Comhairle Chontae Liatroma
Leitrim County Council

Noise Action Plan 2018 – 2023
September 2018

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Date: 18th Sept 2018
EXECUTIVE SUMMARY

The Noise Action Plan 2018-2023 has been prepared by Leitrim Local Authority to address environmental noise from major roads with more than three million vehicles per annum. The action planning area covers the N4 (Dublin-Sligo) and N15 (Sligo-Letterkenny). This is the second Noise Action Plan for Co. Leitrim; the first Action Plan was for the period 2013 - 2018.

The plan has been prepared in accordance with the requirements of EU Directive 2002/49/EC (known as the Environmental Noise Directive, or “END”), which was transposed into Irish Law by the Environmental Noise Regulations 2006, SI No. 140 of 2006.

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.

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

Noise Mapping Bodies and Action Planning Authorities were assigned responsibility under the regulations to draw up strategic noise maps for the third round in 2017 and prepare action plans for noise from the following noise sources:

- sections of rail route above a flow threshold of 30,000 train passages per year (Not applicable to Co. Leitrim)
- major airports with more than 50,000 movements per year - a movement being a takeoff or landing (Not applicable to Co. Leitrim)
- Sections of major roads with a flow threshold of 3 million vehicles per annum (N4 & N15)
- Agglomerations with more than 100,000 inhabitants (Not applicable to Co. Leitrim)

Transport Infrastructure Ireland (TII), as the noise mapping body for major national roads, has prepared strategic noise maps for the sections of the National Routes in Leitrim that were confirmed by verified vehicle count data to have more than 3 million vehicles per annum. TII has estimated from the noise maps and from geodirectory data that approximately 452 individuals living within the action planning area in Leitrim may be located in environmental noise bands from 55 to >75dB $L_{den}$. Approximately 281 individuals may be located in noise bands from 50 to >70dB $L_{night}$

The purpose of this Action Plan is to undertake to manage the existing noise environment and protect the future noise environment within the action planning area. Management of the existing noise environment may be achieved by prioritizing areas for which further assessment and
possible noise mitigation may be required. Protection of the future noise environment may be achieved by acoustical planning, which further incorporates noise into the planning process via measures such as land-use planning, development planning, sound insulation measures, traffic planning and control of environmental noise sources.

LEITRIM ACTION PLAN POLICY STATEMENT

Leitrim Local Authority will seek to address environmental noise from major roads in the county, will endeavour to maintain satisfactory noise environments where they exist and will have regard to acoustical planning in the planning process (within the confines of the 2000 Planning and Development Act) to endeavour 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. Leitrim Local Authority will use the Environmental Protection Agency Act 1992 under Sections 107 & 108 to take any necessary legal action to control noise.
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1.0 BACKGROUND/INTRODUCTION

1.1 Purpose and Scope of the Environmental Noise Directive.

EU Directive 2002/49/EC (known as the Environmental Noise Directive, or “END”) deals with the assessment and management of environmental noise.

The aim of the directive is to:

> "Define a common approach intended to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise."

The Directive requires that Member States:

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

The following definitions are adopted by the European Noise Directive:

- **Noise Mapping** shall mean the presentation of data on an existing or predicted noise situation in terms of a noise indicator, indicating breaches of any relevant limit value in force, the number of people affected in a certain area or the number of dwellings exposed to certain values of a noise indicator in a certain area.

- **Strategic Noise Map** shall mean a map designed for the global assessment of noise exposure in a given area due to different noise sources or for overall predictions for such an area.

- **Action Plans** shall mean plans designed to manage noise issues and effects, including noise reduction if necessary.

1.2 Purpose and Scope of the Environmental Noise Regulations.

END was transposed into Irish Law by the Environmental Noise Regulations 2006. The regulations provide for the implementation of a common approach within the European community intended to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise.

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

The regulations specify the process to be followed in addressing environmental noise from transport sources, implemented over three rounds.

**Round One 2007:**

Noise mapping bodies were required to submit strategic noise maps before the 30th June 2007 for the following:

- Major roads with >6 million vehicles per annum.
- Major railways with >60,000 trains per annum.
- Major airports with >50,000 movements per annum.
- Agglomerations with >250,000 inhabitants.

Round One Noise Action Plans were submitted by the various authorities who came under the limitations set out above. These action plans were reported to the European Commission in January 2009.

Leitrim Local Authority was not required to submit an Action Plan in round one.

**Round Two 2013:**

Round two provides for noise mapping bodies to make strategic noise maps for the following:

- Major roads (defined in the regulations as roads with > 3 million vehicles per annum).
- Major railways (defined as > 30,000 trains per annum).
- Major airports with >50,000 movements per annum.
- Agglomerations with > 100,000 inhabitants.

**Timetable**

- **July 2013:** Leitrim County Council submitted Noise Action Plan to the EPA.
- **January 2014:** The EPA submitted a summary of the Noise Action Plan to the European Commission.
- **September 2016:** A review of strategic noise mapping was undertaken by Leitrim County Council and submitted to the EPA.

**Round Three 2018:**

Round three provides an update to indicate progress and actions undertaken as a result of the Noise Action Plan 2013.
Round three provides for noise mapping bodies to make strategic noise maps for the following:

- Major roads (defined in the regulations as roads with > 3 million vehicles per annum).
- Major railways (defined as > 30,000 trains per annum).
- Major airports with >50,000 movements per annum.
- Agglomerations with > 100,000 inhabitants.

**Timetable**

- **June 2018**: Leitrim County Council developed Draft Noise Action Plan
- **July 2018**: Public consultation (7 weeks)
- **August 2018**: Draft Noise Action Plan submitted to EPA for review
- **September 2018**: Final Noise Action Plan submitted to the EPA
- **January 2019**: The EPA to submit a summary of the Noise Action Plan to the European Commission

1.3 Roles and responsibilities of designated bodies.

The Environmental noise regulations designate noise mapping bodies and action planning authorities for the making of strategic noise maps and noise action plans as follows:

1.3.1 **Noise Mapping Bodies**:

- For major national roads, Transport Infrastructure Ireland (TII), formerly the National Roads Authority (NRA) is the noise mapping authority, on behalf of the action planning authority concerned.
- For major non-national roads, each local road authority is the noise mapping authority concerned.
- For major airports, the relevant airport authority is the noise mapping body, on behalf of the action planning authority concerned.
- For major railways, Iarnrod Éireann or the Railway Procurement Authority, as appropriate, is the noise mapping body on behalf of the action planning authority concerned.
- For the agglomeration of Dublin, Dublin City and County Councils of of Dun Laoghaire / Rathdown, Fingal and South Dublin.
- For the agglomeration of Cork, Cork City and County Councils.

1.3.2 **Action Planning Authorities**

The Action Planning Authorities are the Local Authorities within whose functional areas the major road/railway/airport/agglomerations are located.

1.4 **Key Phases**.

1.4.1 **Identification of areas to be mapped**

In Leitrim, strategic noise maps and associated action plans must be prepared for major roads only. The requirements for major railways, major airports or agglomerations of greater than 100,000 or 250,000 respectively do not apply.
For **Round One** the NRA did not identify any of the National Roads in County Leitrim as having greater than 6 million vehicles per year, nor did Leitrim Local Authority identify any regional road as being above the 6 million vehicle threshold.

For **Round Two** the NRA identified the following routes with more that 3 million vehicle per annum using Average Annual Daily Traffic counts (AADT):

- The N4 from Rooskey to Carrick
- The N15 from the Sligo border to the Donegal border.

Leitrim Local Authority clarified that none of its non-national roads were in excess of 3 million vehicles per year.

For **Round Three** TII vehicle count data suggests that traffic volumes on the N4 and the N15 are below the 3 million threshold. See Tables 1 & 2:

**Table 1**: N4 – Between Longford and Carrick on Shannon (Dromod by-pass)

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>6745</td>
<td>7350</td>
<td>7178</td>
</tr>
<tr>
<td>% HGV</td>
<td>6.4</td>
<td>5.9</td>
<td>6.1</td>
</tr>
<tr>
<td>Vehicles per Year</td>
<td>2,461,925</td>
<td>2,682,750</td>
<td>2,619,970</td>
</tr>
</tbody>
</table>

**Table 2**: N15 – Between Sligo and Bundoran (Tullaghan)

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>6927</td>
<td>7689</td>
<td>7471</td>
</tr>
<tr>
<td>% HGV</td>
<td>5.6</td>
<td>5.2</td>
<td>5.3</td>
</tr>
<tr>
<td>Vehicles per Year</td>
<td>2,528,355</td>
<td>2,806,485</td>
<td>2,726,915</td>
</tr>
</tbody>
</table>

*Data taken from TII website in June 2018*

However for continuity purposes strategic noise mapping for both the N4 and N15 in Co. Leitrim has been carried out in order to avoid any gaps in the road network. For the 2017 phase of noise mapping, strategic noise maps were developed for over 3,000 km of national roads.
In accordance with the Environmental Noise Regulations, the strategic noise maps prepared in 2017 are based on road and light rail traffic movements in the calendar year 2016. Traffic counts generated from the updated 2015 base year of the National Transport Model were used to develop and extrapolate out the predicted traffic figures for 2016. This is something that is inherited from the Navteq network data, on which the model network is based. The modeled periods are an average AM peak hour (7-9am) and an average inter-peak hour (12-2pm). AADT is estimated from these time periods using factors derived from regression analysis, applied on a regional basis.

The generated data from the Navteq network model shows sections of the N4 in Carrick on Shannon where the traffic volumes are in excess of 3 million vehicles per annum (see Map 1).

**Map 1: N4 Traffic count data for Carrick on Shannon (TII noise mapping)**

![Map 1: N4 Traffic count data for Carrick on Shannon (TII noise mapping)](image)

The map shows the most up to date base year AADT data available at the time of model preparation. AADT is provided in each direction on separate links (i.e. one-way AADT). This results in overlapping lines for single carriageway routes (and some dual carriageways) and parallel lines for dual carriageways.
1.4.2 Preparation of Strategic noise maps

1.4.2.1 Purpose
The purpose of the strategic noise maps is to identify the areas affected by different levels of environmental noise from major roads, railways, airports and agglomerations as described under 1.2 above. The maps are a visual representation of estimated noise contour bands within the action plan area from 55dB $L_{den}$ to greater than 75dB $L_{den}$, and from 50dB $L_{night}$ to 70dB $L_{night}$ in 5dB bands. The maps have been linked to population data to estimate the numbers of people located in each environmental noise bands. This information is then used to produce noise action plans, which will endeavour to manage existing environmental noise from the major sources and protect the future noise environment.

1.4.2.2 Preparation
TII ran computerised noise modeling programmes for the relevant roads with volumes above 3 million vehicles per year and generated GIS grids of noise levels as an output of the noise modeling process.

TII generated GIS polygon contour layers for the following decibel (dB) bands for $L_{den}$ and $L_{night}$:

<table>
<thead>
<tr>
<th>$L_{den}$</th>
<th>$L_{night}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>55-59</td>
<td>50-54</td>
</tr>
<tr>
<td>60-64</td>
<td>55-59</td>
</tr>
<tr>
<td>65-69</td>
<td>60-64</td>
</tr>
<tr>
<td>70-74</td>
<td>65-69</td>
</tr>
<tr>
<td>$&gt;/=75$</td>
<td>$&gt;/=70$</td>
</tr>
</tbody>
</table>

See Appendix I: Glossary of acoustic and technical terms

The resultant noise maps are a visual representation of the estimated noise level bands within each action plan area. See Appendix VI for strategic noise maps for Co. Leitrim.

1.4.3 Development of noise action plans

1.4.3.1 Purpose
The purpose of the action plans is to manage environmental noise from the major sources, to improve noise levels where necessary on a prioritised basis, to preserve satisfactory noise environments where they exist and to protect the future noise environment.

1.4.3.2 Scope
The local authority areas covered by the noise action plans are those areas identified by noise mapping as being affected by environmental noise from the major noise sources. The action plans refer to places near the major noise sources i.e. major roads, major railways and major airports and within any relevant agglomeration. The noise from these sources is regarded as affecting an Action Plan Area if it causes either an $L_{den}$ value of 55dB(A) or greater or an $L_{night}$ value of 45dB(A) or greater anywhere within an area.
1.4.3.3 Public participation
The Environmental Noise Directive and the Noise Regulations provide for strategic noise maps and action plans to be made available to the general public. They also provide for public consultation on proposed action plans and for the results of public consultation to be taken into account in finalizing action plans.

Article 11(6) of the END imposes the following duty on member states in relation to public consultation:

- *Member States shall ensure that the public is consulted about proposals for action plans, given early and effective opportunities to participate in the preparation and review of the action plans, that the results of that participation are taken into account and that the public is informed on the decisions taken. Reasonable time frames shall be provided allowing sufficient time for each stage of public participation. If the obligation to carry out a public participation procedure arises simultaneously from this Directive and any other Community legislation, Member States may provide for joint procedures in order to avoid duplication.*

Regulation 12(2) of SI 140 of 2006 provides that:

- *Information for the public on noise maps and action plans shall be clear, comprehensive and accessible and shall include a summary of the most important points.*

It is the policy of the Leitrim Local Authority to engage in public consultation with our citizens in regards to policies and plans developed by the Leitrim Local Authority for Leitrim, in accordance with national guidelines and best practice.

1.4.4 Implementation of the Action Plan
Mitigation and protection measures detailed in Section 7 of this Action Plan will be implemented if required, on a prioritised, phased basis over the five-year life of the Plan. Monitoring measures may be undertaken where noise-mapping data must be verified by measurement prior to the implementation of any corrective action.

2.0 EXISTING NOISE MANAGEMENT LEGISLATION AND GUIDANCE

2.1 National Legislation and guidance
The Environmental Noise Regulations are concerned with community or environmental noise, which is classified in the I-INCE publication “A Global Approach to Noise Control Policy” as follows:

**Community/Environmental Noise**
Unwanted sound in a non-occupational setting, indoors or outdoors, caused by sources over which an individual has little or no control, including sounds produced by neighbours.
Many different noise sources contribute to community/environmental noise, including:

- Roads, railways, airports, industry or recreational activities adjacent to residential properties or noise sensitive premises such as schools or hospitals, or recreational spaces.
- Noisy neighbours, barking dogs.
- Gardening machinery, construction activities, ice cream vans, street cleaning, delivery vehicles.
- Air-conditioning equipment.
- Public house, nightclubs, restaurants or other recreational activities.
- Industrial operations, workshops and factories.

Location of new residential properties or noise sensitive premises such as schools or hospitals, adjacent to existing roads, railways, airports, industry or recreational activities can result in significant noise management issues as can the development of mixed residential/commercial use buildings, and multi-part residential buildings.

A fully encompassing noise management policy needs to provide guidelines, targets and possibly limits for each of these aspects, backed up by legislative powers and Regulations as appropriate. Many of the above aspects may be addressed through the planning process for new or altered developments having regard to the National Guidelines.

### 2.2 Current Community Noise Management Situation

The EPA notes in the Guidance Note for Noise Action Planning that “at present there is no clear official or statutory guidance which could help promote the effectiveness or clarity of the provisions within the Act; however, within the framework of the Regulations the EPA may consider it appropriate to develop such guidance in the future”. The measures in place at present which address particular aspects of community noise are outlined in the following sections (2.2.1 to 2.2.7)

#### 2.2.1 Environmental Protection Agency Act 1992

The existing statutory provisions have primarily come about on foot of the Environmental Protection Agency Act of 1992. Sections 106 to 108 of the Act are of direct relevance, and may be summarised as follows:

- **106** gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property;
- **107** gives powers to local authorities and the EPA to serve notice to take steps to control noise;
- **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. S108 enables private individuals to take a case to the courts at very low financial cost. This procedure is recommended for use by the public, particularly where the problem is caused by noisy neighbours in privately owned or rented accommodation.
2.2.2 IPPC and Waste Licensing
Noise conditions are routinely imposed as part of an IPPC license. The relevant guidance is set out in the EPA publication “Guidance Note for Noise: License Applications, Surveys and Assessments in relation to scheduled activities” published by EPA 2012. This document contains suggested noise limits of 55 dB(A) LAr,T for daytime and 45dB(A) LAeq,T for night-time; with said limits to be applied to “sensitive locations”. Whilst these limits have a very specific application, they have appeared in many different contexts and often form the basis for conditions in planning permissions. Similar noise conditions are also imposed on waste-licensed facilities.

2.2.3 Wind Energy Planning Guidelines
With specific regard to wind energy developments, this DEHLG document suggests a “lower fixed limit of 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations”. The latter requirement may be relaxed in areas with low background levels. A fixed limit of 43dB(A) at night-time is deemed appropriate, as there is no requirement to protect external amenity.

2.2.4 Quarries and Ancillary Activities
Section 261 of the Planning and Development Act, 2000, as amended introduced a new system of one-off registration for all quarries. Only those quarries for which planning permission was obtained in the 5-year period before S261 became operational were excluded. The Department of the Environment published guidelines for Planning Authorities for quarries and ancillary activities in April 2004, including recommended noise conditions for inclusion as part of registration or where a full planning permission was required.

Depending on the complexity of the quarrying operation, noise conditions were included as part of the registration process and as part of the planning process for quarry extension applications. For larger quarry operations, environmental noise conditions along the following lines have been imposed by the planning authority: Noise emissions from the facility shall not exceed 55dB(A) LAcq, 30 mins during the daytime and 45 dB(A) LAcq, 15 min during the night time at the façade of the nearest noise sensitive locations, subject to adjustment in the event of a change in the accepted limits for industrial noise.

Noise and vibration conditions have also been imposed for quarries in which blasting is carried out. These conditions generally state: “Vibration levels from blasting shall not exceed a peak particle velocity of 12 mm/second, measured in any three mutually orthogonal directions at any sensitive location. Blasting shall not give rise to air overpressure values at sensitive locations which are in excess of 125 d(B)(Lin)max peak with a 95% confidence limit. No individual air overpressure value should exceed the limit value by more than 5 dB (Lin).

2.2.5 Building Regulations
The current Irish Building Regulations call for certain constructions to offer “reasonable resistance” to both airborne and impact sound. In the absence of any form of objective criterion, reference is often made to the guidance values put forward in the “Similar Construction” method described in Technical Guidance Document E. For buildings constructed in the vicinity of noise sources it would be appropriate for specific façade noise insulation values, based upon a target
internal noise level, to be a stated requirement of the construction, potentially with a pre-completion sound insulation test required prior to habitation. This would help to ensure that the design targets of the construction are met in practice.

### 2.2.6 Planning

Aside from the guidelines for quarries, there is currently no national policy or guidance to address noise issues as part of the planning process, the Leitrim Planning Authority will set conditions relating to noise as part of a planning permission where the planning authorities consider that excessive noise may result from the development.

The National Roads Authority (NRA) published the document “Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes”, which sets out the procedure to be followed in respect of the planning and design of national road schemes. The NRA also published the “Guidelines for the Treatment of Noise and Vibration in National Road Schemes” in 2004.

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

- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), September 2007;
- Guidelines for Planning Authorities on Sustainable Residential Developments in Urban Areas (Cities, Towns, Villages) May 2009

The guidelines for Sustainable Residential Development highlight the need to “Deliver a quality of life which residents and visitors are entitled to expect, in terms of amenity, safety and convenience”. They go on to state: “Privacy is an important element of residential amenity.” Whilst they are not mentioned specifically, environmental noise and noise transfer between dwellings are both key considerations in respect of amenity and privacy.

The Urban Design Manual lists Privacy & Amenity as one of twelve key issues, with specific reference to the need to prevent sound transmission in homes by way of appropriate acoustic insulation or layout. There is some comment in relation to the use of appropriate building materials and also the zoning of dwellings to minimize the potential for excessive noise transfer.

### 2.3 Local Planning Policy

#### 2.3.1 Leitrim County Development Plan 2015 - 2021

The Leitrim County Development Plan (2015 - 2021) recognises the significance of addressing noise issues in a planning context.

**Section 5.6.6 Noise:** The Council will seek to ensure that new development does not cause an unacceptable increase in the noise levels affecting surrounding properties and that new development, in turn, will not suffer from unacceptably high noise level.
Where any development is proposed within the zone of influence of existing or planned national road routes or proximity of the development to a national road would result in a breach of the National Road’s Authority’s (now TII) design goal for ‘sensitive receptors exposed to traffic noise’, the planning authority will require planning applications to identify and implement appropriate noise mitigation measures.

3.0 DESCRIPTION OF THE ACTION PLAN AREA

3.1 County Leitrim

Leitrim is the 26th largest of the 32 counties by area and the smallest by population. It is the smallest of Connacht’s 5 counties in both size and population. Leitrim is bordered by the counties of 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.

Map 2: Location of Co. Leitrim

Leitrim has a hilly and mountainous landscape in its north-west and is relatively flat in the south-east, each separated by Lough Allen in the middle of the county. Leitrim has the shortest length
of coastline of any Irish county which is only 2.5 km long. The majority of the county falls into the Shannon River catchment while The Erne River catchment provides drainage to the rest.

The county town is Carrick-on-Shannon (4,062 inhabitants - Census 2016). It is a highly developed, prospering river port on the River Shannon and many tourists explore the Shannon and the Shannon-Erne Waterway which has a 63 km canal linking the two river systems. It is amongst the fastest growing towns in Ireland having grown by 25% in the past few years.

3.2 Population Data:

According to the Central Statistics Office; in April 2016, Leitrim had a population of 32,044, consisting of 16,064 males and 15,980 females.

Table 3: Population of County Leitrim

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population</th>
<th>Rate of change in Population</th>
<th>Town</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>25057</td>
<td>-1%</td>
<td>3966</td>
<td>21091</td>
</tr>
<tr>
<td>2002</td>
<td>25799</td>
<td>+3%</td>
<td>4006</td>
<td>21793</td>
</tr>
<tr>
<td>2006</td>
<td>28950</td>
<td>+12%</td>
<td>4130*</td>
<td>24820</td>
</tr>
<tr>
<td>2011</td>
<td>31789</td>
<td>+10%</td>
<td>5380*</td>
<td>26409</td>
</tr>
<tr>
<td>2016</td>
<td>32044</td>
<td>+0.5%</td>
<td>3422</td>
<td>28622</td>
</tr>
</tbody>
</table>

(* figures taken as a sum of Carrick-on-Shannon and Manorhamilton population as presented by the Central Statistics Office)

3.3 Transport Infrastructure in Leitrim

3.3.1 Road Network

There are approximately 2200 km of roads in Leitrim. There are three national primary routes which pass through the jurisdiction; the N4 – Dublin to Sligo, N15 – Sligo to Letterkenny and the N16 - Sligo to Enniskillen. These three nation primary routes make up 57 km of Leitrim’s road network (2.5%). Figures from TII have indicated that the N4 and N15 have excess of 3 million cars movements per year and therefore these roads will be included in the noise mapping/action plan process.

The majority of the road length (97.5%) is 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.

3.3.2 Rail Network

Iarnrod Eireann operates the Sligo to Dublin rail network which passes through Dromod and Carrick-on-Shannon. Figures received from Iarnrod Eireann show that there were 4,940 train passages per year for 2016. This figure shows a decrease of 10% from 2011 values which
indicated 5,512 train passages per year. These values are below the threshold of 30,000 trains per year and therefore noise mapping/action planning is not required in Co. Leitrim.

3.3.3 Air Transport
There are no airports within the county and therefore air transport is not a consideration for the noise mapping/action plan.

3.4 Extent of Action Planning Area

The Leitrim Authority action planning area is defined from the legislation as the area affected by noise from a major road carrying greater than 3 million vehicles per annum. TII data identified the N4 and N15 as major roads which were included in the strategic noise mapping exercise. The extent of each of these roads in Co. Leitrim is described below:

- N4 – Longford border at Rooskey to Roscommon border at the River Shannon bridge in the town of Carrick-on-Shannon
- N15- Sligo border at the Duff River to the Donegal border at the River Drowes

The section of the N4 that has been identified by TII as having in excess of 3 million vehicles is located in the town of Carrick on Shannon – see Map 1. Therefore this stretch of road will be prioritised as an action planning area.

The exact action planning area is a clearly defined stretch of these roads including lands on both sides of the road. The boundary of the lands is not defined by distance from the road noise source but rather it is the land area defined by computer modeling to be affected by noise levels of greater than 45dB(A) L_{night} and/or 55dB(A) L_{den}.

4.0 RESPONSIBLE AUTHORITY FOR ACTION PLANNING

4.1 Name and Contact Details

Leitrim County Council, Environmental Department, Áras an Chontae, Carrick-on-Shannon Co. Leitrim
Telephone: 071 9620005
Email: environment@leitrimcoco.ie

4.2 Description of other bodies of relevance.

Leitrim Local Authority is responsible for the maintenance and upkeep of all National, Regional and Local Roads in the county. Leitrim Local Authority in consultation with TII and the Department of Transport is responsible for the design and construction of new roads in the county.
4.3 Description of noise reduction measures in place.
All road widening and construction projects in recent years have been carried out in accordance to the NRA specifications, which includes the NRA guidelines for treatment of noise and vibration in national road schemes, published in 2004.

During construction, all works are restricted to the Code of Practice working hours and will require works to comply with SI 632 of 2001 EC (Noise emissions by equipment for use outdoors). Furthermore all works shall comply with the recommendations of BS 5228: Part 1
In conjunction with the NRA, a design and build contract was carried out a section of the N4 bypassing the villages of Dromod and Rooskey. The works were completed in 2007 and is approximately 10km in length. Minor realignment works have also been carried out on the N16.

The N4 Dromod - Rooskey bypass has carried out environmental noise mitigation works as prescribed within the scheme’s Environmental Impact Assessment. These ameliorative measures include 400m of environmental noise barriers at numerous locations throughout the 10km scheme, which range from 1m to 2.5m in height.

A new road surface on the N4 was constructed in 2014 between the R201 junction and the Dromod - Rooskey bypass, a distance of approximately 6km. The new surface was hot rolled asphalt which is not a noise reduction type of surface but the new surface should contribute to a reduction of traffic noise levels.

4.4 Review of Round 2 Programme of Works
A review of the Noise Action Plan 2013 – 2017 was carried out in 2016. Traffic count data reviewed for the years 2014, 2015 and 2016 showed that the traffic volumes for the N4 and N15 were below the 3 million per annum threshold. There have been no changes in the development of the major roads in Co. Leitrim during Round 2 of the Noise Action Plan. The volumes of traffic has changed very little in this period so it is assumed that the noise levels have also remained the same.

There are no outcomes to report from the programme of works as set out in the Noise Action Plan 2013 - 2017. The actions set out in the previous action plan will be carried forward and are outlined in the programme of works 2018 – 2023.

5.0 SUMMARY OF NOISE MAPPING RESULTS
5.1 Overview of the preparation of the noise map
In accordance with the Environmental Noise Regulations 2006, the strategic noise maps prepared in 2017 are based on road and light rail traffic movements in the calendar year 2016. Under the Regulations, TII is responsible for the development of strategic noise maps for all national roads carrying in excess of 3 million vehicles a year. For the 2017 phase of noise mapping, strategic noise maps were developed for over 3000 km of national roads. Additional strategic noise maps
were also developed by TII for major non-national roads. However, major non-national roads mapped by TII remain under the jurisdiction of the relevant local authority.

The national primary routes N4 and N15, as described earlier, have been identified as the only sections of major road in County Leitrim for the purpose of implementation of the Environmental Noise Regulations. This has been established from TII’s traffic count data. Strategic noise maps were prepared for these sections of road in 2017.

The strategic noise maps were prepared by TII using a computer model as recommended by the European Commission’s advisory group on environmental noise. The model used was the UK national computation method “calculation of road traffic noise (CRTN), Department of Transport-Welsh Office, HMSO, London, 1998”, adapted as set out in paragraph 2.1 of Annex II to the Directive. The model took account of information such as traffic flow data, vehicle type data, traffic speed, road width, road incline, road barriers and features which affect the spread of noise such as buildings and the shape of the ground (e.g. earth mounds), and whether the ground is acoustically absorbent (e.g. fields) or reflective (e.g. concrete or water).

TII generated GIS grids of noise levels as an output of the noise modeling process. The polygons are maps showing the noise contour bands in 5dB contours from 55dB to >75dB for L\text{den} and from 50dB to >70dB for L\text{night}.

5.2 Presentation of results.

5.2.1 Noise Contour Maps

The strategic noise maps for Leitrim are attached in Appendix VI. Each map shows contours of different noise bands, identifying areas that are relatively louder or quieter. The noise indicator contours shown on the noise maps are L\text{den} and L\text{night}. These are defined as follows (more detailed definitions can be found in Appendix I):

- \text{L_{day}}: The A weighted average sound level over the twelve hour day period of 0700-1900h.
- \text{L_{evening}}: The A weighted average sound level over the 4-hour evening period of 1900-2300 h.
- \text{L_{night}}: The A-weighted average sound level over the 8-hour night period of 2300-0700 h.
- L\text{den}: The \text{day}, \text{evening}, \text{night} rating level. L\text{den} is a logarithmic composite of the \text{L_{day}}, \text{L_{evening}}, and \text{L_{night}} levels but with a 5 dB(A) weighting added to the \text{L_{evening}} value and a 10 dB(A) weighting added to the \text{L_{night}} value.

The noise levels reflect an annual average 24-hour period. The L\text{den} contours shown on the maps range from 55dB to 75dB in 5 contour bands. The L\text{night} contours range from 45 dB to 70dB in 5 contour bands. Areas with noise levels of less than 55dB L\text{den} and less than 45dB L\text{night} are not mapped because these levels are below the threshold for inclusion under the legislation.

Additional noise contour maps for Carrick on Shannon were developed by Leitrim County Council using TII’s strategic noise maps. These maps were developed to show more detail along the N4 in the town of Carrick on Shannon. All maps are attached in Appendix VI.
Table 4: Population Exposure Data (L<sub>den</sub>)

<table>
<thead>
<tr>
<th>Road Location</th>
<th>Decibel Level Contour</th>
<th>Total people living in dwellings</th>
<th>Approx. Area (km&lt;sup&gt;2&lt;/sup&gt;)</th>
<th>Approx. number of dwellings</th>
<th>Approx. number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>N4 &amp; N15</td>
<td>&lt;55</td>
<td>2038</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>55 - 59</td>
<td>226</td>
<td>8</td>
<td>344 (67 of which are greater than 65dB)</td>
<td>544 (92 of which are greater than 65dB)</td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>60 - 64</td>
<td>134</td>
<td>2</td>
<td>89</td>
<td>281</td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>65 - 69</td>
<td>89</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>70 - 74</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>&gt; 75</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Population exposed to >55dB: 544

Table 5: Population Exposure Data (L<sub>night</sub>)

<table>
<thead>
<tr>
<th>Road Location</th>
<th>Decibel Level Contour</th>
<th>Total people living in dwellings</th>
<th>Approx. Area (km&lt;sup&gt;2&lt;/sup&gt;)</th>
<th>Approx. number of dwellings</th>
<th>Approx. number of People</th>
</tr>
</thead>
<tbody>
<tr>
<td>N4 &amp; N15</td>
<td>&lt;50</td>
<td>2211</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>50 – 54</td>
<td>164</td>
<td>4</td>
<td>171 (2 of which are greater than 60dB)</td>
<td>281 (5 of which are greater than 60dB)</td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>55 – 59</td>
<td>112</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>60 – 64</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>65 – 69</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N4 &amp; N15</td>
<td>&gt; 70</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Total Population exposed to >50dB: 281

5.3 Limitations of the noise mapping process.

5.3.1 Limitations of the computer modeling method
The data used to generate the noise maps was obtained from computer modeling rather than from actual noise measurement. This approach is in accordance with the Noise Regulations. There are
technical and practical reasons for using computer modeling in preference to noise measurement to produce noise maps. Noise levels at each monitoring location will generally result from a combination of different sources and physical measurement would not allow for the specific contribution from road noise to be determined. Furthermore, to produce a map based on measurements would require a large number of measurements to be made at each location over extended monitoring periods, at prohibitive expense.

The use of computer modeling to prepare noise maps is not a limitation of the noise mapping process because it is the method imposed under the Regulations. However, this noise mapping method does make it difficult to quantify the reduction in noise levels achieved by specific mitigation measures implemented at a local level. Without “before” and “after” noise monitoring results, improvements cannot be quantified. To address this limitation, Leitrim Local Authority proposes that where specific situations are identified for which mitigation measures may be required, a limited amount of noise monitoring will be conducted to confirm that noise levels are unsatisfactory. If mitigation measures are implemented, further monitoring will be carried out to quantify the effectiveness of the measures.

Data obtained from computer modeling is somewhat limited in that it provides a single annual average noise level and does not identify changing noise profiles over time.

5.3.2 The Vehicle Count Data
The strategic noise maps produced in this report are based on traffic count information taken by TII in 2016. The AADTs were estimates from the updated 2015 base year of the National Transport Model. This was the most up to date base year AADT data available at the time of model preparation. These counts may have to be repeated annually, to ascertain if volumes are increasing or decreasing. The figures generated from this National Transport Model represents as accurately as possible the typical year in terms of traffic flow at these locations for 2016.

6.0 IDENTIFICATION OF AREAS SUBJECTED TO NOISE MANAGEMENT ACTIVITIES

6.1 Assessing and prioritising actions.
There are no statutory limits in place in relation to environmental noise exposures at EU or national level. The EPA recommends that the proposed onset levels for assessment of noise mitigation measures for noise due to road traffic should be as follows:

- 70dB, L_{den} and
- 57dB, L_{night}

The proposed onset levels for assessment of noise level preservation for quiet areas, where the existing noise level is considered good are as follows:

- 55dB, L_{den} and
- 45dB, L_{night}
In order to focus resources on areas in most need of improvement, a decision matrix will be applied, based on work carried out by Dublin Agglomeration (see Table 6 below). The final matrix score is determined 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

1. Calculated environmental noise level.
The score under this variable is assigned based on the calculated $L_{den}$ and $L_{night}$ levels for the location.

2. Type of location
This score is assigned based on the type of land use in the area and on the receptor. A higher score is assigned to open countryside on the basis of the expectation that residences in open countryside will have lower ambient noise levels than commercial areas and town centres. A higher score is also assigned to noise sensitive locations because of the requirement for low noise levels for them to function effectively e.g. schools, churches, funeral homes, hospitals, nursing homes.

3. Noise Source
The noise source in Co. Leitrim is the same for all assessments (i.e. noise from major roads). It has been suggested in EPA Noise Guidance Document, (Guidance Note for Noise Action Planning, EPA July 2009), that each Action Planning Authority may impose an additional weighting factor to the matrix to include the number of residents at each address. Leitrim Local Authority does not propose to impose this additional weighting for the following reasons:
- The number of residents at a particular location may change with change of ownership.
- While there may be only one or two residents at a particular address, their lifestyle habits maybe such that they spend considerably more hours around the home than for example a large family where the adults are at work all day and children are at school.

Data obtained from the matrix tool will enable the Leitrim Local Authority to prioritise areas. A matrix assessment score of 17 or greater will be taken to indicate that the threshold levels may have been exceeded and that the location should be included in the shortlist for further assessment.
Table 6:
Matrix A: Decision support matrix to identify and prioritise noisy areas

Priority Matrix
*Based on Maximum Exposure Levels in the Assessment Area*

<table>
<thead>
<tr>
<th>Location</th>
<th>Score Range</th>
<th>Score Range Lnight</th>
<th>Sub Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Band</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-49</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>50-54</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>55-59</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>60-64</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>65-69</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>70-74</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>75-79</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>&gt;/=80</td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Location</th>
<th>Town centre</th>
<th>Commercial</th>
<th>Recreational open space</th>
<th>Residential</th>
<th>Open countryside</th>
<th>Noise Sensitive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of noise source</th>
<th>Air</th>
<th>Industry</th>
<th>Rail</th>
<th>Road</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total Score**

### 6.2 Preservation of noise levels in quiet areas.

A quiet area in open country is defined as an area delimited by the action planning authority following consultation with the agency and approval by the minister, that is undisturbed by noise from traffic, industry or recreational activities. At present, there are no such quiet areas identified in County Leitrim for which noise mapping has been carried out.

Under the Environmental Noise regulations, it is required to delimit quiet areas within agglomerations. These quiet areas could be defined as public open spaces. There were no quiet areas inside agglomerations identified in Co. Leitrim in Round Two of Noise Action Planning.

Noise sensitive locations are locations for which a quieter noise environment is preferable for effectively carrying out the functions of the particular location. They include schools, libraries, hospitals, nursing homes, funeral homes, churches and other places of worship.
The strategic noise maps will be examined to identify any noise sensitive locations or quiet areas situated within the action planning area. Any noise sensitive locations or quiet areas identified will be assessed using Matrix A - Table 6 in order to prioritise areas that warrant further noise monitoring.

7.0 MITIGATION AND PROTECTION MEASURES:

7.1 The Source of Road Noise.
The level of environmental noise generated by a particular road is dependent on a range of factors including the number and type of vehicles, the speed of the vehicles, the road surface and the incline. The extent to which the noise travels from the road is affected mainly by the following parameters: distance, weather, the presence of acoustic barriers, buildings, road width, road incline, nature of the topography and whether the ground is acoustically absorbent or reflective.

The most significant factor in terms of noise generation is the noise produced by the vehicle. Vehicle noise arises from three sources:

- Propulsion noise (engine, power train, exhaust and intake systems).
- Tyre/road contact noise.
- Aerodynamic noise.

Engine noise is the dominant source at lower speeds (under 30kph for passenger cars/under 50kph for lorries), tyre/road noise dominates above that and aerodynamic noise becomes louder as a function of the vehicle speed.

Vehicle noise limits are set in EU legislation and address propulsion noise for new vehicles. Current limits are shown in Appendix VI. Noise emissions are determined by means of a vehicle drive-by test, which measures the noise emitted as the vehicle is driven by at 50kph and accelerates in front of the microphone position. The current drive by test does not include provision for evaluating noise performance in typical urban stop-start traffic situations at lower speeds, where engine noise is the dominant source. Another failing is that the test parameters are set in such a way that vehicles can be designed to pass the test but are considerably louder when driven on the road. A new type of vehicle test has recently been introduced which corrects for these limitations.

The EU noise limits are a valuable tool for ensuring that noise emissions are minimized for new vehicles. However they only apply to new vehicles. As vehicles age, the level of noise produced by the engine increases with wear and tear on the parts but there is presently no requirement in Ireland to assess noise emissions from older vehicles. Another practical limitation to the noise emission limits is that while a newly purchased vehicle may comply with its emission limit, modifications to or removal of the vehicle silencer will result in an excessively noisy vehicle.

Installation of a sports exhaust on a vehicle is not illegal at present and is a major contributor to nuisance noise from road vehicles. Tyre rolling noise emissions have increased over time, predominantly due to the trend towards wider and heavier tyres. Tyre/road contact begins to dominate the noise emission above 30km/h for passenger cars and above 50km/h for lorries. For
this reason, it was deemed necessary to regulate tyre/road noise separately at EU level. The rolling noise emissions of tyres are regulated under the following EU regulations.

**Tyre-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefore - Regulation No 661/2009**

Under the framework of Directive 2007/46/EC this regulations establishes new maximum permissible rolling noise limits for tyres available on the market across Europe. This noise limits replace the previous limits set out within Directive 2001/43/EC. The new Regulation requires tyres to comply with more stringent limits on rolling noise emissions. Compliance with these new noise limits is mandated from 1st November 2012 for new types of tyre, from 1st November 2013 for new types of vehicle and from 1st November 2016 for all new tyres and vehicles. The new rolling noise limits are between 3 and 4 dB(A) lower than the previous limits.

**Labeling of tyres with respect to fuel efficiency and other essential parameters – Regulation 1222/2009**

In support of Regulation 661/2009 this Regulation establishes a framework for the provision of harmonised information on tyre parameters through labeling, allowing end-users to make informed choice when purchasing tyres. As from 1 November 2012 the EU Energy labels for tyres must be available at point of sale and show information on fuel consumption, wet grip and rolling noise levels, as shown in the diagram below.

*Example of EU Energy label for tyres*
7.2 Measures To Reduce Noise From Major Roads.

7.2.1 Existing Developments.
There are a limited number of approaches that can be taken to reduce noise from major roads for existing dwellings: Relocating the road away from high-density settlements by the construction of a bypass is obviously the most effective method of minimizing the numbers of dwellings likely to be affected by the road noise. This mitigation measure has been implemented in Leitrim with the opening of Dromod/Rooskey bypass on the N4 where noise barriers were installed at a number of locations. Where areas are identified by further assessment, it may be possible to install noise barriers on major roads away from residential areas (where pedestrian access is not an issue). The installation of different road surfacing also has an effect on the noise generated.

Traffic calming measures can be employed where the major road passes through a built-up area. Changes to the road to use low noise surfaces may be appropriate in some instances. Improved insulation will reduce noise levels within dwellings but this is only effective when windows are kept closed.

7.2.2 Future Developments.
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.

7.3. Proposed Measures for Leitrim Action Planning Area

7.3.1 Mitigation Measures:
Residences located within the action planning area will be assessed using the decision matrix – Matrix A – (Table 6) to prioritise areas for which further assessment may be required.

Reducing traffic density is the most effective way to reduce road noise emissions. The Leitrim County Development Plan 2015 – 2021 sets out objectives in relation to public transport, roads, walking and cycling.

Leitrim Local Authority shall aim to reduce traffic density on a countywide basis by:

• Promoting Cycling and Walking:

Smarter Travel, A Sustainable Transport Future, (2009) is the new transport policy for Ireland for the period 2009-2020. It recognises the vital importance of continued investment in transport
to ensure an efficient economy and continued social development, but also promotes more sustainable transport modes such as walking, cycling and public transport.

**Objective 27** It is an objective of the Council to develop the National Cycle Network Corridors within the county – Corridor 1 (Sligo to Dundalk) and Corridor 11 (Limerick to Carrick-on-Shannon).

**Objective 28** It is an objective of the Council to develop a National Cycle Network Corridor from Carrick-on-Shannon to Mullingar.

**Objective 29 (a)** It is an objective of the Council to seek opportunities for the development of suitable walking routes, cycle tracks and bridle paths along redundant railway lines and other suitable locations such as; along waterways and historical access routes.

**Objective 29 (b)** It is an objective of the Council to map suitable recreational routes within the County and to promote and facilitate the development of such routes having cognisance of National policy in this regard and subject to the availability of resources.

**• Upgrading the N4 National Primary Route**

**Objective 30 (b)** It is an objective of the Council to complete the design and construct the proposed Carrick-on-Shannon bypass and to upgrade/realign it as necessary from the western end of the Dromod-Rooskey bypass at Moher/Finnalaghta townlands to link into the Carrick-on-Shannon bypass.

**7.3.2 Protection Measures for future improvement:**
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 into 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:
  
  i. For new developments proposed within the current action planning area or
  ii. 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.

The Leitrim Local Authority will consider providing for a higher standard of façade and window insulation on the most exposed façades in new local authority housing developments located beside major roads, potentially with a pre-completion sound insulation test carried out prior to habitation.

The Leitrim Local Authority will consider requiring a higher standard of façade and window insulation for all new multiple residential developments located beside major roads, potentially with a pre-completion sound insulation test required prior to habitation. Leitrim Local Authority will consider requiring a higher standard of façade and window insulation for single one-off housing applications beside major roads.

The powers of the Planning Authority to impose the above measures are restricted by the provisions of the existing Planning Acts. Protection measures for future improvement may also include extending speed limit restrictions around built-up areas.

7.3.3 Monitoring Measures:
Data presented in the noise maps shown in Appendix VI is obtained from computer modeling and is reported as a mean annual noise level, $L_{den}$ and $L_{night}$. The model may overestimate the environmental noise levels resulting from major road traffic at a particular location. Where the decision matrix process identifies locations for further assessment, noise monitoring may be carried out to confirm that levels of environmental noise are unsatisfactory and that mitigation measures may be required. The possibility of other noise sources contributing to the measured noise level must be taken into account in this assessment. Where mitigation measures can be implemented, further noise monitoring will be carried out after implementation in order to quantify the improvement achieved.

A health impact assessment would be a useful means for humanising the noise results following noise monitoring in residential areas. However, it is unlikely to be assessed for this round of Noise Action Planning due to a lack of resources and guidance on the subject of noise and health.

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.

7.3.4 Consultative Measures
In areas where the Leitrim Local Authority do not have a regulatory role, but where improvements in regulatory controls will effect a reduction in environmental noise from major roads, the Leitrim Local Authority will consult and liaise with the relevant authorities. These areas may include:
• Liaising with TII to extend speed restriction zones for national roads passing through built-up areas. Of relevance to the present and future action planning areas.
• Liaising with TII to impose set back distances for developments alongside national roads.
• Consulting with the Department of Housing, Planning and Local Government regarding present restrictions on Planning Authorities in relation to the imposition of planning measures to address noise in the assessment of applications.
• Recommending to the Planning Authority that measures proposed in this action plan be included in the Leitrim County Development Plan.
• Recommending to the Department of Transport, Tourism and Sport that noise monitoring be incorporated as part of the NCT and DOE commercial vehicle tests. Wear and tear on a vehicle will increase noise emissions and should be addressed in vehicle testing. A vehicle with a missing or defective silencer will not pass the NCT test. However a vehicle with a modified exhaust (approved sports exhaust) will pass the test unless the air emission limits are exceeded.
• Recommending to the Department of Transport, Tourism and Sport that modified sports exhausts be made illegal for normal road use. This recommendation will obviously have resource implications for the Gardaí in terms of enforcement.
• Possibly recommending to the Department of Justice that An Garda Siochana be provided with noise testing instrumentation for roadside checks (of limited effectiveness without supporting legislation and emission limits).
• Liaising with the EPA to establish limit values for community noise.
• Recommending to the Department of Transport, Tourism and Sport that tighter tyre rolling noise limits should be implemented at EU and national level.

8.0 PUBLIC PARTICIPATION

The purpose of the Public Consultation is to allow for public participation in preparation and review of the Leitrim Local Authority Noise Action Plan. The Leitrim Local Authority Noise Action Plan 2018 will be advertised in the local media. The plan will be made available for inspection in the County Council Office in Carrick on Shannon and Manorhamilton and also published on the Leitrim County Council website www.leitrimcoco.ie

A newspaper notice will be placed in the Leitrim Observer, inviting submissions from the general public. Submissions/comments must be made in writing and addressed to:

Environmental Department,
Leitrim County Council,
Áras an Chontae,
Carrick-on-Shannon,
Co. Leitrim.

Further details of the public consultation process and the submissions will be provided in Appendix V of the final Plan.

In addition to the general public, the following stakeholders will be asked to comment on the Draft Noise Action Plan:
Having observed the level of public participation and preparation in the Noise Action Plan, Leitrim County Council deemed that it was unnecessary to undertake a Strategic Environmental Assessment (SEA) of the Draft Noise Action Plan. The decision to not proceed with an SEA was taken at the end of the public consultation period, when no response was received from the general public, and following consultation with the Elected Members no objections or observations were raised.

As there are no specific mitigation measures identified in the Noise Action Plan there is no need at this stage to carry out Appropriate Assessment (AA) screening. All projects and works that may arise as a result of the Noise Monitoring will be subject to AA screening checks with reference to NPWS guidance.

After the public consultation and timeframe for submissions has passed, the submissions will be considered, responses formulated and the Noise Action Plan can be finalised. In the appendices of the final Noise Action Plan, comments on the submissions will be included and the public will be informed of decisions taken. The finalised Leitrim Local Authority Noise Action Plan 2018-2023 will be published. A newspaper notice will be placed in the Leitrim Observer advertising the fact that the Leitrim Local Authority Noise Action Plan 2018 is available. Copies will be made available for inspection in all County Council offices in Carrick on Shannon and Manorhamilton. The plan will also be published on the Leitrim County Council website www.leitrirmoco.ie

### 9.0 IMPLEMENTATION PROGRAMME

#### 9.1 Roles and Responsibilities

Under the Environmental Noise Regulations, 2006, Transport Infrastructure Ireland (TII) is the noise mapping body for major national roads in Leitrim. The Leitrim Local Authority is the noise mapping body for major non-national roads in the county. The Leitrim Local Authority is the Action Planning Authority for major roads in Leitrim. The volumes of rail in the county are below the thresholds for noise mapping and so the Regulations do not apply to these areas at present.

The Leitrim Local Authority is responsible for the preparation of the noise action plan and for meeting the stated objectives of the plan, including implementing measures to improve existing
noise levels at a local level (if appropriate) and identifying and implementing measures for the protection of the future environment from road noise.

9.2 Targets and Objectives:

It is the aim of the Noise Action Plan to manage environmental noise from major roads, to protect good satisfactory noise environments where they exist and to protect the quality of the future noise environment by acoustical planning.

9.3 Programme of Works

Year One to Two (2018 to 2019):
- Apply the decision matrix tool described in section 6.1 to assess priority areas for which further monitoring may be warranted
- Identify noise sensitive locations along the N4 and N15 using the strategic noise maps
- Identify potential quiet areas along the N4 and N15
- Purchase a sound level meter to measure noise at priority areas, noise sensitive locations and quiet areas
- Notify the road design department in Leitrim County Council of the roads under consideration in the Noise Action Plan
- Liaise with the planning department in identifying priority properties using geodirectory and CSO data

Year Two (2019 to 2020):
- Initiate noise monitoring in identified priority areas to determine existing noise levels
- Identify appropriate mitigation measures for specific locations
- Consult with road design department to discuss noise mitigation measures that may need to be considered
- Develop local planning guidance on noise in collaboration with the Planning Department
- Undertake consultative measures outlined in 7.3.4

Year Three to Four (2021 to 2022):
- Commence implementation of the relevant actions as outlined in section 7, where necessary.
- Collect adequate traffic flow data for all roads in the county
- Ensure that the Noise Action Plan is considered as part of Leitrim’s County Development Plan
- Communicate with Iarnrod Eireann to receive updates on rail transport figures.
- Leitrim Local Authority staff will continue to consult and work with EPA and TII on any future Noise Action Plans and strategic noise mapping

9.4 Evaluation, Review and Corrective Action Programmes
9.4.1 Ongoing review
Progress will be reviewed against the programme of works on an annual basis. An interim summary report will be prepared. 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 presently unforeseen reasons.

9.4.2 End of programme review
An end-of-programme review of the action plan will be prepared at the end of Round 3. This review will summarise progress in implementing measures, identify the extended noise mapping/action planning area, highlight aspects of the original action plan which were modified, giving reasons for the modification and recommend measures for future improvement.

*See Appendix III - Diagram showing recommended approach for evaluation, action and review.*

10.0 FINANCIAL PROVISIONS

10.1 Budgetary Provisions.
Financial provisions have not been made available at national level to fund any noise assessment measures, mitigation measures or additional noise mapping requirements resulting from implementation of this action plan. Staff resources have not been increased to assist in implementation of the plan. Because of the lack of these resources, any mitigation measures must be strictly prioritised. It is hoped that where mitigation measures are identified, their implementation will also be found to be of benefit all other local authority sections.

10.2 Cost Benefit Analysis.
Evaluation of the impact of noise nuisance is complicated because noise nuisance is subjective; it is largely related to the type of noise, the source of the noise and whether it is welcome or unwelcome, and background noise levels in the environment. Responses to noise from the different transport sources can vary considerably. Assessing the impact of mitigating measures to address noise nuisance is further complicated because noise is measured on a logarithmic scale and human perception of loudness does not directly coincide with increased sound pressure levels (e.g. a 3dB increase in noise, which represents a doubling in sound pressure level, is the smallest statistically significant increase in loudness detectable by the human ear). To reduce the subjective “loudness” of a noise source by 50% would require a 10dB drop in noise level and may be very difficult to achieve without major investment in noise mitigation. Assigning a monetary cost to the noise nuisance can enable cost benefit analysis to be used as a decision support tool in determining what (if any) noise mitigation measure is to be implemented.

The position of the EC working group on health and socio-economic valuation of noise, recommends the following in relation to road noise:

- For road transport, the (interim) use of the median value change in noise perceived by households of €25 per dB (Lden), per household per year. The validity range of this interim value is between 50/55 Lden and 70/75 Lden and it should be adjusted as new research on the value of noise becomes available.
• The estimate of the change should apply at all initial noise levels, and regardless of the size of any change brought about;

As a preliminary step in carrying out cost benefit analysis on possible noise mitigation measures, The Leitrim Local Authority propose to assign the monetary benefit to noise mitigation measures as recommended above - €25 per dB (L_{den}) per household per year. The number of households in the immediate area that would potentially benefit from a particular mitigation measure will also be factored into the analysis.

There is now limited funding available from the Department of Communications, Climate Action and the Environment (DCCAE) for the purchase of sound level meters to assess noise issues. The Department would also like to assess the training needs of Local Authorities for managing noise issues and are assessing the feasibility of providing training through the Environmental Training Services Group.

Leitrim Local Authority has applied to the DCCAE for funding for the purchase of a sound level meter in order to monitor the traffic noise in priority areas. In addition, Leitrim Local Authority has expressed an interest in relevant staff members attending training for dealing with noise issues.

11. SUMMARY AND CONCLUSIONS

The Leitrim Local Authority Noise Action Plan addresses road noise from:

- N4 – Longford border at Rooskey to Roscommon border at the River Shannon bridge in the town of Carrick-on-Shannon
- N15- Sligo border at the Duff River to the Donegal border at the River Drowes.

Lands adjacent to these roads are considered to be located within the action planning area where noise mapping has indicated that the environmental noise levels may be 55dB L_{den} or greater.

The aim of the action plan is to manage existing road noise within the plan area and to protect the future environmental noise environment within the plan area.

While no limits exist for environmental noise in Ireland, the EPA recommends that proposed onset levels for assessment of noise mitigation measures for noise due to road traffic are as follows:

- 70dB, L_{den} and
- 57dB, L_{night}

Noise maps were prepared for major roads in County Leitrim based on a road noise computation model run by TII. These maps present calculated environmental noise levels from major roads in coloured noise contour bands from 55dB L_{den} and 45dB L_{night}, to greater than 75dB L_{den} and greater than 70dB L_{night}, in 5 dB bands.
The noise maps for Leitrim were prepared based on the roads network in place in the county in 2016. TII has estimated that a total of 2,200 individuals are resident within the noise mapping/action planning area.

In terms of management of existing road noise, the actions proposed under the current plan is to use a decision matrix to identify areas for possible further assessment. Noise monitoring will be carried out in these prioritised areas. Where further assessment indicates that noise mitigation may be required, this will be carried out on a prioritised basis, applying cost benefit analysis to any proposed measures. The monetary benefit of noise mitigation will be calculated from the figure of €25 per dB (Lden), per household per year.

An annual review will be carried out each year to update progress on the actions identified in the programme of works. In addition, an end of programme report will be prepared to review and evaluate all progress on the Noise Action Plan during round three.

Rebeccah Cogan
Environmental Technician

Approved by:

Brendan McKenna
Senior Executive Engineer

Environment Section, Leitrim County Council
Appendix I
Glossary of acoustic and technical terms

**AADT**: Annual Average Daily Traffic. The total volume passing a point or segment of a road for one year, divided by the number of days in the year.

**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.

**Agglomeration**: A dense urbanized area having a population of greater than 100,000 persons.

**Decibel (dB)**: A unit of measurement of sound. When measuring environmental noise, an “A” weighting network is used (called dB(A)) which filters the frequency of the sound to mimic human hearing, which is most sensitive to frequencies between 500Hz and 5,000Hz. The decibel scale is logarithmic. If two noise sources emit the same sound level (e.g. 80dB(A)), the combined sound level from the two sources is 83dB(A) and not 160dB(A). The human perception of “loudness” is that a 10dB increase in sound level is perceived as being twice as loud. A 3dB increase, which is a doubling of the sound level, is perceived as a barely perceptible change in loudness. A decibel level of zero represents absolute silence. A level of 140dB(A) would cause ear pain.

The table below gives examples of the relationship between the subjective valuation of noise and the actual objective levels (taken from the END Briefing note of the 07/02/08):

<table>
<thead>
<tr>
<th>Noise Level dB (A)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>Threshold of Pain</td>
</tr>
<tr>
<td>95</td>
<td>Pneumatic drill (at 7m distance)</td>
</tr>
<tr>
<td>83</td>
<td>Heavy diesel lorry (40km/h at 7m distance)</td>
</tr>
<tr>
<td>81</td>
<td>Modern twin-engine jet (at take-off at 152m distance)</td>
</tr>
<tr>
<td>70</td>
<td>Passenger car (60km/h at 7m distance)</td>
</tr>
<tr>
<td>60</td>
<td>Office environment</td>
</tr>
<tr>
<td>50</td>
<td>Ordinary conversation</td>
</tr>
<tr>
<td>40</td>
<td>Library</td>
</tr>
<tr>
<td>35</td>
<td>Quiet bedroom</td>
</tr>
<tr>
<td>0</td>
<td>Threshold of hearing</td>
</tr>
</tbody>
</table>
**Daytime:** Between the hours of 7am and 7pm

**DB(Lin)max peak:** Instantaneous Maximum Peak sound pressure measured in decibels on a sound level meter, without the use of a frequency weighting system. Used to measure air overpressure levels from blasting.

**Evening time:** Between the hours of 7pm and 11pm

**Environmental Noise:** Shall mean 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 such as integrated pollution prevention and control licensed industries.

**Hertz:** Unit of frequency of sound.

**IPPC License:** Integrated Pollution Prevention and Control License (obtained from EPA).

**L_{den}:** (day-evening-night noise rating indicator) shall mean the noise indicator for overall annoyance. This comprises of adding the average value for the 12 hour day time period with the average value of the 4 hour evening period plus a 5 decibel weighting or penalty, and the average value for the 8 hour night time period with a 10 decibel weighting or penalty.

**L_{day}:** (day-noise indicator) shall mean the noise indicator for annoyance during the day period. This is the average value in decibels for the daytime period.

**L_{evening}:** (evening-noise indicator) shall mean the noise indicator for annoyance during the evening period. This is the average value in decibels for the evening time period.

**L_{night}:** (night-time noise indicator) shall mean the noise indicator for sleep disturbance. This is the average value in decibels for the nighttime period.

**Major road:** a national or regional road with more than 3 million vehicles per annum.

**Major railway:** A railway line, which has more than 30,000 train passages per year.
**Major Airport:** A civil airport, which has more than 50,000 movements per year, excluding those movements purely for training purposes on light aircraft; in this context, a movement means a single take-off or landing of an aircraft.

**Night time:** Between the hours of 11pm and 7am.

**Noise annoyance:** Noise annoyance is defined by the World Health Organisation (WHO) as 'a feeling of displeasure evoked by noise'.

**Peak Particle Velocity (ppv):** Peak particle velocity is a measure of vibration magnitude, which is the maximum rate of change of ground displacement with time, usually measured in mm/sec.

**TII:** Transport Infrastructure Ireland
Appendix II

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UK DOT, Transport analysis guidance, Noise, TAG unit 3.3.2, November 2006

Quarries and Ancillary Activities: Guidelines for Planning Authorities, DOEHLG April 2004.

CEDR; State of the art in managing road traffic noise: cost benefit analysis and cost effectiveness analysis – Technical report 2017-03

NRA; Good practice guidance for the treatment of noise during the planning of National Road Schemes 2014


N4 Dromod Rooskey Bypass - EIS; NRA and DOT
Carrick-on-Shannon Bypass Route Corridor Select Report 2010 – NDP, NRA, DOT, Roughan O’Donovan

Iarnrod Eireann; 2011 and 2016 rail traffic on the Iarnrod Eireann Network; Strategic Noise Mapping 2017
Appendix III

Overview of flow diagram of process for action planning decision making

Leitrim Local Authority: Noise Action Plan 2018 - 2023
## Appendix IV

### Template Decision Support Matrix

#### Priority Matrix

*Based on Maximum Exposure Levels in the Assessment Area*

<table>
<thead>
<tr>
<th>Location</th>
<th>Score Range</th>
<th>Score Range</th>
<th>Sub Total</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>L&lt;sub&gt;den&lt;/sub&gt;</td>
<td>L&lt;sub&gt;night&lt;/sub&gt;</td>
<td></td>
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<tr>
<td>Noise Band</td>
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<td></td>
<td></td>
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<tr>
<td>45-49</td>
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<td>1</td>
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<tr>
<td>50-54</td>
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<td>60-64</td>
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<td>3</td>
<td></td>
</tr>
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<td>4</td>
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</tr>
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</tr>
<tr>
<td>75-79</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>&gt;=80</td>
<td>5</td>
<td>7</td>
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<table>
<thead>
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<th>Score Range</th>
<th>Score Range</th>
<th>Sub Total</th>
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<tbody>
<tr>
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<td>1</td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Recreational open space</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Open countryside</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Noise Sensitive</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Noise Source</th>
<th>Score Range</th>
<th>Score Range</th>
<th>Sub Total</th>
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<tbody>
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<td>Air</td>
<td>3</td>
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<td>Industry</td>
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<td>3</td>
<td></td>
</tr>
<tr>
<td>Rail</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Road</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Total Score**
Appendix V

Public Consultation

Advert in Leitrim Observer: 27 June 2018

Comhairle Chontae Liatroma
Leitrim County Council

NOTICE OF PUBLIC CONSULTATION ON NOISE ACTION PLAN 2018 IN RESPECT OF COUNTY LEITRIM

ENVIRONMENTAL NOISE REGULATIONS, 2006
(S.I. No. 140 of 2006)

Leitrim County Council invite submissions from the public on the Noise Action Plan 2018-2023 prepared under SI No. 140 of 2006, to address noise from major transport sources.

This is a five year strategic plan to address noise from major roads in County Leitrim which have in excess of 3 million vehicles per annum – the N4 and the N15. The plan excludes noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside a means of transport or due to military activities in military areas.

The main purpose of the plan is to inform and consult the public about exposure to noise from the above mentioned major roads and the corrective measures that may be considered to address these issues.

It should be noted that the plan has yet to be reviewed and endorsed by the Elected Members. The plan together with recommendations on all observations and submissions received will be considered by the Elected Members.

The plan and associated maps will be available for inspection, during normal working hours, at the following locations from Wednesday 27 June to Friday 17 August 2018.

- Aras an Chontae, Carrick-on-Shannon
- Manorhamilton Area Office

The plan may also be accessed on the Leitrim County Council website www.leitrimcoco.ie

Submissions may be made in writing to;

The Environment Department, Leitrim County Council,
Aras an Chontae, Carrick-on-Shannon, Co. Leitrim
or by email to environment@leitrimcoco.ie

Closing date for submissions is Friday 17 August 2018

**Public Display in Aras an Chontae, Carrick on Shannon**

27 June – 17 August 2018
Manorhamilton Area Office (North Leitrim)

Copies of the Draft Noise Action Plan and associated maps were available for viewing by the public in Manorhamilton Area Office from 27 June – 17 August 2018.

The Draft Noise Action Plan was available to view on Leitrim County Council’s website:

Results from Public Consultation

No comments or submissions were received by members of the public during the public consultation period.

Transport Infrastructure Ireland (TII) sent in a submission – the comments and corrections were inserted into the final Noise Action Plan.

No submissions were received from other stakeholders who were sent invitations to comment on the Draft Noise Action Plan.

The Draft Noise Action Plan was brought to the attention of the elected members at the County Council Meeting on 3 September 2018. No objections or observations were raised by the elected members.

The Draft Noise Action Plan was submitted to the EPA for review and the plan was reviewed by the EPA on 13 September 2018. All comments from the EPA’s review were taken into consideration in order to finalise Leitrim Local Authority’s Noise Action Plan 2018 – 2023.
Appendix VI

Strategic Noise Maps