under this Noise Action Plan: **PIA1 – Jamestown Drumsna Bypass** . In addition, noise from the new N4 Carrick-on-Shannon to Dromod Project will be

considered at planning and development stages of this project for any new sensitive locations that may be impacted by the new by-pass routes. This Noise Action Plan outlines potential mitigation options for road traffic noise. A cost benefit analysis for potential mitigation measures for PIA1 will be undertaken in conjunction with the N4 Road upgrade works.

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 at PIA1, in conjunction with N4 Carrick-on-Shannon to Dromod Project.
- Collect traffic data for noise monitoring period also if possible
- Review potential mitigation measures for the PIA1 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 and the Regional Spatial, the Economic Strategy for the Northern and Western Region and Leitrim County Development Plan 2019-2025.

A pre-screening check on this Noise Action Plan was carried out in line with Strategic Environmental Assessment (SEA) Directive which requires that assessment of the effects of certain plans and programmes on the environment be carried out. The SEA Screening concluded that no further SEA is required. It has been determined that the NAP will operate at a high level and therefore a full SEA would not be proportionate relative to the NAP itself. A Statement of Screening for Appropriate Assessment (AA) was also conducted, which concluded that an AA of the plan is not required as it can be excluded, on the basis of objective information provided, that the proposed development, individually or in combination with other plans or projects, will not have a significant effect on any European sites.

Appendix A: Glossary of acoustic and technical terms

Term	Definition
Absolute Risk (AR)	<p>SI 663/2021 gives a calculation for the absolute risk (AR) of a harmful effect of Environmental noise as:</p> $AR = \left(\begin{array}{c} \textit{Occurrence of the harmful effect} \\ \textit{in a population exposed} \\ \textit{to a specific level of environmental noise} \end{array} \right) \text{ (Formula 2)}$
Acoustical planning	Controlling future noise by planned measures, such as land-use planning, systems engineering for traffic, traffic planning, abatement by sound-insulation measures and control of noise sources
Action Planning Authority - APA	This is the Authority responsible for implementing the Noise Action Plan, in this case Leitrim County Council
ADDT	Average Annual Daily Traffic
Agglomeration	<p>An Agglomeration is defined under the European Communities Environmental Noise Regulations 2018 & 2021 and includes:</p> <p>Cork - encompassing area regulated by Cork City Council and Cork County Council</p> <p>Dublin – encompassing areas regulated by Dublin City Council, Dun Laoghaire / Rathdown County Council, Fingal County Council, South Dublin County Council, Kildare County Council & Wicklow County Council.</p> <p>Limerick – encompassing areas regulated by Limerick City and County Council & Clare County Council.</p>
Appropriate Assessment - AA	A report on the assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas.
Attenuation	The reduction in level of a sound between the source and a receiver due to any combination of effects including distance, atmospheric absorption, acoustic screening, the presence of a building façade, etc.
Attribute Data	A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height
CNOSSOS-EU	Common Noise Assessment Methods for Europe, Directive 996/2015
CRTN	Calculation of Road Traffic Noise 1988. The Road traffic prediction methodology published by the UK Department of Transport
dB	Decibel is the unit of noise measurement
EC	European Commission
EEA	European Environment Agency
END	Environmental Noise Directive (2002/49/EC)
Environmental Noise	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 including

Term	Definition
	those defined in Annex I to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevent and control (2)
EPA	Environmental Protection Agency
EU	European Union
Free Field	An environment in which the sound can freely propagate and in which there is no reflective surfaces of size that affect the frequency region of interest
GIS	Geographic Information System, is a computer system that analyses and displays geographically referenced information.
Harmful Effects	SI 663/2021 defines Harmful Effects of Environmental Noise as follows: <ul style="list-style-type: none"> • Ischaemic heart disease (IHD) corresponding to codes BA40 to BA6Z of the international classification ICD-11 established by the World Health Organisation; • High annoyance (HA); • High sleep disturbance (HSD).
HCV	Heavy Commercial Vehicle
HGV	Heavy Goods Vehicle (lorry/truck)
IED	Industrial Emissions Directive 2010/75/EU on Industrial Emissions (Integrated Pollution Prevention and Control)
Important Area - IA	Important Areas where the noise level exceeds a Lden of 53dBA and/or the Lnight of 45dBA
IPPC	Integrated Pollution Prevention Control Licence
Ischaemic Heart Disease	Also called coronary heart disease (CHD), where there is a build-up or blockage in the arteries which reduce the blood supply to the heart. See also Harmful Effects.
ISO	International Standards Organisation
L_{Aeq}	The steady sound level which has the same energy as a time varying sound signal when averaged over the same time interval, T.
L_{day} (L_d)	Noise indicator for annoyance during the day period L _{Aeq,12hr} (07:00 to 19:00)
L_{evening} (L_e)	Noise indicator for annoyance during the evening period L _{Aeq,4hr} (19:00 to 23:00)
L_{night} (L_n)	Noise indicator for sleep disturbance L _{Aeq,8hr} (23:00 to 07:00)
L_{den}	L _{den} is the day-evening-night noise indicator which is generally used for traffic noise assessments and it represents the noise indicator for overall annoyance. As traffic noise varies from moment to moment, a single figure indicator the L _{den} is used, termed L _{day} , L _{evening} and L _{night} . It is the energy average sound pressure level (L _{Aeq}) over a 24-hour period, with a penalty of 5 dB added for the evening hours or 19:00 to 23:00, and a penalty of 10 dB added for the nighttime hours of 23:00 to 07:00, calculated as follows: $L_{den} = 10 * \log 1/24 \{12 * 10^{((L_{day})/10)} + 4 * 10^{((L_{evening}+5)/10)} + 8 * 10^{((L_{night}+10)/10)}\}$

Term	Definition
Most Important Area - MIA	These locations are a sub-set of Important Areas where the health effects are highest, typically through a product of noise exposure levels and the number of people exposed to noise
Major road	A national, regional or minor road which has more than three million vehicle passages per year
NAP	Noise Action Plan
Noise Mapping Body - NMB	Transport Infrastructure Ireland (TII) is the Noise Mapping Body for this Noise Action Plan and they have prepared the strategic noise maps for this purpose.
Noise Bands	Areas lying between contours of the following levels (dB): L_{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75 L_d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75 L_e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, ≥ 75 L_n <45, 45-49, 50 – 54, 55 – 59, 60 – 64, 65 – 69, ≥ 70 Notes: It is recommended that class boundaries be at .00, e.g. 55 to 59 is actually 55.00 to 59.99 The assessment and reporting of the 45 – 49 dB band for L_{night} is optional under the Regulations
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 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. Predictor software was used by TII for preparing strategic noise maps for areas outside agglomeration for Round 4 NAPs
Noise Model	All the input data collated and held within a computer program to enable predicted noise levels to be calculated at a specific location.
Noise sensitive location	NSL – any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
OSI	Ordnance Survey for Ireland (now under Tailte Eireann)
Priority Important Area - PIA	Priority Important Areas are those which will be addressed during the implementation of the Noise Action Plan
Relative Risk (RR)	SI 663/2021 gives a calculation for the relative risk (RR) of a harmful effect of Environmental noise as:

Term	Definition
	$RR = \left(\frac{\text{Probability of occurrence of the harmful effect in a population exposed to a specific level of environmental noise}}{\text{Probability of occurrence of the harmful effect in a population non exposed to environmental noise}} \right)$ <p style="text-align: right;">(Formula 1)</p>
RSA	Road Safety Authority
Scheduled Activity	Activity normally subject to an Integrated Pollution Control Licence under the EPA Acts
Soundscape	A soundscape is a sound or combination of sounds that forms or arises from an immersive environment. The study of soundscape is the subject of acoustic ecology. The idea of soundscape refers to both the natural acoustic environment, consisting of natural sounds, including animal vocalizations and, for instance, the sounds of weather and other natural elements, and environmental sounds created by humans such as ordinary human activities including conversation or work, and sounds of mechanical origin resulting from use of industrial technology. The disruption of these acoustic environments results in noise pollution.
Strategic Environmental Assessment - SEA	Strategic Environmental Assessment (SEA) is the process by which environmental considerations are required to be fully integrated into the preparation of plans and programmes prior to their final adoption.
Strategic Noise Map	A graphical representation of the predicted noise in a particular area and from particular noise sources, with different colours representing different noise levels in decibels [dB(A)]. Strategic Noise Maps are required under the Environmental Noise Directive and are produced every 5 years for major roads, rail and airports and reported by each Local Authority in their Noise Action Plan
Stone mastic asphalt - SMA	A finished durable surface materials for use on the national road network.
TII	Transport Infrastructure Ireland
WHO	World Health Organisation
ZPAP	Zero Pollution Action Plan

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Appendix C: Strategic noise maps

This Appendix contains

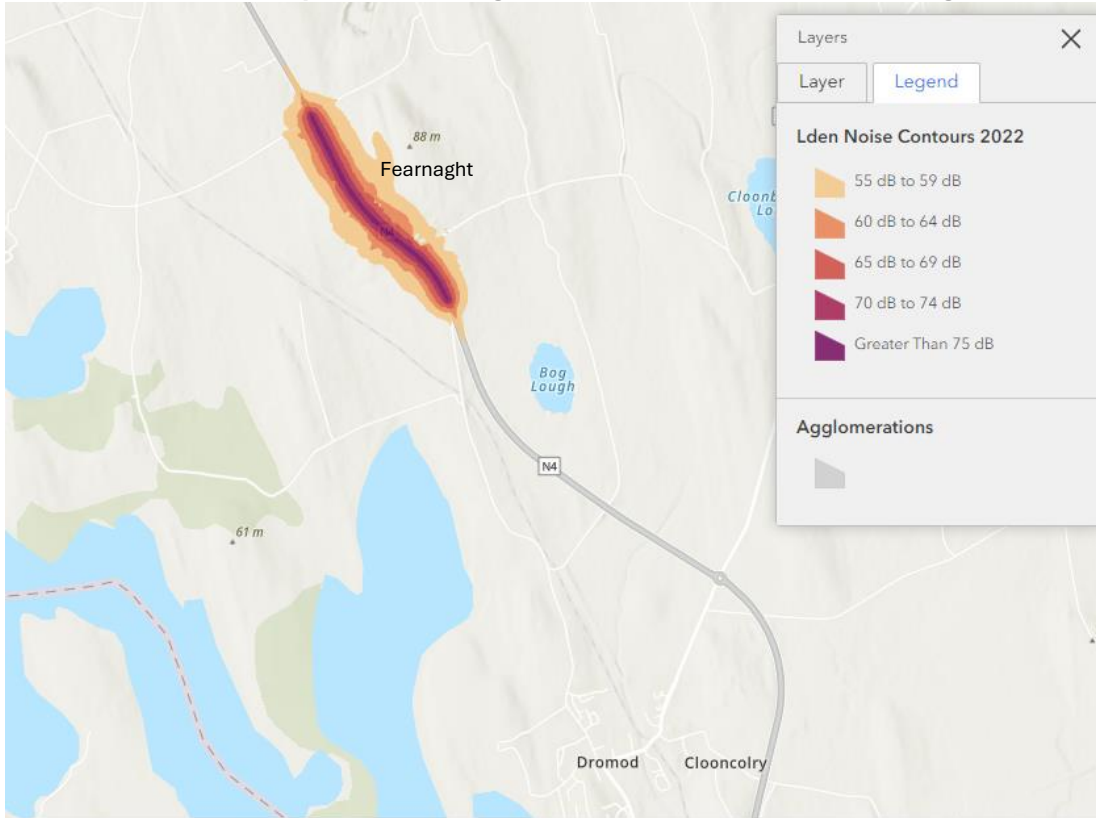
L_{den} and L_{night} Maps in for Four Sections of Major Roads in County Leitrim

1 x Priority Important Area (PIA) Map

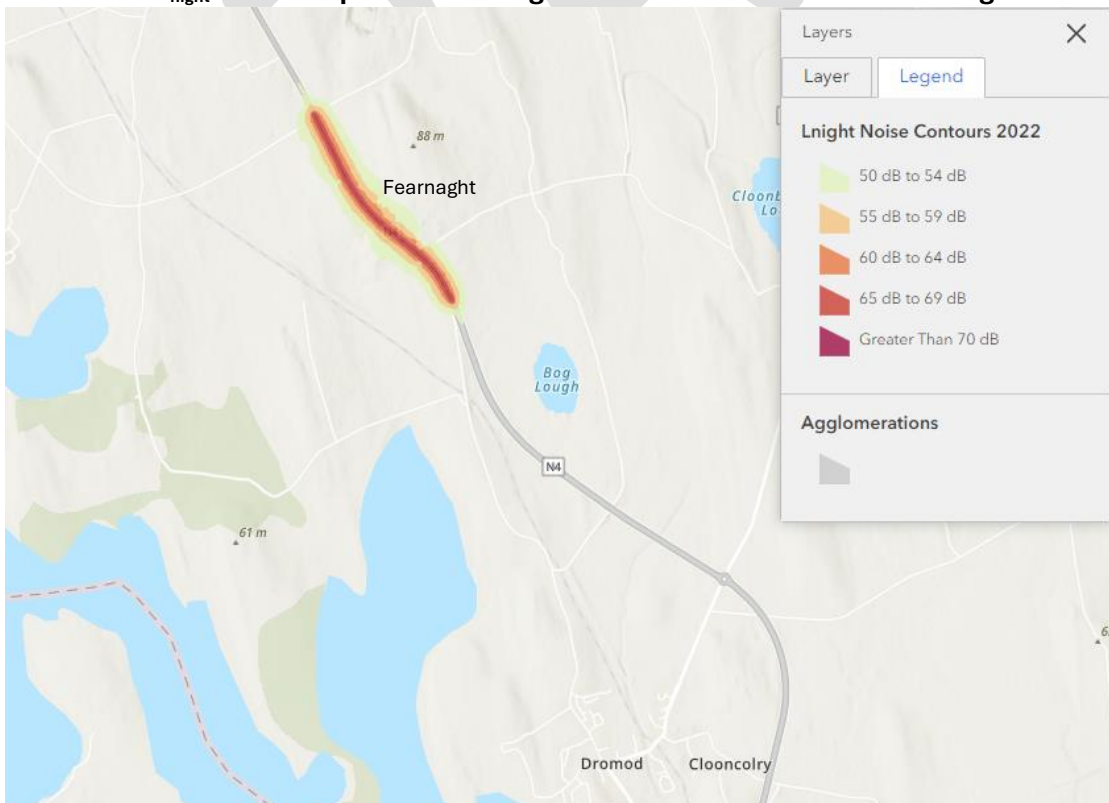
2 x Most Important Area (MIA) Map

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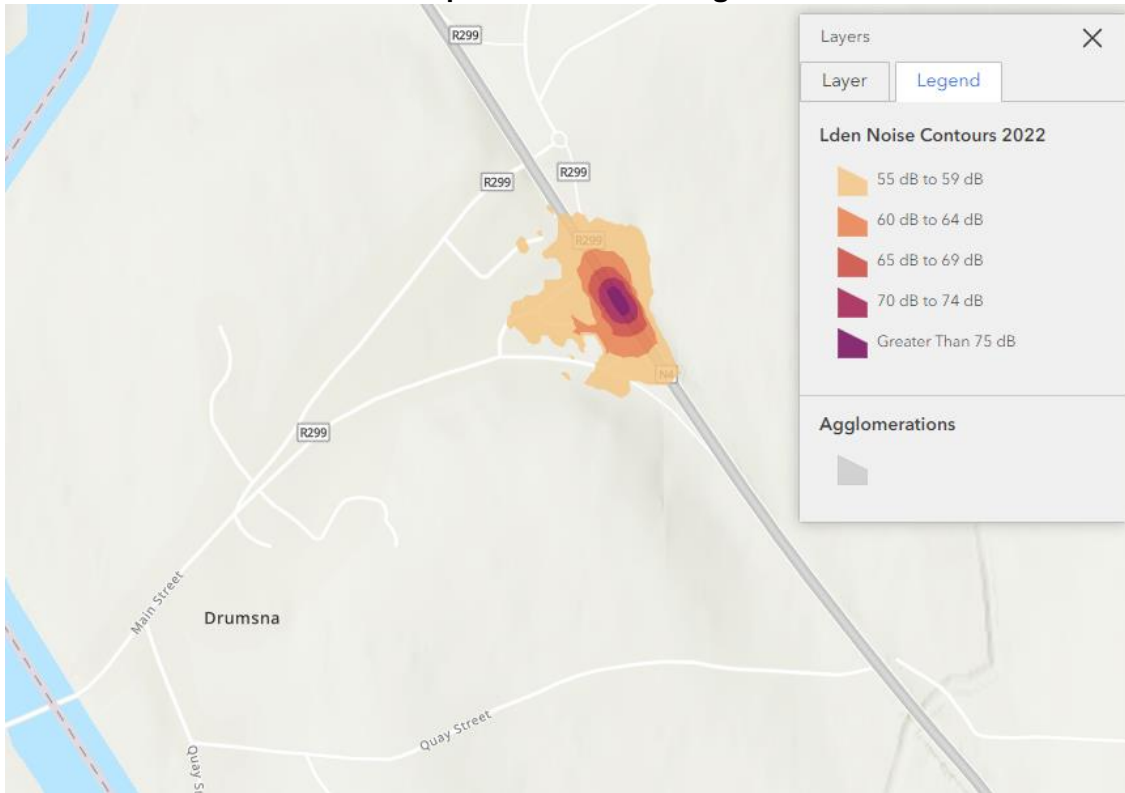
L_{den} Noise Map – 1.5km along the N4 in the townland of Fearnaght



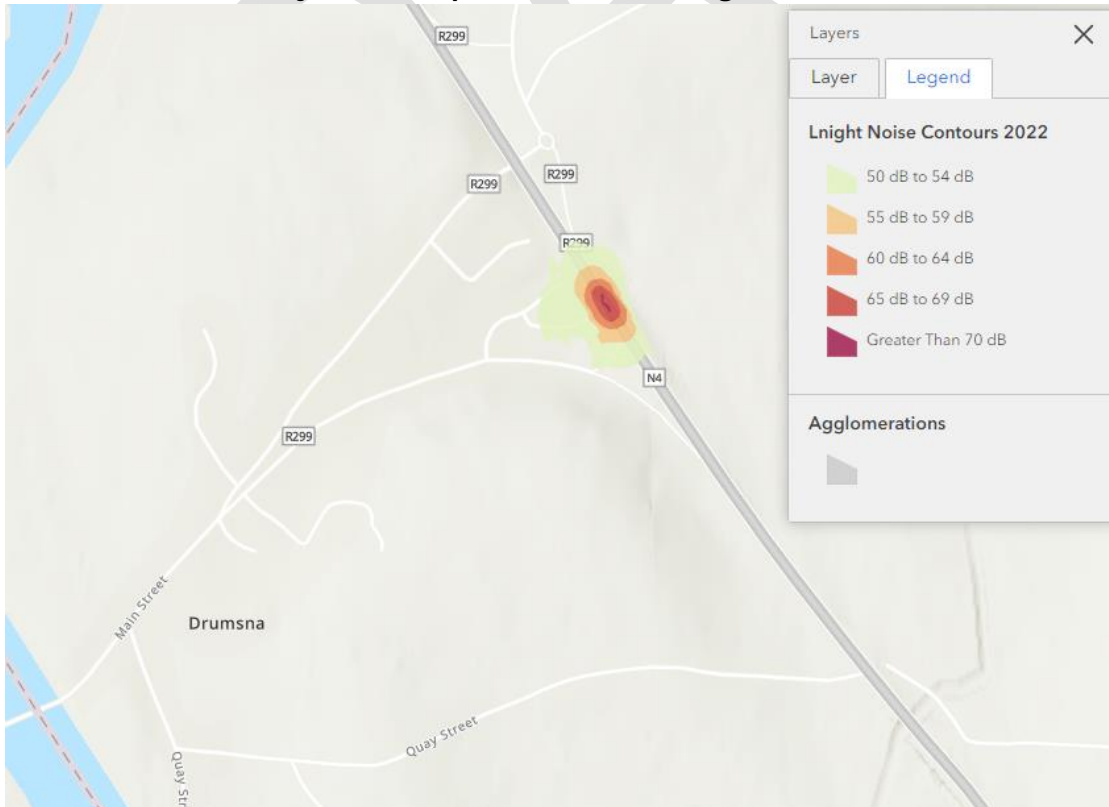
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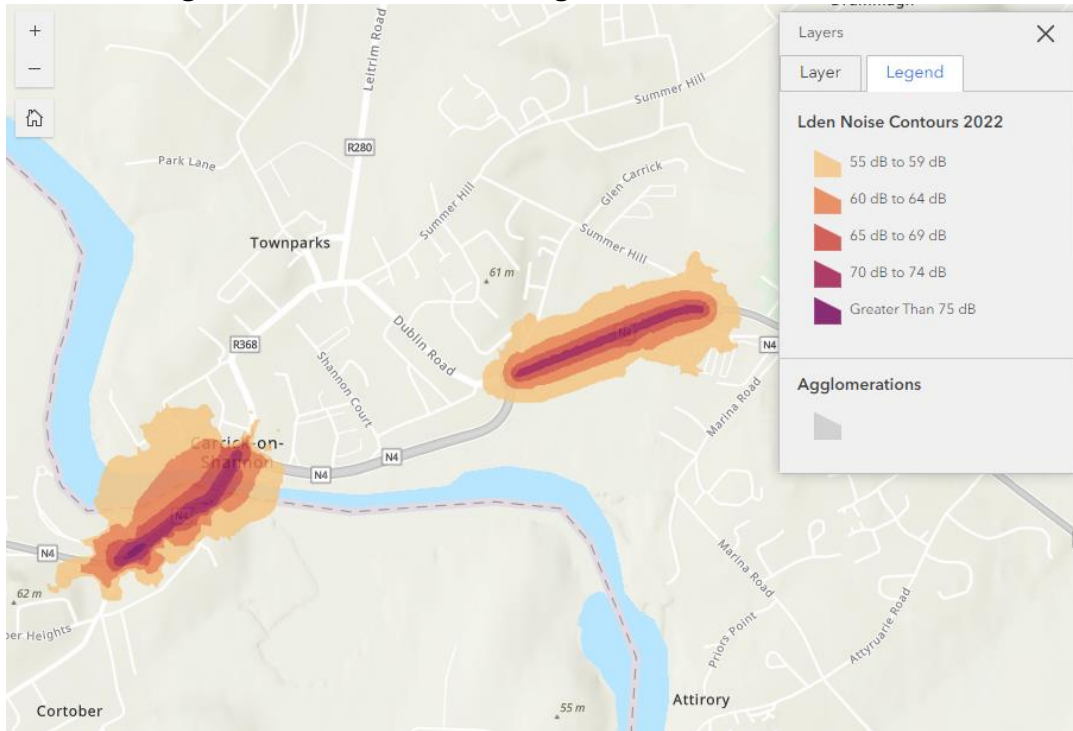
L_{den} Noise Map – 0.5km in the village of Drumsna



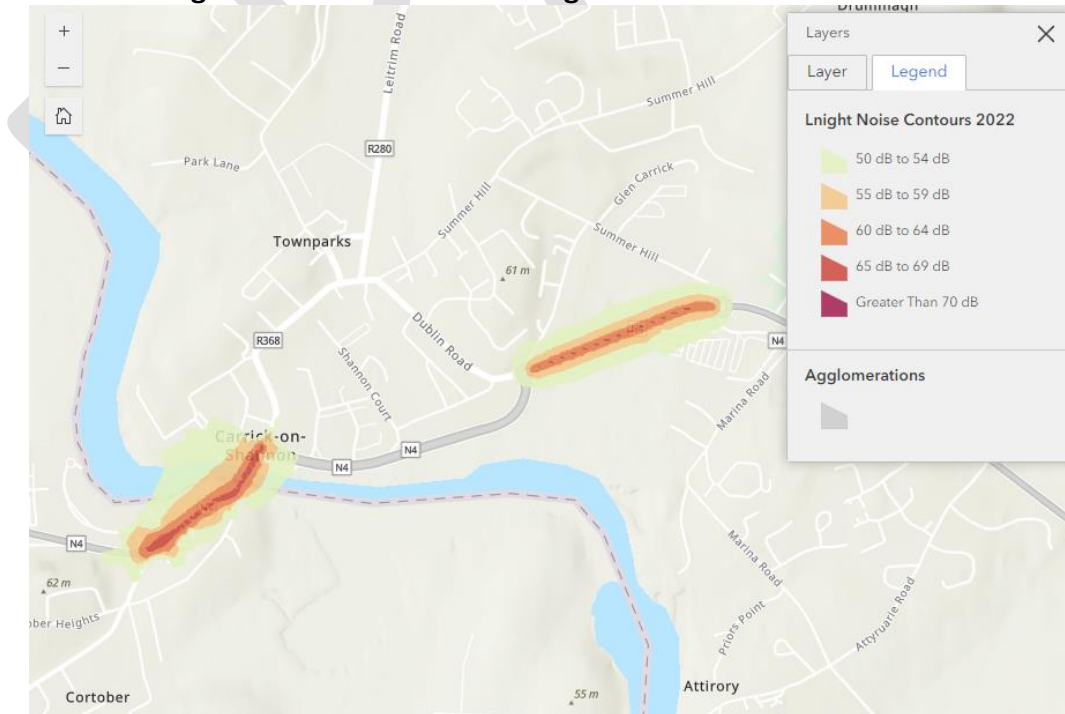
L_{night} Noise Map – 0.5km in the village of Drumsna



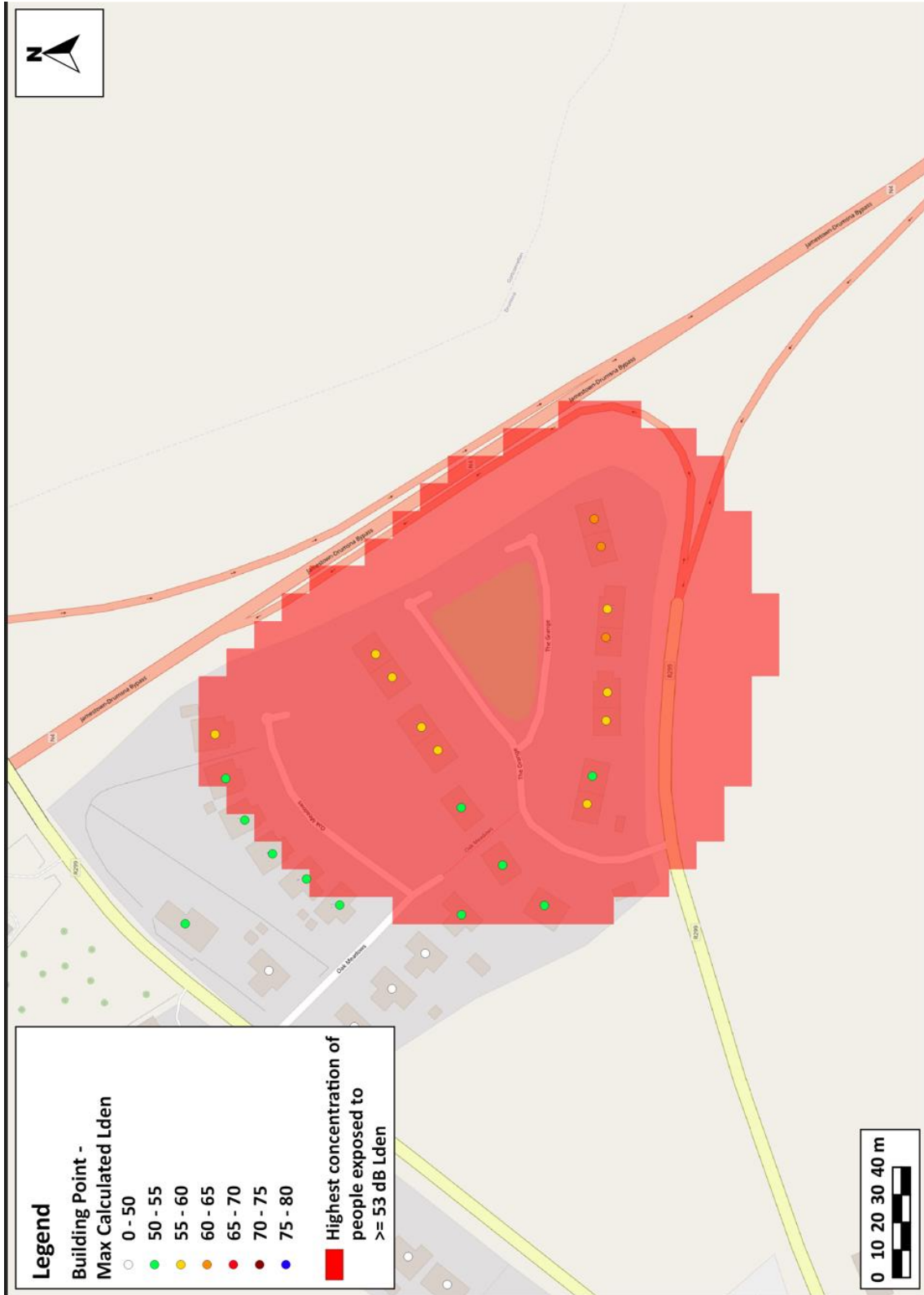
L_{den} Noise Map – 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border



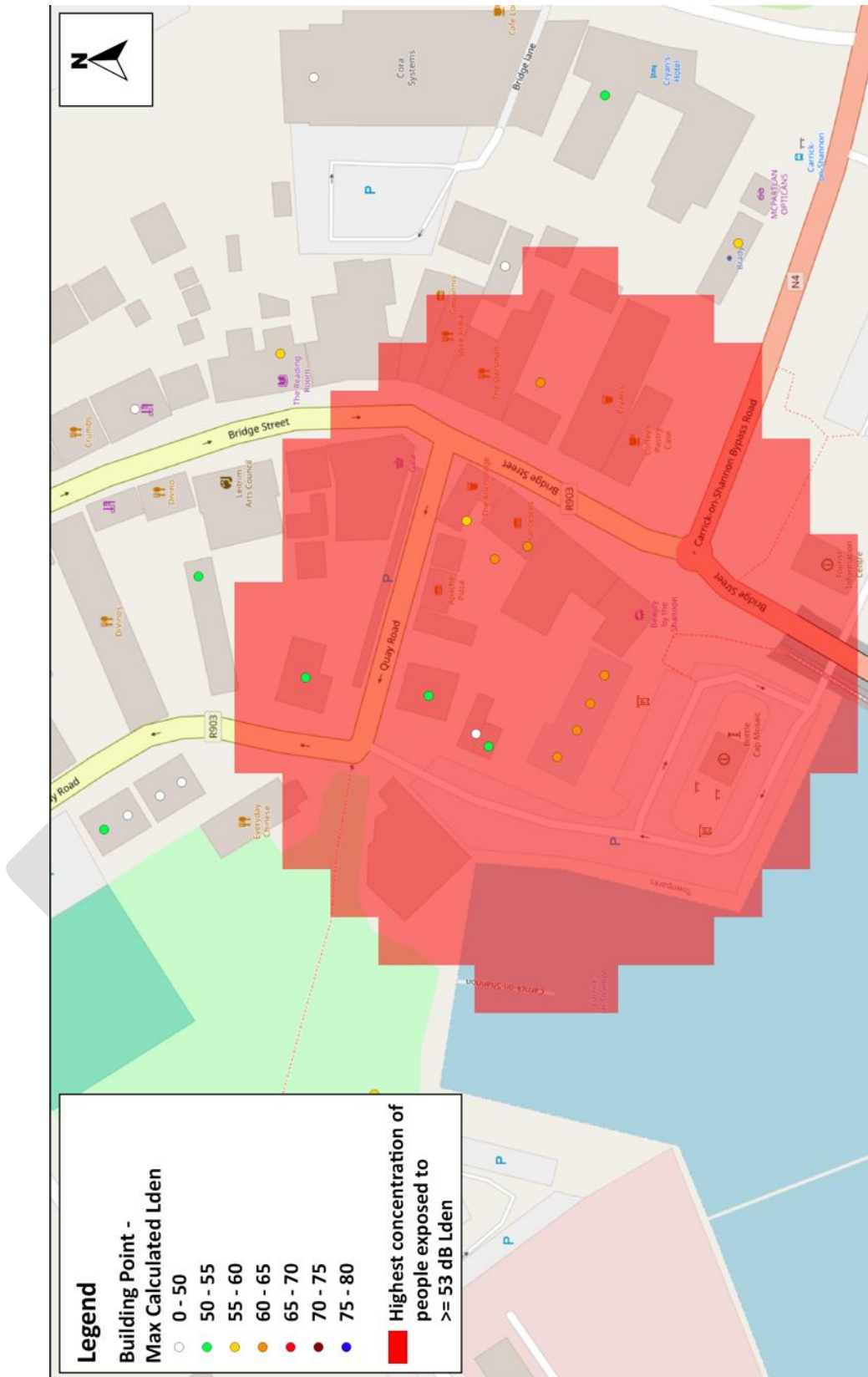
L_{night} Noise Map – 0.5km on the outskirts of Carrick-On Shannon, between the Attifinlay Roundabout and Shannon Roundabout and 0.5km along the Cumann na mBan Bridge on the Leitrim/Roscommon border



PIA1 – Jamestown Drumsna Bypass



MIA2 - Quay Road, Bridge Street, Carrick-on-Shannon



MIA3 – Mount St Joseph near the Shannon Roundabout, Carrick-on-Shannon



Appendix D: Public Consultation

Public Consultation: Draft Noise Action Plan 2024-2028 Leitrim County Council's Draft Noise Action Plan under the Environmental Noise Regulations, 2006 (Statutory Instrument No. 140 of 2006).

Leitrim County Council have prepared a Draft Noise Action Plan for sections of major roadways in their functional areas that experience a volume of traffic greater than 3 million vehicle passages per year.

The plan covers environmental noise from major transport sources, as designated by the Environmental Noise Regulations 2006. Details of the sections of roadway referred to above can be viewed in the Draft Noise Action Plan. Please be advised that this plan excludes noise from domestic activities, noise created by neighbours and noise at workplaces.

It should be noted that concurrently an Appropriate Assessment Screening has been undertaken and a report documenting this prepared. The AA Screening considers European Communities (Birds and Natural Habitats Regulations 2011 (S. I. No. 477 of 2011)). A Strategic Environmental Assessment report and determination was also prepared.

Part of this screening stage includes a screening of environmental significance, to assess whether the plan is likely to result in significant effects and therefore taken forward for SEA. Both are available to view.

The Draft Plan will be available for public inspection at the offices of Leitrim County Council, Aras an Chontae, St. George's Terrace, Carrick on Shannon, Co. Leitrim, between the hours of 9 a.m. and 1 p.m. and between 2 p.m. and 5 p.m., Monday to Friday from Tuesday, 29 October to Friday, 9 December 2024 inclusive, and on the Council's website at www.leitrim.ie.

Observations and submissions in respect of the proposed Plan should be made in writing and marked **"Submission – Draft Noise Action Plan"**, before 4 pm on 23rd December 2024, addressed to: - Environment Department, Leitrim County Council, St. George's Terrace, Carrick on Shannon, Co. Leitrim or to environment@leitrimcoco.ie

Appendix E: Submission Received

[WIP]

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