



Comhairle Contae Mhuineacháin
Monaghan County Council

Draft Noise Action Plan

(2018-2023)

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

June 2018

Executive Summary

This Noise Action Plan has been prepared by Monaghan County Council for major roads carrying more than three million vehicles per annum, which in County Monaghan comprises the national road; N2 and small sections of Regional roads around the towns of Monaghan (R162 & R937), Castleblayney (R181 & R938) and Carrickmacross (R927). This is the second noise action plan devised for Co. Monaghan; the first one being devised for the period 2013-2018.

The plan was prepared in accordance with the Environmental Noise Regulations (S.I. 140 of 2006). 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.

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 Monaghan)
- Major airports with more than 50,000 flights per annum (not applicable to Monaghan)
- Major Roads with more than 3 million vehicles per annum (applicable to the N2, R162 & R937 in Monahan town, the R181 & R938 in Castleblayney and the R927 in Carrickmacross) and
- Agglomerations of greater than 100,000 habitants (not applicable to Monaghan)

In 2017 Transport Infrastructure Ireland (TII), as the designated Noise Mapping Body for major national roads, prepared noise maps and population exposure assessments for national roads. Monaghan 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 the 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 the TII mapped the N2, N53, N54 and roads in the towns of Monaghan, Castleblayney and Carrickmacross. However, the N53 and N54 do not fall within the scope of the Environmental Noise Regulations (S.I. 140 of 2006) or EU Directive 2002/49/EC, as they do not have greater than 3 million vehicles per annum, so they are not considered under this Noise Action Plan.

Noise maps for County Monaghan 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. Each map presents the noise levels in 5dB contour bands. Maps for the N2 and major roads in Monaghan, Castleblayney and Carrickmacross are presented in Appendix 1.

A summary of the population exposure for each of the noise band contours was compiled by reference to geodirectory data by the TII for all the roads that they mapped and is provided below:

**Population Exposure Data, (L_{den}) for Major Roads in Co. Monaghan,
(from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)**

Noise Level Band dB	Approximate No. of People (Round 3 – 2017)
55-59	1,521
60-64	1,232
65-69	1,378
70-74	150
>75	3

**Population Exposure Data, (L_{night}) for Major Roads in Co. Monaghan,
(from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)**

Noise Level Band dB	Approximate No. of People (Round 3 – 2017)
50-54	1,249
55-59	1,533
60-64	206
65-69	3
>70	0

The figures provided above include the N53 and N54, which are not required to be covered under the regulations, so are not considered under this Noise Action Plan. Therefore the numbers in Table 1 and 2 are higher than the actual number of people exposed under this Noise Action Plan.

The purpose of the Noise Action Plan is to endeavour to manage the existing noise environment on the N2 and major roads within the towns of Monaghan, Castleblayney and Carrickmacross and protect the future noise environment within the action planning area. Management of the existing noise environment will be achieved by prioritising areas for which further assessment and possible noise mitigation, may be 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.

Assessing and prioritising actions

The proposed onset levels for assessment of noise mitigation measures for noise due to road traffic are:

- 70dB, Lden and
- 57dB, Lnight

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, Lden and
- 45dB, Lnight

In order to focus resources on areas in most need of improvement, a decision matrix will be applied where 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, rail, airport, agglomeration)

It is proposed to examine the noise maps to identify any noise sensitive locations situated within the action planning area. Any noise sensitive locations identified will be tested against the Matrix to establish what mitigation measures will be considered to improve the existing noise situation.

The following key actions are proposed subject to the availability of resources;

1. It is proposed to manage the potential noise impact of future development through the Planning and Licensing processes, including existing provision for Environmental Impact Assessment Reports.
2. The potential noise impact from increased traffic on major roads should be adequately addressed by reviewing (and revising, if necessary) the Noise Action Plan every 5 years, or sooner where a material change in environmental noise in the area occurs.
3. Carry out an assessment of Quiet Areas in open countryside, following the EPA screening process and from a review of the landscape character assessment for the County. Identify areas for delimiting and submit proposal to EPA and Minister for approval.
4. The accuracy of predicted noise levels will be confirmed and potential noise mitigation measures identified on a priority basis. A cost-benefit analysis on potential actions will be carried out and a list of beneficial, achievable actions for noise mitigation drawn up.
5. A budget will be identified by Monaghan County Council and a programme of works agreed and implemented.

The first Noise Action Plan 2013-2018 included the N2, N53, N54 and relevant roads in Monaghan, Castleblayney and Carrickmacross. In year one of the plan a matrix assessment was undertaken and identified all houses with a matrix score of 17 or greater. In year two of the plan, monitoring was undertaken at selected properties along the major routes to verify the noise model readings and in general a good correlation was found. There were no noise reduction measures undertaken or road upgrade works over the remaining years of the first Noise Action Plan.

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1. Introduction

1.1 Background

This Noise Action Plan has been prepared for Monaghan County Council to meet the requirements of the statutory Noise Regulations currently in force, namely the;

- Environmental Noise Directive (END) 2002/49/EC and
- Environmental Noise Regulations, S.I. No. 140 of 2006

The Noise Action Plan was undertaken in line with the EPA “Guidance Note for Noise Action Planning”, July 2009. For the Noise Action Plan the TII conducted noise mapping for the following roads in Monaghan; N2, N53, N54 and small sections of Regional roads around the towns of Monaghan (R162 & R937), Castleblayney (R181 & R938), Carrickmacross (R927) and a small section of the R162 Kingscourt Shercock Road, located in Co. Monaghan. However, the N53 and N54 and the small section of the R162 Kingscourt-Shercock road in Co. Monaghan do not have greater than 3 million vehicles per year, so they do not fall within the scope of the regulations and are not included in this Noise Action Plan.

The plan informs the public about the relevant traffic noise data and provides an action plan to avoid, prevent or reduce, on a prioritised basis, environmental noise exposure along the N2 and major roads within the towns of Monaghan, Castleblayney and Carrickmacross. This is a 5-year plan, but will be revised if necessary, if noise conditions change within this period.

A glossary of acoustic and technical terms used throughout this report is provided in Appendix 2.

1.2 Purpose and Scope of the END Directive

In 2002 the European Union issued Directive 2002/49/EC relating to the assessment and management of environmental noise pollution, which is commonly referred to as the Environmental Noise Directive (END).

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.

1.3 Purpose and Scope of the Regulations

The END was transposed into Irish Law by the Environmental Noise Regulations, S.I. No. 140 of 2006. 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 as follows;

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

Within County Monaghan some sections of road fall within the definition of a major road, as defined in the Regulations; the N2 and regional roads around the towns of Monaghan, Castleblayney and Carrickmacross; R162, R937, R181, R938 & R927. It is these that this Noise Action Plan has been devised for. These thresholds will be used on an on-going basis at 5 yearly intervals, the next being in 2023.

1.4 Roles and Responsibilities of designated bodies

There are three main designated bodies under the Regulations for the purposes of the County Monaghan Noise Action Plan, covering Major Roads.

1) Environmental Protection Agency – Oversee the Regulations

The Regulations designate the Environmental Protection Agency (EPA) as the national authority responsible for overseeing the implementation of the Regulations. The EPA are required to provide advice and guidance on the requirements of the Regulations and to report on Strategic Noise Mapping and Action Planning to the European Commission.

2) Transport Infrastructure Ireland (TII) - Noise Mapping Body

Transport Infrastructure Ireland (TII) is the designated noise mapping body for national roads identified as major roads within the County and Monaghan County Council is the designated noise mapping body for non-National major roads (above 3million vehicles per year). The TII undertook the strategic noise mapping of both National and non-national roads for the purposes of this Noise Action Plan in line with EPA Guidelines for producing strategic noise maps for the County. A strategic noise map is a map designed for the assessment of noise exposure in a given area.

3) Monaghan County Council - Action Planning Authority

The Regulations designate for major roads, the relevant local authority within whose functional area the road is located as the action planning authority. Therefore, Monaghan County Council is the action planning authority for this Noise Action Plan.

1.5 Key Phases

1.5.1. Identification of areas required to be mapped.

In County Monaghan, strategic noise maps and action plans must be prepared for major roads only with >3 million vehicles per annum. The requirement for major railways, major airports or agglomerations >100,000 people do not apply to Co. Monaghan.

Road traffic volumes were obtained using the Transport Infrastructure Ireland’s traffic counting data (Annual Average Daily Traffic – AADT) at the locations shown in Figure 1, which shows four traffic counters on the N2 and one on the N53, N54 and N12. Traffic counts from regional roads were obtained from Monaghan County Council traffic counts, except for the section of the R162 in Monaghan which runs from Kingscourt to Shercock, where traffic counts were provided by Cavan County Council. Regional road traffic counts are provided in Table 1.

Figure 1. TII 2017 Traffic Count Data on N2, N53, N54 & N12

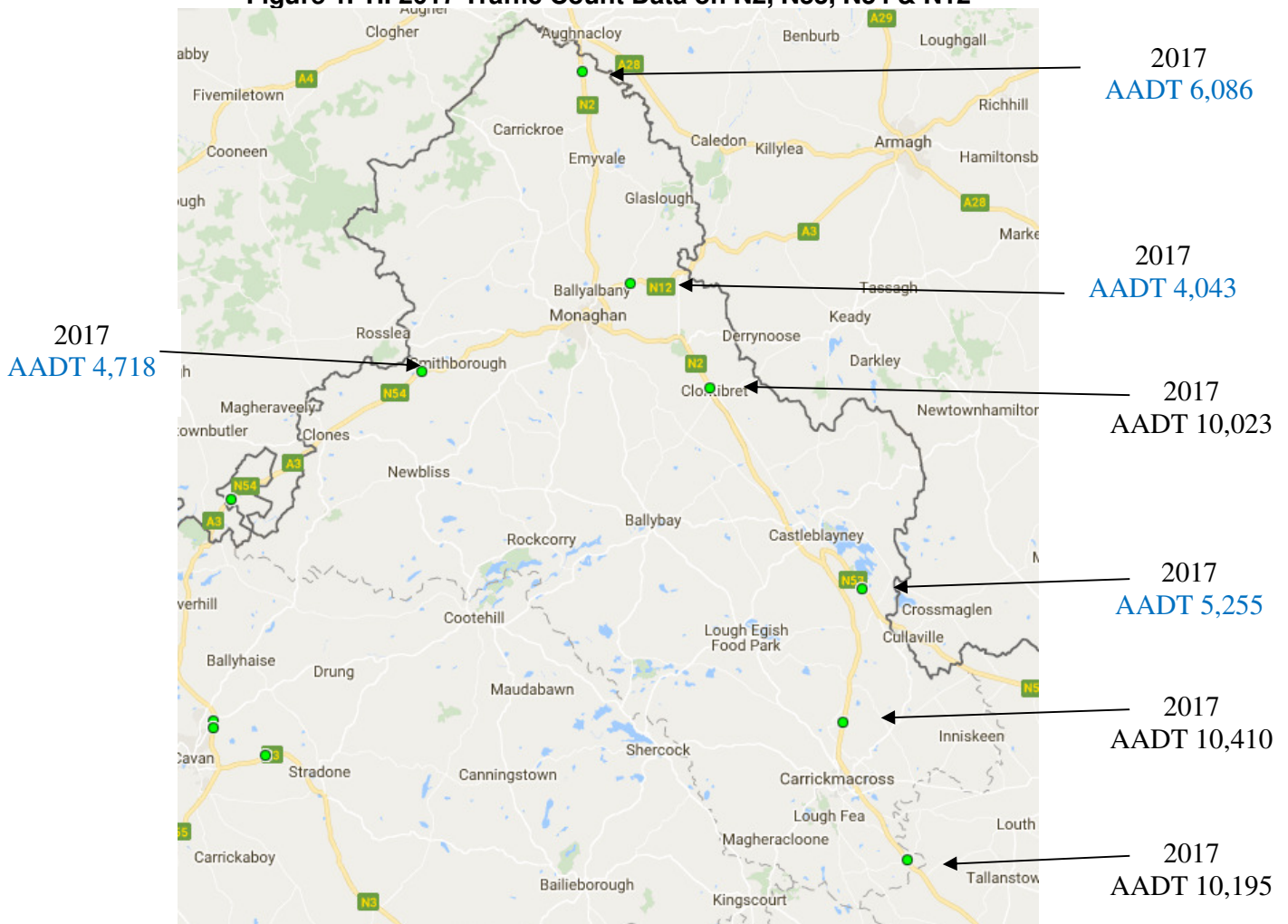


Table 1. Local Authority Traffic Count Data used by TII for Noise Model

Regional Road Name	Road No.	Length (km)	AADT	Annual Traffic Volume (million)
Main Street, Castleblayney	R181	0.113	11,284	4.1
York Street, Castleblayney	R938	1.034	7,887	2.9
Main Street, Carrickmacross	R927	1.397	9,544	3.5
Glen Road, Carrickmacross	R162	0.928	11,786	4.3
Dublin Road, Monaghan	R937	1.365	13,415	4.9

An AADT figure of 8,220 or greater gives >3million vehicle movements per year. Therefore, for this Noise Action Plan, roads with an ADDT less than 8,220 are not required to be considered.

The following routes were identified as falling under the Regulations as they have >3 million vehicle movements per annum.

- National Primary Road, N2 from Louth/Monaghan border to Monaghan/Tyrone border; 75km total. The ADDT figures from Monaghan to Tyrone border did not have >3million vehicles per year, but the entire N2 was considered in this Noise Action Plan.
- Regional Road R937, Dublin Road, Monaghan town, 1.365km total
- Regional road R162, Glen Road, Monaghan Town, 0.928km total.
- Regional Road R181, Main Street Castleblayney, 0.113km total
- Regional Road R938, York Street, Castleblayney, 1.034km total
- Regional Road R927 Main Street, Carrickmacross, 1.397km total

The TII included in their Noise Modelling and Noise Maps the N53, N54 and the section of the R162 in Co. Monaghan on the Kingscourt - Shercock Road as sections of these roads were included in other Counties. Therefore, to avoid fragmentation in the noise model they were included for completeness. However, these sections are not required to be considered in this Noise Action Plan, based on their annual traffic volumes.

1.5.2. Preparation of strategic noise maps

Transport Infrastructure Ireland (TII) carried out noise mapping for the County and produced the strategic noise map. This was done following the EPA *Guidance Note for Strategic Noise Mapping for the Environmental Noise Regulations 2006 (Version 2 – August 2011). Revised Section 10: Mapping Methodology for Exposure Assessment - Post Processing and Analysis (October 2017).*

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. 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 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 Monaghan 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. Each map presents the noise levels in 5dB contour bands and are shown in Appendix 1.

1.5.3 Development of the noise action plans.

The Local Authorities within whose functional area the roads are located are the designated body for preparing Noise Action Plans. The plan is based on the strategic noise maps produced by the TII, which provides the baseline predicted noise levels from major roads within the County. The noise action plan details the current situation regarding road traffic noise on major roads within the County and it forms the basis of developing a long term environmental noise strategy.

1.5.4 Public participation and their role

As required under the Regulations, the Public are invited to participate in the development of the Monaghan 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.

1.5.5 Implementation of the plans

Noise action plans are to be implemented within a 5 year timeframe, so this Action Plan covers the period 2018-2023. The plan will be revised sooner, if a material change in the environmental noise occurs.

2. Existing noise management legislation and guidance

2.1 National Legislation or Guidance

A number of guidance documents have guide levels in relation to noise, depending on the type of development e.g. road, quarry, wind turbine etc. There are no guide values for a large number of developments and scenarios and the best-fit guidelines (Irish/UK) are commonly used, which can lead to confusion, inconsistent use and incorrect use of noise levels in a large number of cases. The following list of national legislation and guidelines make reference to environmental noise.

2.1.1 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.

2.1.2 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 current design goal is that all new national road schemes should be designed, where feasible, to meet a day-evening-night sound level of 60 dB L_{den} (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. 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.

2.1.3 IED/PPC/ Waste Licensing

Certain activities that fall under the requirements for an Industrial Emissions 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 $L_{Aeq,T}$.

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.

2.1.4 Wind Energy Planning Guidelines

The 2006 Wind Energy Development Guidelines are currently under review and due to be published in the first quarter of 2018. The reviewed guidelines are expected to have a more stringent noise limit, in tandem with a new robust noise monitoring regime, to ensure compliance with noise standards.

The proposed new robust noise restriction limits 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. These limits will be conditioned as part of the planning permission process.

The new noise limits are being proposed in tandem with the introduction of a new noise monitoring regime in relation to wind farms. 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 have *Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3)* (2011), which 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

2.1.5 Quarry and Ancillary Activities

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 55dB L_{Aeq} , 1hr and 45dB 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.

2.1.6 Building Regulations

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 dwelling built after 1st July 2015 to be sound tested by competent testers and adhere to the sound insulation values set in TGE.

2.1.7 Project Ireland 2040 - National Planning Framework (February 2018)

This Planning Framework was devised by the Government of Ireland and lists National Policy Objective 65, which will;

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 and sea frontage, 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.

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.*

2.2 Regional and Local Legislation or Guidance

2.2.1 Regional Spatial and Economic Strategy

In October 2017, the Minister for Housing, Planning and Local Government directed that the three Regional Assemblies commence the preparation of the Regional Spatial and Economic Strategies for their individual regions, as a replacement to the Regional Planning Guidelines (RPGs) 2010 -2022. The Northern and Western Regional Assembly Regional Spatial and Economic Strategy is currently in preparation and when finalised, will be considered by Monaghan County Council for future Noise Action Planning.

2.2.2 County Development Plan

The Draft Monaghan County Development Plan 2019-2025 has noise conservation listed in a number of areas.

Chapter 4, on Economic Development, Section 4.8 on the Extractive Industry states that; *Mineral extraction, such as working with stone, sand and gravel, can generate environmental capacity problems for the surrounding areas. As such, applications for mineral extraction must account for issues relating to noise, dust, vibration, visual intrusion, water pollution, traffic generation, etc.*

Chapter 8 on Environment, Energy & Climate, Section 8.39 on Noise states; *The impact of noise pollution is an important consideration in assessing all new development proposals as it can impact on people's quality of life and health. The Environmental Noise Regulations 2006 give effect to EU Directive 2002/49/EC relating to the assessment and management of noise pollution. A Noise Action Plan is in place by the Council for major roads within County Monaghan carrying more than 3,000,000 vehicle passages per year.*

Using the provisions of the development management process, the planning authority will aim to take account of and mitigate noise and/or vibration at site boundaries or adjacent to noise sensitive locations, in particular residential properties with reference to layout, design and/or noise attenuation measures.

Policy NP1 *To promote the implementation of the Noise Directive 2002/49/EC and associated Environmental Noise Regulations 2006.*

Section 8.40 on Air Quality list the following policy objective;

Policy AQP2 *To contribute toward compliance with air quality legislation; greenhouse gas emission targets; management of noise levels; and reductions in energy usage.*

Chapter 15 on Development Management Standards, Section 15.14 Industrial & Commercial Developments states the following policy objective;

Policy ICP1 *Proposals for industrial and commercial developments will be permitted subject to the following criteria:*

d) The provision of a buffer zone up to 15m in width, or as otherwise determined by the Planning Authority according to the proposed operations, where industrial and other sensitive land uses adjoin, to ensure amenities of adjacent properties are not adversely affected and that there is no significant amenity loss by way of noise, smell or other nuisance to immediate neighbours or the area in general as a result of the proposed development, lighting and the amount of traffic generated or the servicing arrangements.

Section 15.15 Agricultural Development states the following policy objective;

Policy AGP1 *To permit development on an active and established agricultural or forestry holding where it is demonstrated that:*

e) The proposal will not result in a detrimental impact on the amenity of residential dwellings outside of the holding including potential for issues arising from noise, smell and pollution. Where a development is proposed within 100m of any residential property not located on the holding within the rural area (i.e. outside of a designated settlement) written consent, witnessed by a solicitor or a peace commissioner, from the adjoining property owner stating there is no objection to the proposal must be provided.

Section 15.20 Renewable Energy states that;

The most common form of renewable energy developments in County Monaghan are wind farms. However other forms of development can include biomass, solar, geothermal and hydro power. In assessing planning applications for these types of development, particular regard will be shown to the following:

- Level of noise disturbance and where applicable shadow flicker.

Section 15.30 Construction & Environmental Management Plan states that;

Large scale planning applications will be required to be accompanied by a Construction and Environmental Management Plan (CEMP) that shall incorporate relevant mitigation measures indicated in any lower tier Environmental Impact Assessment or Appropriate Assessment. CEMPs typically provide details of intended construction practice for the proposed development. The following information and issues should be included:

i) Details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels.

Section 15.31 Public Assets & Infrastructure has the following policy objective;

Policy DM2: *To assess proposals for development in terms of, inter alia, potential impact on existing adjacent developments, existing land uses and/or the surrounding landscape. Where proposed developments would be likely to have a significant adverse effect on the amenities of the area through pollution by noise, fumes, odours, dust, grit or vibration, or cause pollution of air, water and/or soil, mitigation measures shall be implemented in order to eliminate adverse environmental impacts or reduce them to an acceptable operating level.*

The Draft Strategic Environmental Assessment (Environmental Report) of the Draft Development Plan (Feb 2018) states in Section 4.7 Air and Climatic Factors that;

The Plan facilitates improvements in sustainable mobility, thereby facilitating reductions in and limiting increases of greenhouse gas emissions. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic. This is particularly relevant through the accommodation of new development, including consolidation, within each of the settlements that are provided with land use zoning by the Plan. Land-use planning contributes to what number and what extent of journeys occur. By addressing journey time through land use planning and providing more sustainable modes and levels of mobility, noise and other emissions to air and energy use can be minimised. Furthermore, by concentrating populations, greenfield development – and its associated impacts – can be minimised and the cost of service provision can be reduced.

3. Description of the Action Planning Area

3.1 Extent of the area

In County Monaghan, 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 2,500km of public road in Co. Monaghan of which 107 km is national road, comprising four national routes. One of these national roads, the N2 is included in this Noise Action Plan and some sections of non-National road were also designated a major road and included in the study. The total road area considered in this Noise Action Plan is approximately 80km.

Noise maps have been produced for;

- N2, from the Louth/Monaghan border at Aclint Bridge, on the River Fane to the Monaghan/Tyrone border at Moy Bridge, on the River Blackwater. This road bypasses the major towns of Carrickmacross, Castleblayney and Monaghan and runs through the village of Emyvale, with a total distance of approximately 75km.
- The following Regional Roads in Monaghan, Castleblayney and Carrickmacross towns, a distance of approximately 4.8km in total;
 - o R937, Dublin Road, Monaghan town
 - o R162, Glen Road, Monaghan Town
 - o R181, Main Street Castleblayney
 - o R938, York Street, Castleblayney
 - o R927 Main Street, Carrickmacross

Maps of the areas included in the Noise Action Plan are provided in Appendix 1.

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 1km each side of the centreline of the road. The Regulations require the Action Plan covers 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 55dB(A) or greater or an L_{night} value of 50dB(A) or greater anywhere within the area. For noise modelling purposes, the 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, from examination of the noise maps produced in Appendix 1, the $L_{den} \geq 55$ dB(A) zone and the $L_{night} \geq 50$ dB(A) zone extends approximately 500m from the centre line of the major road. Therefore, for the purposes of noise action planning, all lands within 500m 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.

3.2 Description of the topography/ geographical location.

Monaghan is one of the country's landlocked counties, characterised by rolling drumlin hills and wetlands. It contains 129,093 acres of land or 1.9% of the total area of the Republic of Ireland. Of this total, 69% of the area is dedicated to agriculture (mainly grassland), 4% to forestry and 1.7% covered by lakes. County Monaghan is located in the Border, Midlands and Western Region as defined under the National Spatial Strategy (NSS). It is one of three Ulster Counties bordering with Northern Ireland. The county shares 108 miles of border with Northern Ireland, giving the county the longest share of border between Northern Ireland and the Republic of all southern counties. There are six counties in total that border Monaghan; Fermanagh, Tyrone and Armagh in Northern Ireland and Louth, Meath and Cavan in Southern Ireland. Two of these counties are significant in terms of this noise action plan as the N2 adjoin them; Louth and Tyrone.

3.3 Description of the general population

County Monaghan has a population of 61,386 (2016 census). It is a predominantly rural county with approximately 68% of its population living in population centres of less than 1,000 people. There are five major towns in the county: Monaghan (7,678), Carrickmacross (5,032), Castleblayney (3,607), Clones (1,608) and Ballybay (1,241).

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, single unit dwellings predominate, comprising once off rural housing. There are some areas of ribbon development adjacent to sections of national and non-national roads near built up areas and a number of rural houses adjacent to the road, 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. The newest section of roadway in Monaghan, the N2 bypass of Carrickmacross and Castleblayney had noise mitigation measures (noise barriers) included within the design process.

3.4 Location of noise sensitive groups

A noise sensitive location as 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 3.1.

- All residential properties within 500m of the centreline of the N2.
- In a built-up area, only residential properties in the immediate vicinity of the major road.
- Schools located along the N2, and the sections of the R937, R162, R181, R938 & R927 also designated as major routes.

3.5 Description of the main infrastructure/services.

Monaghan provides an important transport link between the north and south and the N2 which travels through the county has been recognised as an important strategic link servicing Derry and the North West.

4. The Responsible Authority for Action Planning

4.1 Name and contact details for the Responsible Authority

In County Monaghan, the only noise source to be considered by the Action Planning Authorities relates to major roads in excess of 3 million vehicles per year, as required under the Regulations. Monaghan County Council is considered responsible planning authority in developing the Noise Action Plan.

The contact details are;

Noise Action Plan
Road Design Office
Monaghan County Council
MTEK II
Knockaconny
Armagh Road
Monaghan
Co. Monaghan
Tel: 047 30596
Email: roads@monaghancoco.ie

4.2 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 <http://www.epa.ie/downloads/advice/noisemapping/>.

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

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. Monaghan County Council Roads Department is responsible for the planning, design, improvement and upkeep of the road network within the county. Non-national roads are funded through the Department of Transport, Tourism and Sport and from the Council's own resources.

4.3 Description of any noise-reduction measures already in force within the action planning area, or projects in preparation

Three sections of bypass were constructed in the along the N2 in between 2005-2007. These diverted traffic (hence noise) away from towns and concentrate it in less built up areas. Noise barriers formed part of the Carrickmacross and Castleblayney bypass schemes on sections of road near houses.

N2 Carrickmacross bypass: The N2 Carrickmacross to Aclint Road Realignment involved the construction of 8.5 km of single carriageway roadway to improve the existing road alignment and provide a bypass for the N2 National Primary route of Carrickmacross town. This road was opened to traffic on 21st January 2005.

N2 Monaghan bypass: The reconstruction and realignment of 2.3 km of the N2 from the townland of Corlat south of Monaghan Town to the existing N2/N12 junction in the townland of Coolshannagh to the north was opened on 25th September 2006 and reduces the volume of traffic for the Town.

N2 Castleblayney bypass: Realignment of the existing N2 National Primary route from the townland of Tullybuck north of Clontibret to the townland of Drumcrew south of Castleblayney was officially opened to traffic on 5 November 2007. This road scheme was 15.8km in length.

N2 Monaghan to Emyvale Road Widening Scheme: This scheme ran from the Townland of Coolkill East to the Townland of Corracrin, a distance of 8.3km. A full noise assessment was undertaken for this work at planning application stage, in line with TII guidelines.

N2 Clontibret to A5 Northern Ireland Road Scheme: A preferred route corridor (400m) wide has been selected to upgrade the N2 between Clontibret and Northern Ireland, a distance of 28km. The preliminary design stage for this road scheme is due to commence in June 2018. The requirements of the Noise Action Plan, in compliance with the Regulations will be taken into account for this road scheme.

N2 Ardee to Castleblayney: There are future plans in place by Monaghan County Council to upgrade the N2 between Ardee and Castleblayney, to provide online/offline realignment between these towns.

No other noise-reduction measures are planned or in preparation in the action planning area.

5. Summary of the results of the noise mapping

5.1 Overview of the preparation of the noise map

A noise map is a graphical representation of the various noise levels in a particular area with different colours representing different noise levels in dB(A). The TII produced the noise maps for all major roads. In County Monaghan roads with >3million vehicle passages per year were identified for noise mapping under the Regulations. For noise modelling and noise mapping purposes, the TII included the N2, N53, N54 and the R937, R162, R181, R938 & R927, even though the N53 and N54 in Co. Monaghan did not reach the threshold of 3million vehicles per year. The N2 and short sections of the R937, R162, R181, R938 & R927 are included in this Noise Action Plan.

A noise map is produced using computer software and the TII used B&K *Predictor Version 11.2* Noise Model. To conduct noise modeling using the software and to produce the noise map a number of variables are determined in order to correctly represent the amount of noise generated at the source, in the case of roads, by traffic driving on the roads. Information on the topography of the area, buildings and barriers were also input into the model.

5.2 Presentation of results

Two noise maps were produced by the TII in 2017 for the County's major roads; one showing the L_{den} (dB) and one showing the L_{night} (dB) noise contour bands, with additional details of area, buildings and population exposed. Note the overall map provided by TII for Monaghan roads included the N53 and N54 which fall under the 3million vehicle per year threshold and are not included in this Action Plan.

The noise maps for the N2 and minor roads around Monaghan, Castleblayney and Carrickmacross are provided in Appendix 1, with different colour coded bands showing the noise level in 5dB bands from the road centerline. The L_{den} map shows the loudest noise is the road itself, while moving out from the road, the noise level reduces. The lowest noise band shown is 55-59dB (orange) and beyond this the noise level from the road (L_{den}) is not reported under the Regulations i.e. <55dB.

The L_{night} map similarly shows noise contours in 5dB bands. The highest noise on the road itself at night is in the 65-69dB range, with no L_{night} noise >70dB for any of the major roads. Moving out from the road, the noise level decreases with distance with the lowest noise band shown as 45-49dB (yellow) and beyond this the noise level from the road (L_{night}) is not reported under the Regulations i.e. <45dB.

As detailed in Section 3.1, noise from major sources is regarded as affecting an area if it causes either an L_{den} value of 55dB(A) or greater or an L_{night} value of 50dB(A) or greater anywhere within the area. Therefore, the extent of the orange band (55-59dB) in the L_{den} map and the pale yellow band (50-54dB) in the L_{night} map is the extent of the area eligible for inclusion in the assessment stage of this Noise Action Plan. This area extends approximately 500m from the centre line of the main road. On some stretches of road, the extent is much less and some areas, it may be slightly greater.

Based on data supplied from the TII regarding the noise modeling, the following tables show the exposure statistics over an average 24hour period for major roads (includes the N2, N53, N54 and regional roads in town).

Table 2. L_{den} – Population Exposure Statistics for Major Roads in Co. Monaghan (from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)

Noise Level Band dB	Approximate No. of People (Round 3 – 2017)
55-59	1,521
60-64	1,232
65-69	1,378
70-74	150
>75	3

Table 3. L_{den} - Area, Houses and Population Exposure Statistics for Major Roads (from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)

Noise Level Band dB	Approximate Area km ²	Approximate No. of Dwellings	Approximate No. of People Exposed
>55	32	1,890	4,284
>65	7	799	1,531
>75	0	1	3

Table 4 Population Exposure Data, (L_{night}) for Major Roads in Co. Monaghan, (from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)

Noise Level Band dB	Approximate No. of People (Round 3 – 2017)
50-54	1,249
55-59	1,533
60-64	206
65-69	3
>70	0

Table 5. L_{night} - Area, Houses and Population Exposure Statistics for Major Roads (from TII Data covering the N2, N53, N54 and R162, R937, R181, R938, and R927)

Noise Level Band dB	Approximate Area km ²	Approximate No. of Dwellings	Approximate No. of People Exposed
>50	17	1,380	2,991
>60	3	123	209
>70	0	0	0

5.3 Limitations of the maps/results

The figures provided in Tables 2-5 include the N53 and N54, which are not required to be covered under the regulations, so are not considered under this Noise Action Plan. Therefore, the figures provided are higher than the actual area, number of dwellings and number of people exposed under this Noise Action Plan.

The strategic noise maps produced for this Noise Action Plan provide a best estimate, rather than a complete and wholly accurate account of noise in a given area. There are no actual noise measurements included in this model to verify results. Therefore, it will be necessary to confirm that the noise levels indicated by the strategic noise maps are being experienced by the population within a certain area, prior to the review of potential noise mitigation measures and any subsequent commitment of budget.

Under the Regulations it is required to delimit quiet areas in the open countryside. This is an area that is “undisturbed by noise from traffic, industry or recreational activities.” The strategic noise mapping undertaken did not delimit quiet areas in open countryside. This is due to the nature of the assessed noise source i.e. traffic noise and due to the area of coverage of the strategic noise mapping, which is near to major sources and therefore not at locations which will be undisturbed by them.

The EPA guidelines on Noise Action Plans requires that the onset level for assessment of noise mitigation i.e. the level at which noise mitigation should be considered by the Local Authority is L_{den} 70dBA and L_{night} 57dBA. The strategic noise maps produced do delimit the $L_{night} >57dB$ noise band.

6. Identification of areas to be subjected to noise management activities

6.1 Description of the criteria/ decision matrix to be used for the identification of areas qualifying for action

The results of the strategic noise maps provide an indication of the extent of noise exposure near major roads. For assessment purposes, the EPA Guidelines propose onset levels for assessment of noise mitigation measures and onset levels for assessment of noise level preservation where they are good, as detailed in Table 6. The noise levels in Table 7 represent an annual average 24-hour period.

Table 6. Onset Levels for Assessment of Noise

Onset Level for	L _{den} dB	L _{night} dB
Assessment of Noise Mitigation Measures	70	57
Assessment of Noise Level Preservation where they are good	55	45

From examination of the Noise Maps there are a number of people and dwellings that are affected by an L_{den} noise >70dB and a greater number affected by L_{night} noise >57dB, as this limit is lower so extends out a greater distance from the road. To assess these locations, the EPA Guidelines recommend a decision support matrix, the objective of which is to provide a consistent approach to establish locations where noise mitigation is required to be assessed.

A decision support matrix is a table which takes into account factors such as noise exposure level, type of noise receptor and type of noise source, to facilitate the assessment of the relative importance of each. Table 7 shows the matrix used for this Noise Action Plan. This matrix is conducted for each noise sensitive location or group of noise sensitive locations within an area. It contains a score rating under three different categories, based on the information specific to each location. The total score is calculated and a score of 17 or above indicates locations that should be shortlisted for further assessment.

From examination of the matrix in Table 7, the only "type of noise source" in Monaghan relevant to this Noise Action Plan is road noise. The "type of location" along the major roads in Monaghan is primarily one-off houses i.e. residential. Around towns the location is classified as commercial and other areas e.g. schools is classified as Noise Sensitive Locations. As schools are not functional at night, they are not considered noise sensitive locations during this period. Therefore, L_{night} readings are not applicable in the decision support matrix for schools.

Table 7. Decision Support Matrix to Identify and Prioritise Noisy Areas

Location:				
Decision Selection Criteria		Score Range	Score Range	Subtotal
		L_{den}	L_{night}	
Noise Band	<45	5	6	
	45-49	4	5	
	50-54	3	4	
	55-59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	≥80	5	7	
Type of Location	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
Type of Noise Source	Air	3	4	
	Industry	2	3	
	Rail	2	3	
	Road	3	4	
Total Score				

6.2 Quiet Areas

A Quiet Area is an area where environmental noise levels are deemed to be good. As detailed in Table 6, the onset level for noise preservation where they are good is L_{den} 55dBA and L_{night} 45dBA.

Under the Regulations there is a requirement to delimit Quiet Areas within agglomerations. However, as there are no agglomerations (population >100,000) within County Monaghan, 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 the 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 Monaghan County Council Planning Department for future developments. Any proposals to designate Quiet Areas would be discussed with the EPA for approval.

6.3 Application of the criteria/matrix.

Table 6 provides the threshold noise levels for onset of assessment for noise mitigation and onset levels for preservation of noise levels where they are good.

Table 7 provides the Co. Monaghan decision support matrix, which can be used to provide a rating scheme which would initially help to identify locations beyond the assessment thresholds, but also provide the process of ranking the locations to help develop an initial prioritisation for further investigation.

The decision support matrix will be used to draw up a short-list of potential areas for consideration for further action for noise mitigation, which takes into account any area with a score of approximately 17 or above. Further action for noise mitigation is subject to availability of funding over the lifetime of the plan.

6.4 Results of the analyses

An assessment of all noise sensitive locations along the N2 and other major routes in Monaghan, Castleblayney and Carrickmacross, above the onset level of $L_{den} >70\text{dBA}$ and $L_{night} >57\text{dBA}$ was examined as part of this Noise Action Plan. The preliminary assessment shows that there are approximately 18 houses with a matrix score of 17 or greater. These are one-off houses that lie very close to the N2 at different locations along the route. Houses in towns of Emyvale, Monaghan, Castleblayney and Carrickmacross are in a commercial location, which results in a lower score in the decision support matrix, therefore none of these dwellings exceed the matrix score of 17.

An assessment of all schools near the N2 and other major roads was examined to determine if any fell within the above bands. As schools do not operate at night (23:00-07:00), the L_{night} levels were not taken into account as the building ceases to be a noise sensitive location at night. None of the schools along the N2 major route fell into the $L_{den} >70\text{dBA}$ category.

7. Mitigation and protection measures

7.1 Processing Areas above Onset of Assessment Criteria

Any areas identified as being priority for further action will be further assessed to confirm that the noise levels stipulated in the strategic noise mapping are experienced by the properties and population within the areas being addressed.

This will be done by reviewing and refining the strategic noise model and by undertaking field survey work to measure noise levels. Once the extent of the noise impact has been confirmed for the locations under review, the potential noise mitigation measures will be investigated and a cost benefit analysis undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action.

7.2 Preservation of Areas Below & Between Protection Threshold

The current Planning and Licensing system will manage potential development within the Monaghan area, where noise impact of developments is required to be assessed before planning is granted.

Any potential noise impacts from increased traffic on the N2 can be addressed by reviewing and revising this Noise Action Plan every 5 years or sooner, where a material change in environmental noise occurs in an area.

7.3 Future Developments and Noise Impacts

Two proposed projects on the N2 will alter the noise environment for residents along this route; the N2 Clontibret to A5 Northern Ireland Road Scheme, for which the preliminary design stage is due to commence in June 2018 and the N2 Ardee to Castleblayney online/offline realignment upgrade works, which are also proposed. The road developments will be undertaken in line with TII guidelines. In addition, the siting of residential properties in close proximity to the N2 will be undertaken giving careful consideration of the noise action plan and noise results obtained from the TII Noise Mapping exercise.

7.4 Confirming the Extent of Noise Impact

The extent of the noise impact from major roads will be confirmed by reviewing and refining the noise models if appropriate and by undertaking field survey work to measure noise levels. The field survey work will also ascertain whether the property being assessed has noise sensitive rooms on the most exposed facades or whether noise mitigation measures were already present which may not have been taken into account by the noise mapping model.

7.5 Review of Possible Mitigation Measures

The decision support matrix analysis identifies locations for which noise mitigation measures are considered appropriate. Following on from this, a review of available measures will be undertaken. For this process, a balanced approach will be used to help sustainably manage the interests of the residents, the aims of the Noise Action Plan, the Development Plan, the feasibility of the measures and available funding.

In general, the properties that warrant further investigation from the TII noise mapping exercise undertaken as part of this Noise Action Plan are within approximately 5m of the N2, which makes mitigation measures difficult. The N2 is the major traffic route North-

South within the county so reducing traffic volumes is not an option currently. Providing barriers is prohibited by the fact that the houses are too close to the road to construct a wall in front of them and the barrier would have to be long and high to achieve significant sound reduction, as the source and receiver are so close together, which would be a major visual intrusion on the properties close to the N2.

Some examples for general mitigation of road traffic noise at national/regional level and at local level which can be examined under this Noise Action Plan include:

- **At EU level**, vehicle noise emissions and tyre noise regulations would be set.
- **At National level**, national planning guidance or noise regulations would be set, similar to those in the UK such as the UK ProPG: Planning & Noise, Professional Practice Guidance on Planning and Noise for New Residential Developments.
- **At Regional level** transport policy objectives may be set such as;
 - Improved public transport;
 - Getting people out of cars; and
 - Increasing bus, train, bicycle journeys.
- **At Local Authority level** there are powers to
 - Replace diesel vehicles with compressed natural gas / electric;
 - Designate truck routes;
 - Restrict night time delivery or limits;
 - Control noise emitting and noise sensitive development;
 - Set speed limits;
 - Introduce road closures / traffic routing;
 - Resurface roads
 - Smooth broken surfaces;
 - Use low noise road surfaces on higher speed routes;
 - Define planning zones:
 - Locate noise sources and population with consideration to potential for noise impact;
 - Require façade insulation:
 - Require secondary or triple glazing as a mitigation measure;
 - Specify building construction details for new developments exposed to environmental noise;
 - Specify noise barriers;
 - Liaise with the public groups; and
 - Set long term targets
- Monaghan County Council has the option to consider or undertake the following:
 - Traffic management – routes and HGVs;
 - New road construction (bypass);
 - Re-surfacing of roads;
 - Vehicle speed management;
 - Noise screening measures; and
 - Façade insulation measures.

From the above list it is apparent that the Monaghan County Council only have powers to act within a number of the possible mitigation scenarios.

Research has been undertaken within EC funded projects looking into the design of noise mitigation measures and estimates of the extent of costs and benefits. The conclusion is

often that there is no single measure which provides the optimal solution, rather a range of measures, each of which may provide an incremental improvement in the situation.

These actions against noise will be considered during the assessment of possible noise mitigation for sites identified through the decision support matrix. The Noise Action Plan will be considered within local and regional development plans, road maintenance proposals and the planning process.

7.6 Assessing Effectiveness of Potential Measures

Once the list of areas for potential mitigation are drawn up and prioritised, the potential measures to reduce noise will be examined on a case by case basis. This will then be subject to a cost benefit analysis, in order to develop a prioritised list of actions to be undertaken. As funding for national roads may come from the TII, the cost benefit analysis will be done in consultation with the TII.

7.7 Budget and Cost Benefit Analysis

The cost-benefit analysis will address lifetime construction and maintenance costs against noise reduction benefit i.e. reduction in sound level achieved and the number of people it benefits. As funding from national roads will come from the TII, the cost benefit analysis will be done in conjunction with the TII.

7.8 Outcome

Areas with predicted noise levels above the onset of assessment criteria will be prioritised using a standardised decision support matrix. This will follow a review to confirm that the predicted noise levels are accurate. Mitigation measures outlined in Section 7.5 will be assessed for each area and following a cost-benefit analysis, a list of achievable actions for noise mitigation will be compiled and agreed with the TII, where required.

8. Public Participation

The Regulations require that Action Planning Authorities consult with the public when drawing up and revising Action Plans. Therefore, submissions or observations on the Draft Plan are invited from the public.

The Draft Noise Action Plan will be put on public display for 6 weeks, beginning on 7th June 2018, with a further 2 weeks for submissions, ending at 5pm on 1st August 2018. During this time, written invitations are invited. A notice was placed in the local paper, the Northern Standard in advance advising the public of the locations where and when the plan was on display.

- Monaghan County Council Offices, Glen Road, Monaghan
- Monaghan County Council Offices, M-TEK Building 1, Armagh Road, Monaghan
- Monaghan County Council, Castleblayney/Carrickmacross Civic Offices, Riverside Road, Carrickmacross
- Monaghan County Council, Ballybay/Clones Municipal District Office, Monaghan Rd, Clones

A copy of the Draft Noise Action Plan is also available to download on the Monaghan County Council website www.monaghancoco.ie

Comments, observations or suggestions in relation to the plan can be made in writing to the following address:

Draft Noise Action Plan
Road Design Office
Monaghan County Council
MTEK II
Knockaconny
Armagh Road
Monaghan
Co. Monaghan

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

- Environmental Protection Agency
- National Roads Authority
- Louth County Council
- Newry & Mourne District Council
- Dungannon & South Tyrone Borough Council
- Fermanagh District Council
- The Department for Regional Development (DRD) (Northern Ireland)
- Department of Environment, Heritage and Local Government (DEHLG)
- Department of Transport
- An Taisce
- Public Participation Networks

9. Implementation Plan

This Noise Action Plan covers the period 2018 – 2023.

9.1 Roles and Responsibilities.

Monaghan County Council is the designated Action Planning Authority for this Noise Action Plan and will endeavour to review and where necessary revise this Noise Action Plan.

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

The 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 the TII and the EPA. The 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 the TII is not responsible for their upkeep.

9.2 Targets and Objectives

This 5-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.

9.3 Programme of Works

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

Year 1

- Devise a list of areas from the strategic noise maps for which further assessment may be warranted (i.e. monitoring). Prioritise these areas.
- Ensure that accurate traffic data is being collected from major roads for future requirements.
- Identify the budget for external noise consultants and begin verification process on the areas of most of concern regarding noise exposure. This will entail re-checking the noise model and verification of the model by on-site noise measurements.
- Consult with the EPA on the process of delimiting Quiet Areas in line with their guidelines.
- Conduct a feasibility study to identify possible mitigation measures.
- Conduct cost-benefit analysis for noise mitigation and identify funding sources and the potential budget available for these works, including a timetable for implementation.
- Identify areas for noise mitigation, apply for statutory approval where applicable and apply for funding.
- Commence the implementation of relevant noise management actions where budgets permit.

Years 2-4

- Continue with the implementation of relevant noise management actions where budgets permit.
- Evaluate the effectiveness of works, through re-measurement.

Year 5

- Review the success of the action plan
- Incorporate action planning measures and best practice environmental noise policy into new Development Plan and Local Area Plans.

The first Noise Action Plan 2013-2018 included the N2, N53, N54 and relevant roads in Monaghan, Castleblayney and Carrickmacross. In year one of the plan a matrix assessment was undertaken and identified all houses with a matrix score of 17 or greater. In year two of the plan, monitoring was undertaken at selected properties along the major routes to verify the noise model readings and in general a good correlation was found. There were no noise reduction measures undertaken or road upgrade works over the remaining years of the first Noise Action Plan.

9.4 Evaluation, Review and Corrective Action Programmes

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

There are a number of risk factors associated with the delivery of this Noise Action Plan, particularly financial risks. Some critical elements of the Action Plan are outside the control of Monaghan 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 2023 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 new noise maps will also be carried out, giving an indication of the change in environmental noise levels and the numbers of people exposed.

10. Summary and Conclusions

The Environmental Noise Regulations 2006, 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, the TII.

In County Monaghan only traffic noise on major roads in excess of 3 million vehicles per year applies to this Noise Action Plan. This includes the N2 and short sections of the R937, R162, R181, and R938 in the towns of Monaghan, Castleblayney and Carrickmacross. Strategic noise mapping in respect of those roads, was carried out by the National Roads Authority in 2017.

This Noise Action Plan, which is based on the results of these noise maps, was prepared by Monaghan County Council. The Noise Action Plan describes the action planning area and the responsible authorities. It discusses existing noise management legislation and guidance. A summary of the results of the strategic noise mapping is included and the areas that are to be subject to noise management activities are identified. Mitigation and protection strategies are set out for these areas and an implementation plan has been drawn up.

The Noise Action Plan covers a five-year period beginning in 2018 and must be reviewed and revised if necessary at least every 5 years. The views of the public were taken into account by conducting an 8-week public consultation process on the Draft Plan. The results of the public participation were taken into account when preparing this document. Other bodies including the National Roads Authority, adjacent Local Authorities and other relevant organisations were consulted on the draft document. Guidance and advice was obtained from the designated national authority, the EPA, at all stages of the process.

The results of the strategic noise mapping indicate that, in the County as a whole, an estimated 18 dwellings along the N2 have predicted noise levels above the onset levels for assessment of noise mitigation measures and no schools with elevated noise levels were identified.

The Noise Action Plan has been drawn up with the twin aims of:

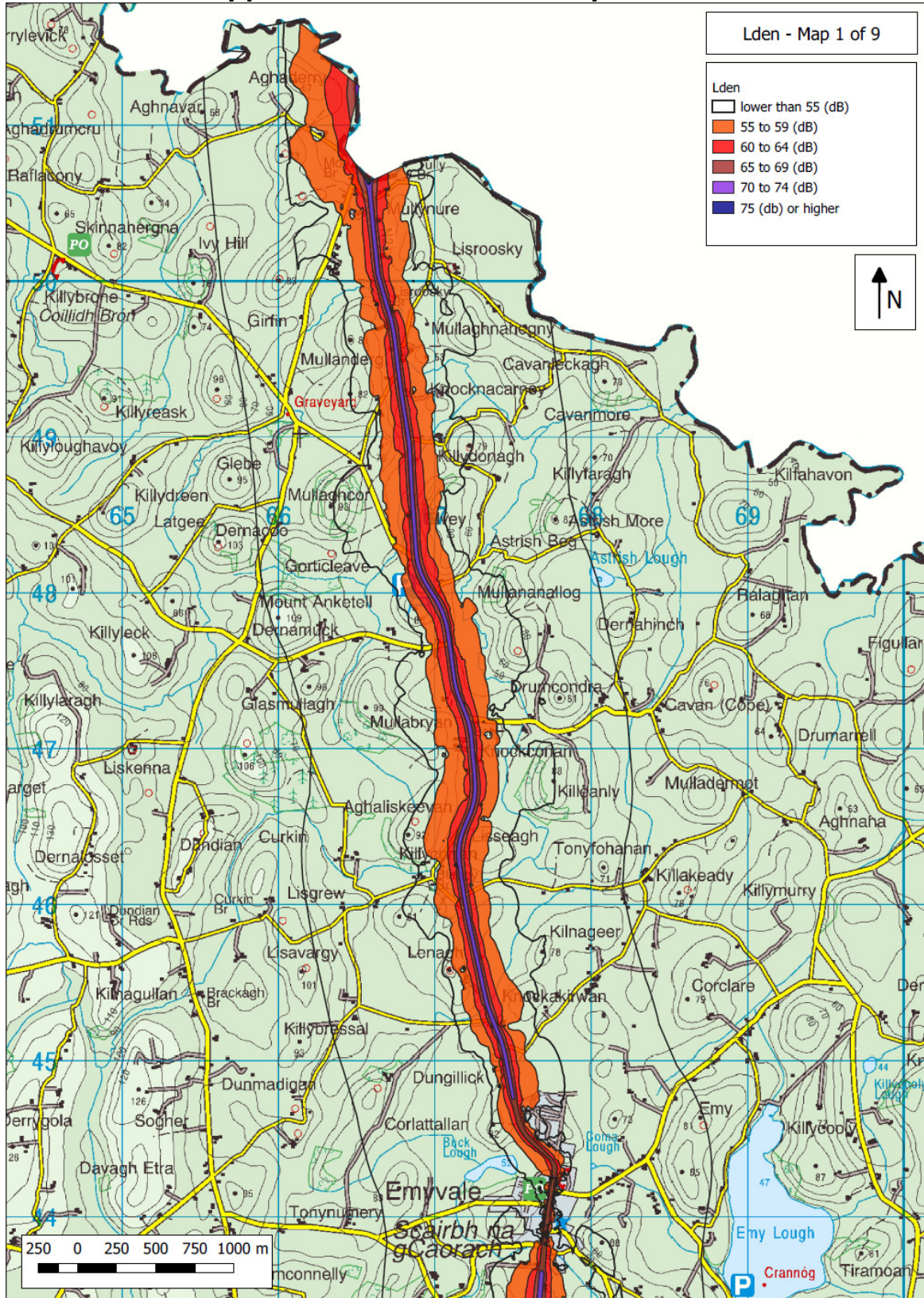
- Protecting the future noise climate
- Improving the existing noise climate where necessary

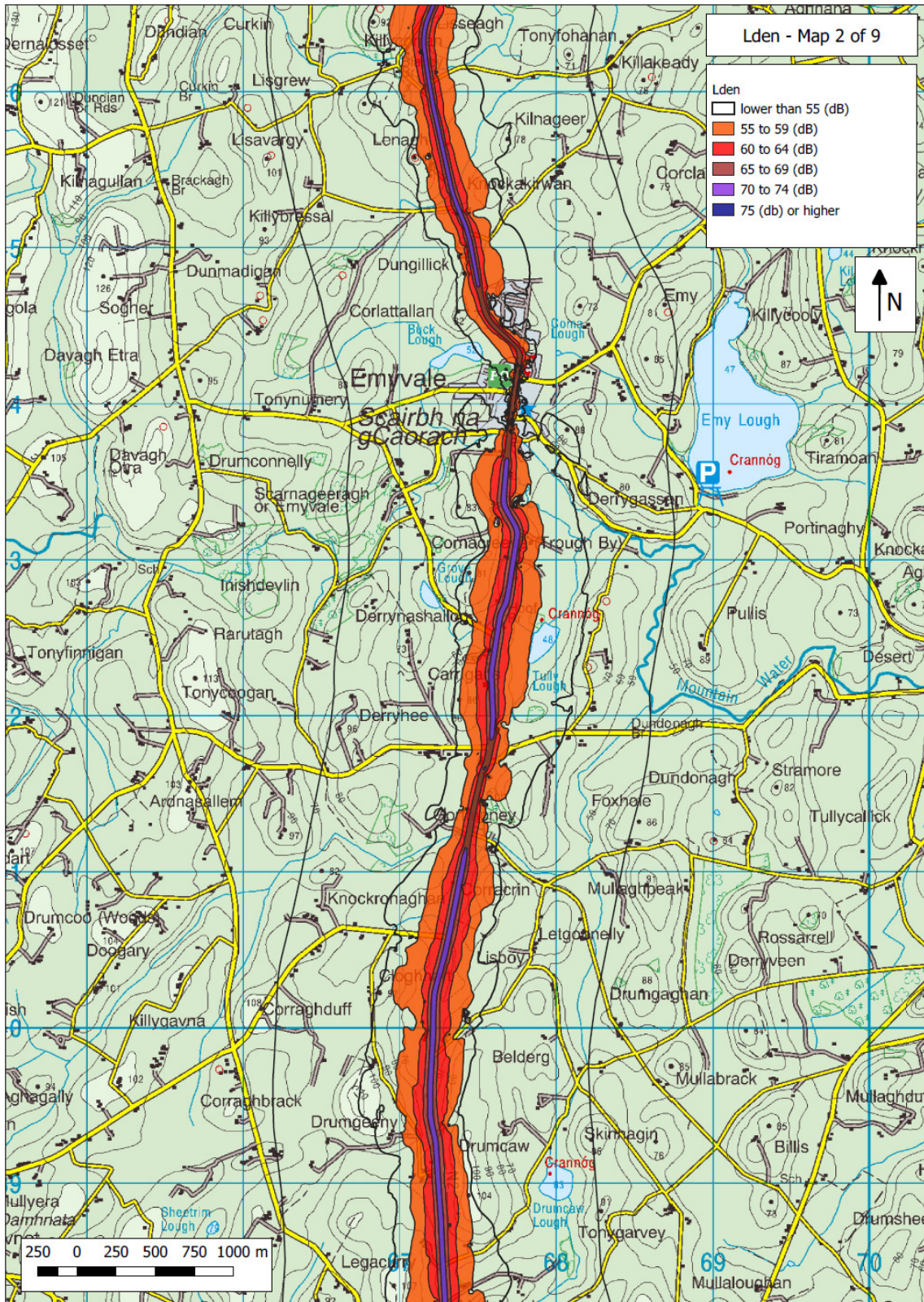
With this in mind the following key actions are proposed, subject to the availability of resources;

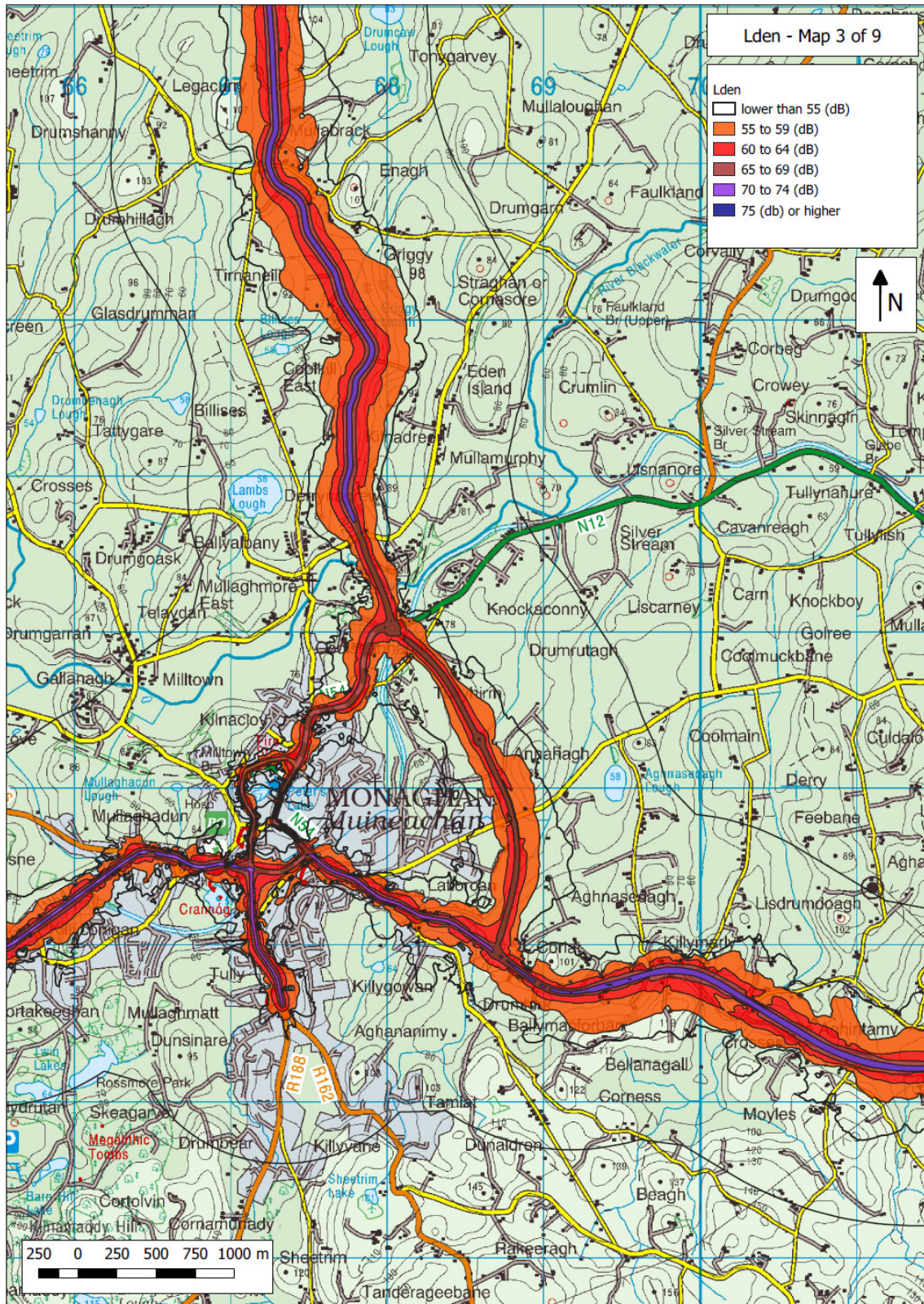
1. The potential noise impact of future development will be managed through the Planning and Licensing processes, including existing provision for Environmental Impact Assessments. The potential noise impact from increased traffic on major roads will be adequately addressed by reviewing (and revising, if necessary) the Noise Action Plan every 5 years, or sooner where a material change in environmental noise in the area occurs.
2. Carry out an assessment of Quiet Areas in open countryside, following the EPA screening process and from a review of the landscape character assessment for the

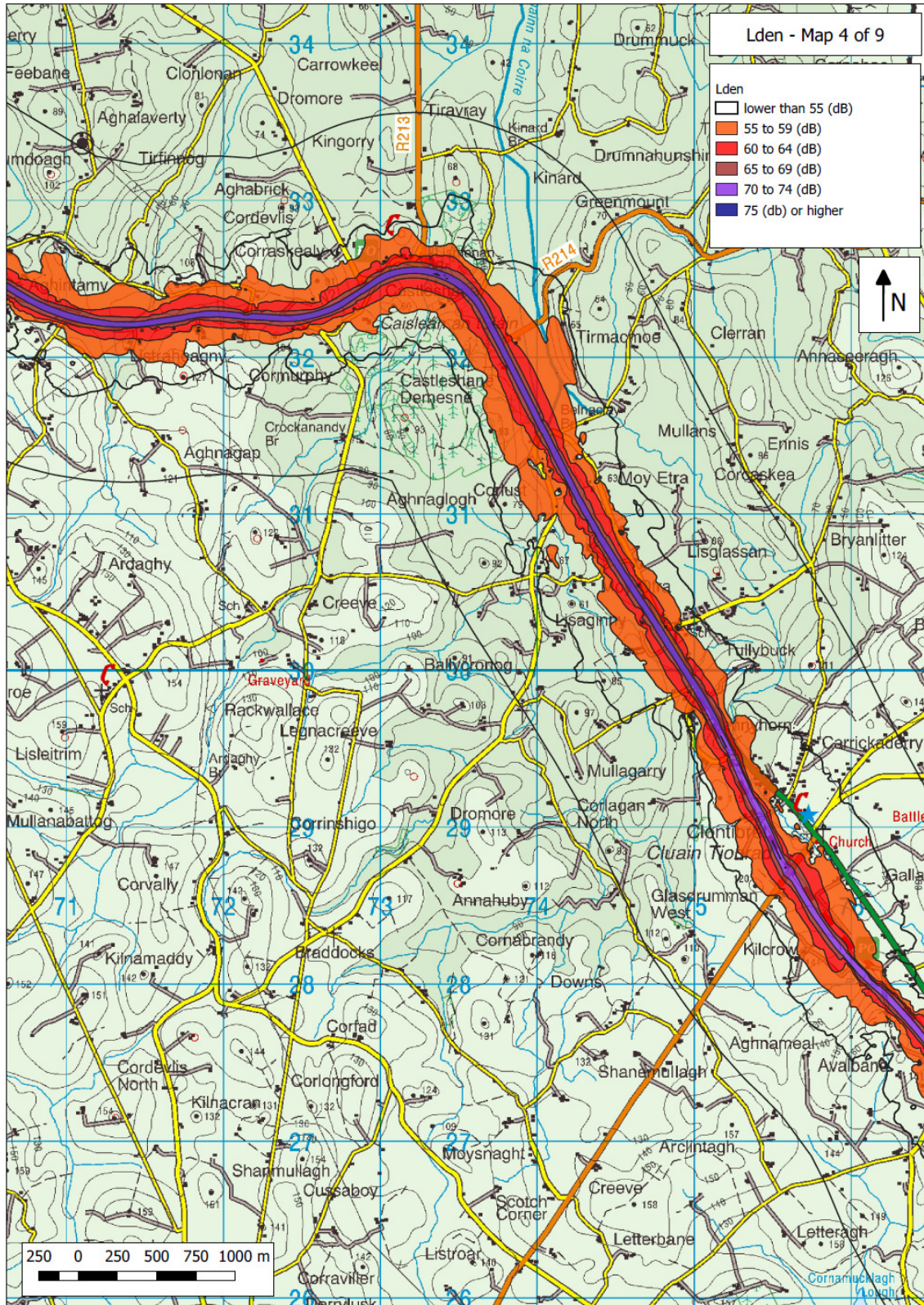
- County. Identify areas for delimiting and submit proposal to EPA and Minister for approval.
3. The accuracy of predicted noise levels will be confirmed and potential noise mitigation measures identified on a priority basis. A cost-benefit analyses on potential actions will be carried out and a list of beneficial, achievable actions for noise mitigation drawn up.
 4. A budget will be identified with each relevant authority and a programme of works agreed and implemented.

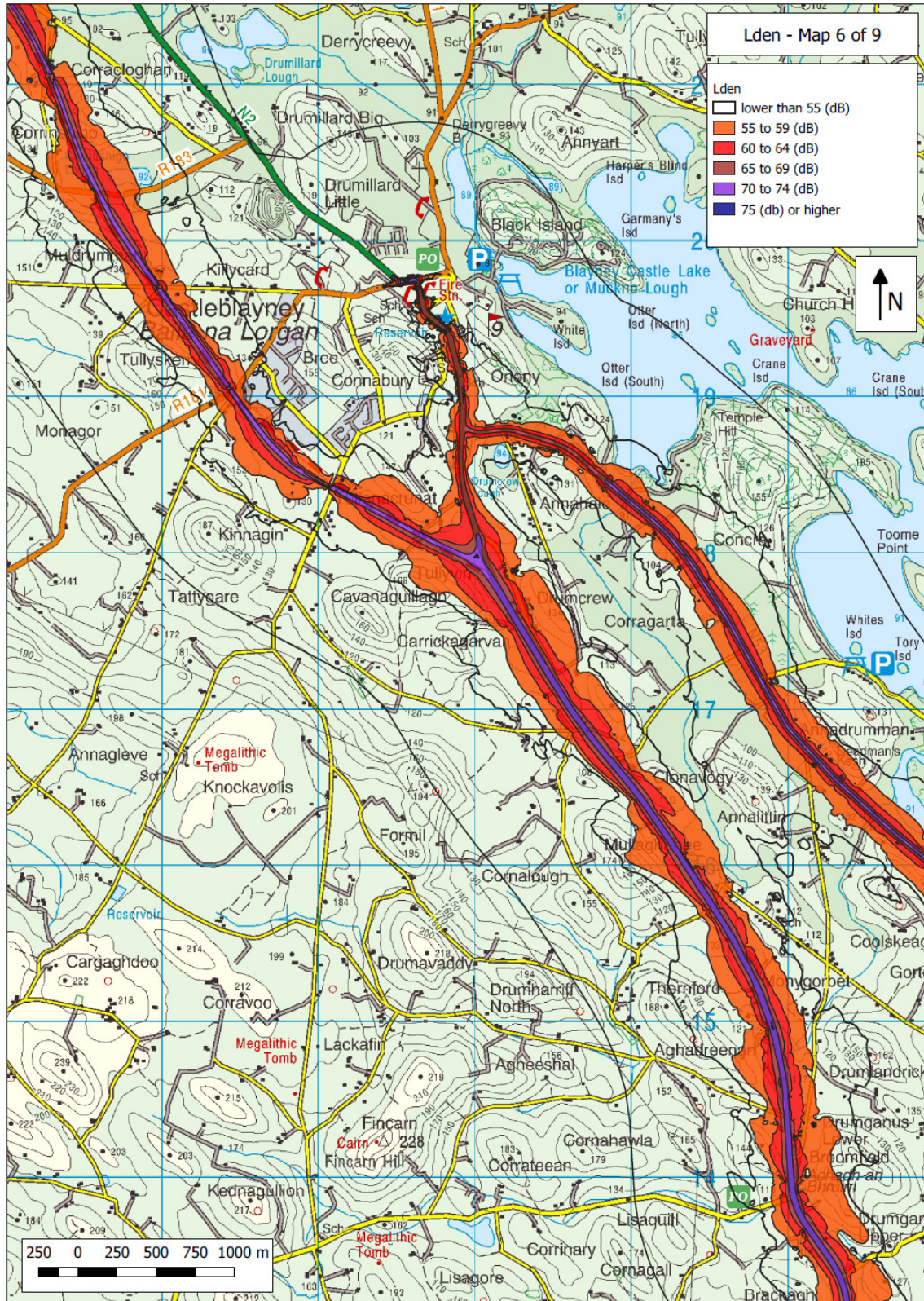
Appendix 1a - L_{den} Noise Maps of N2

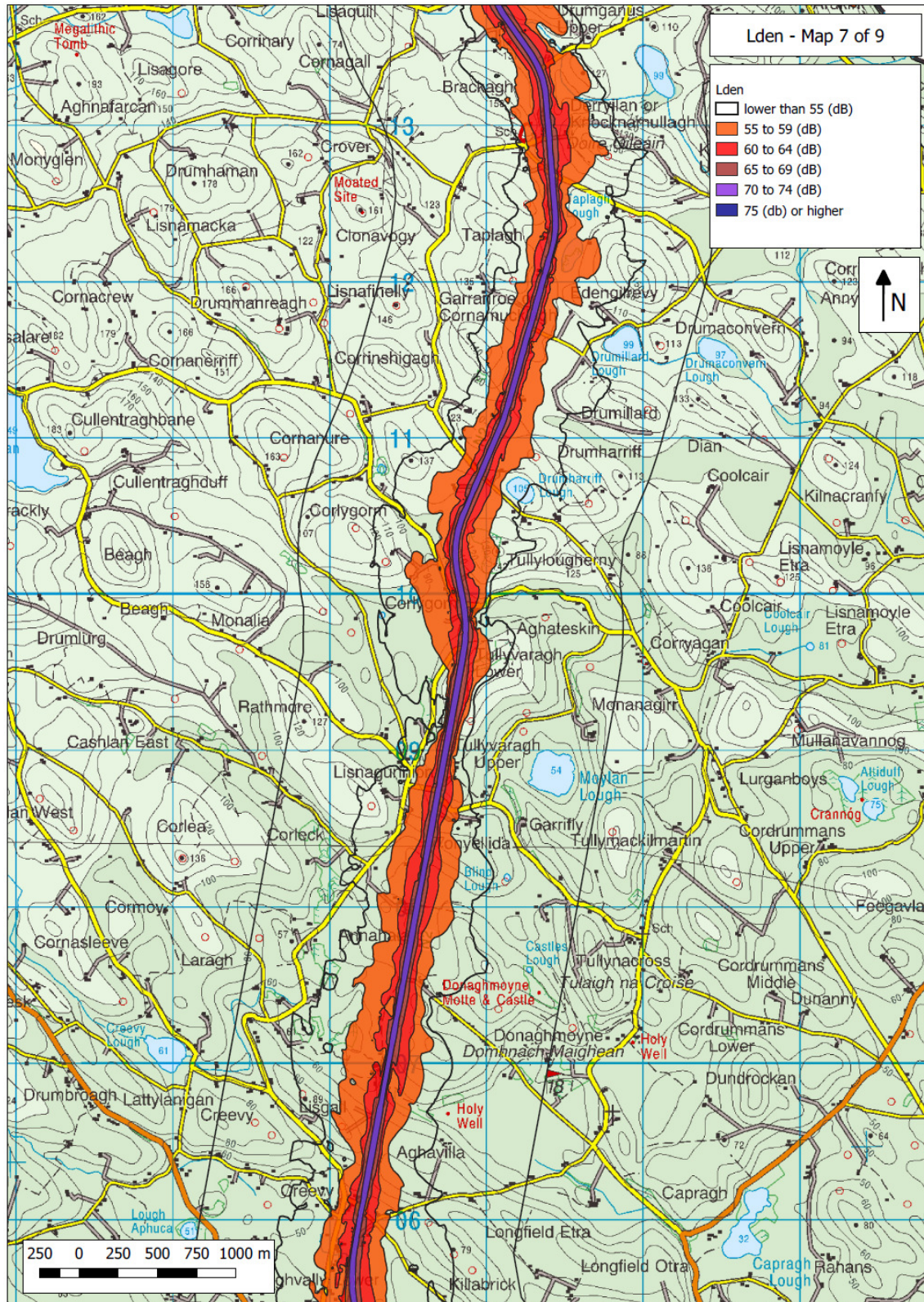


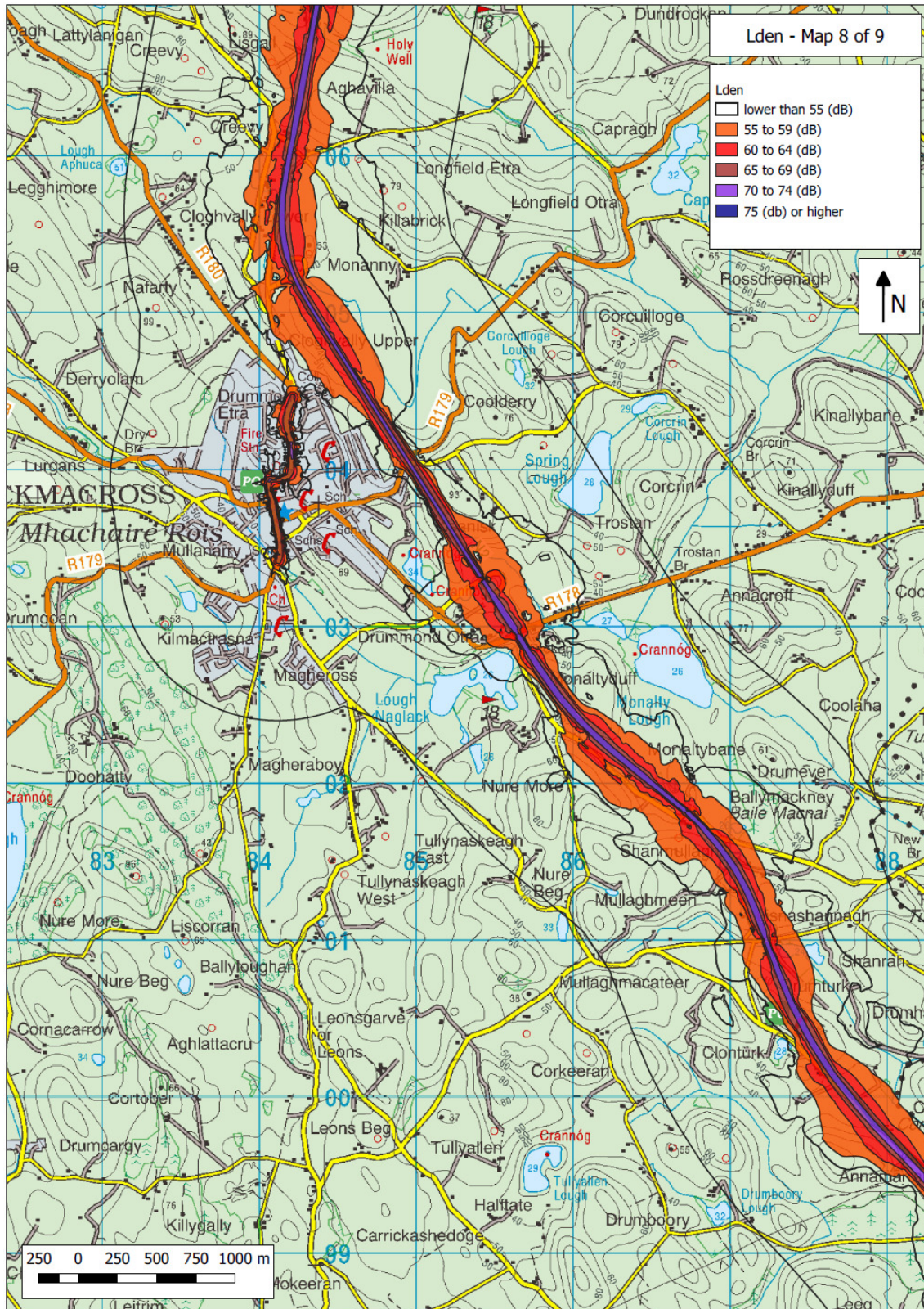


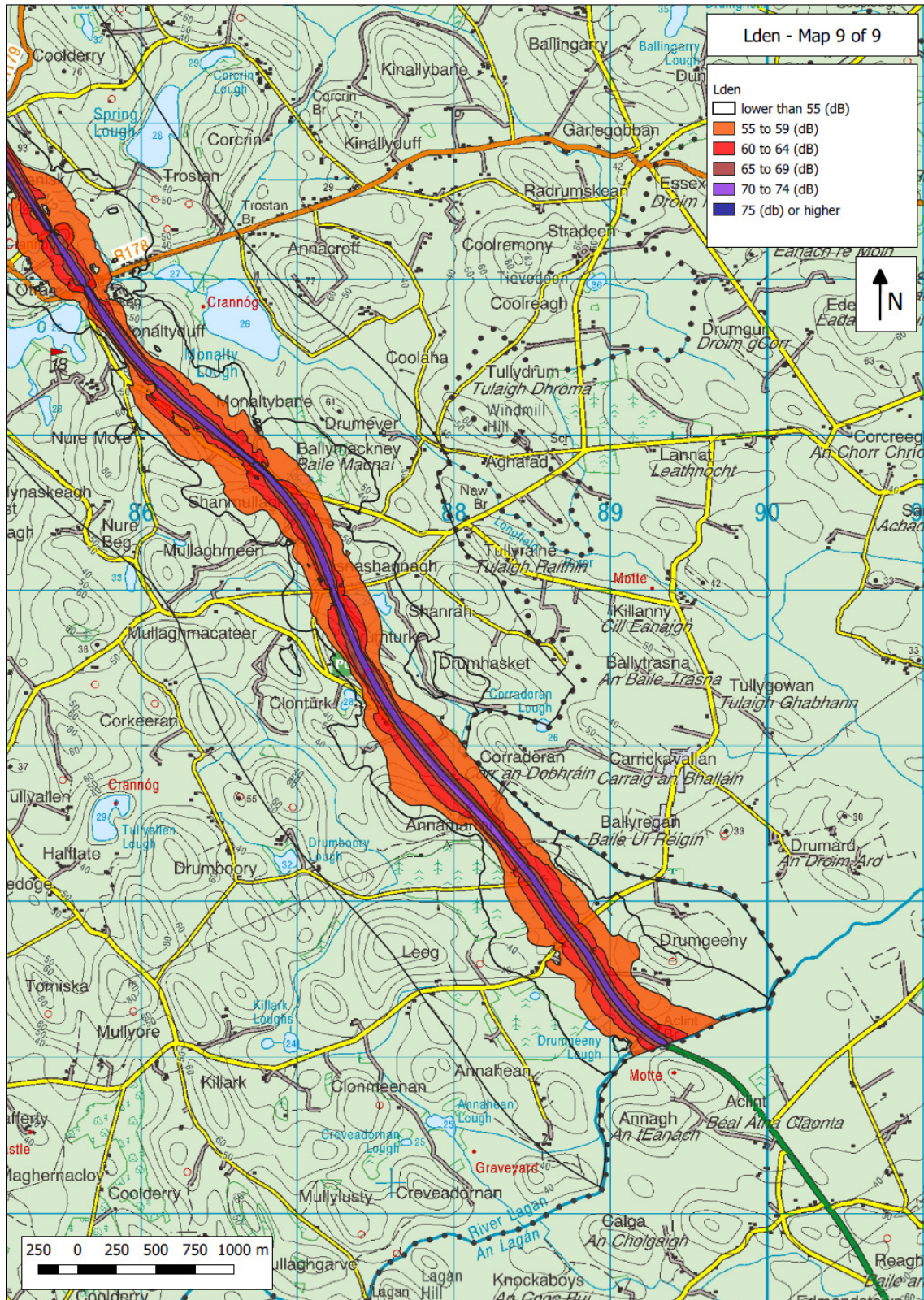


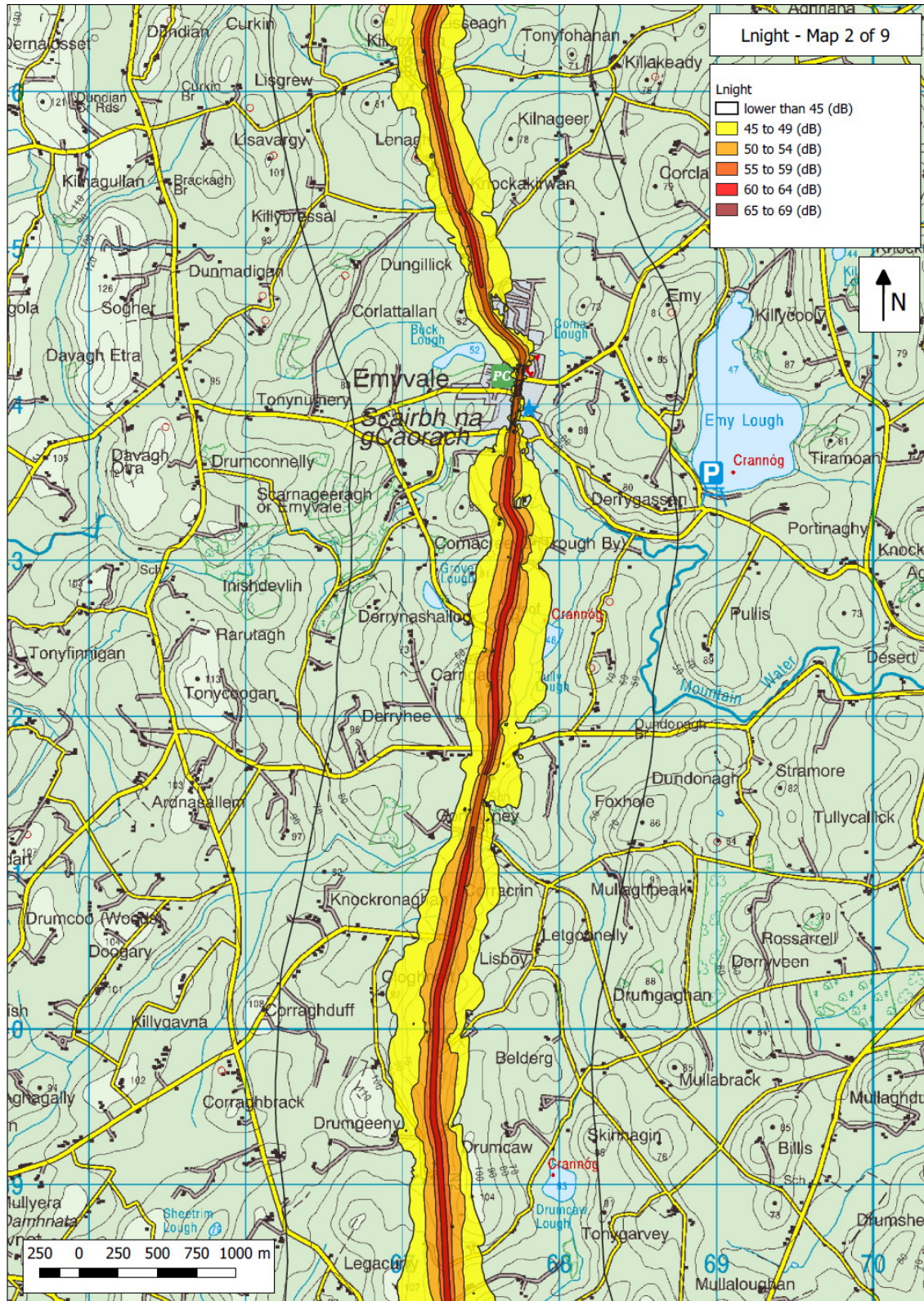


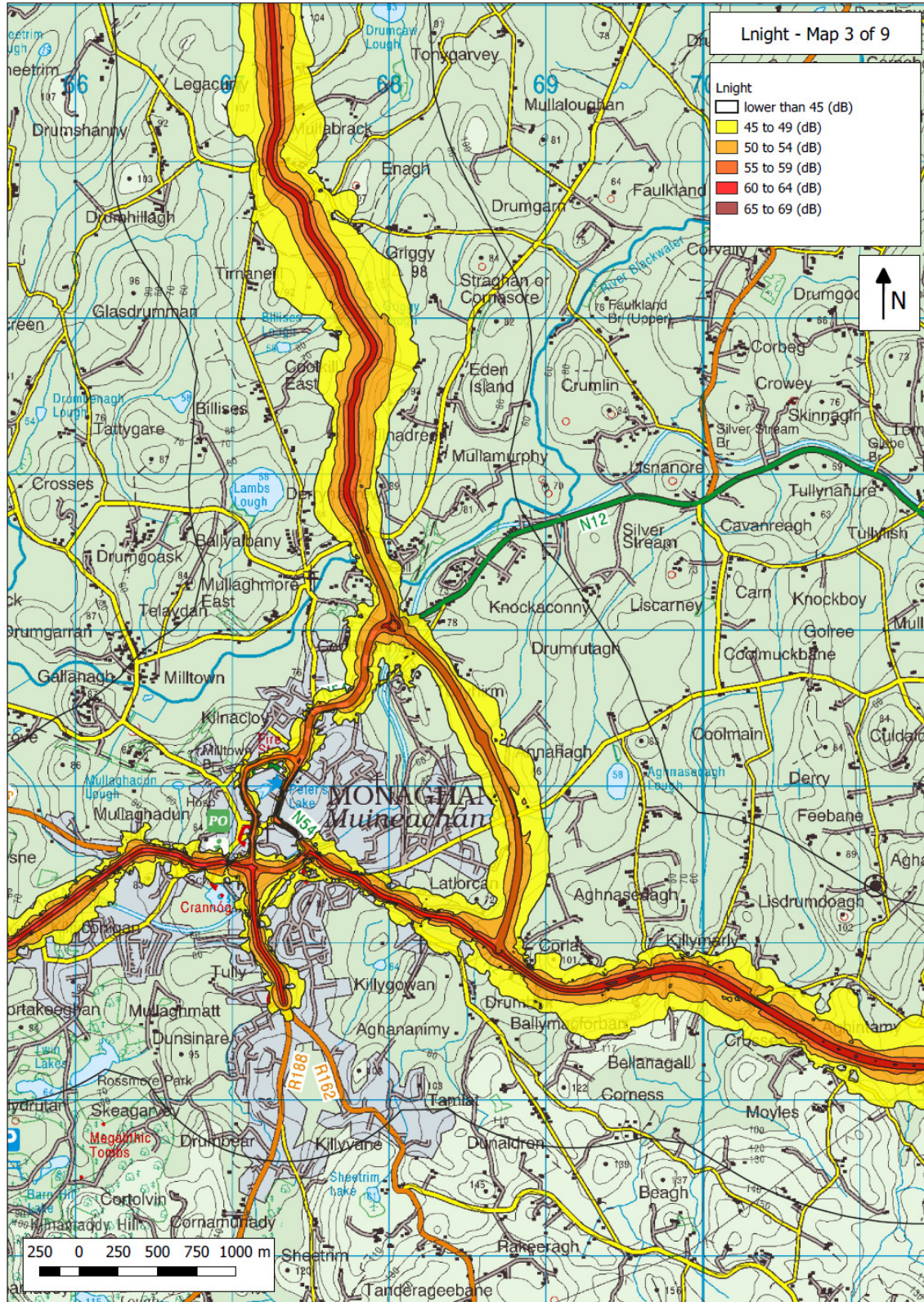


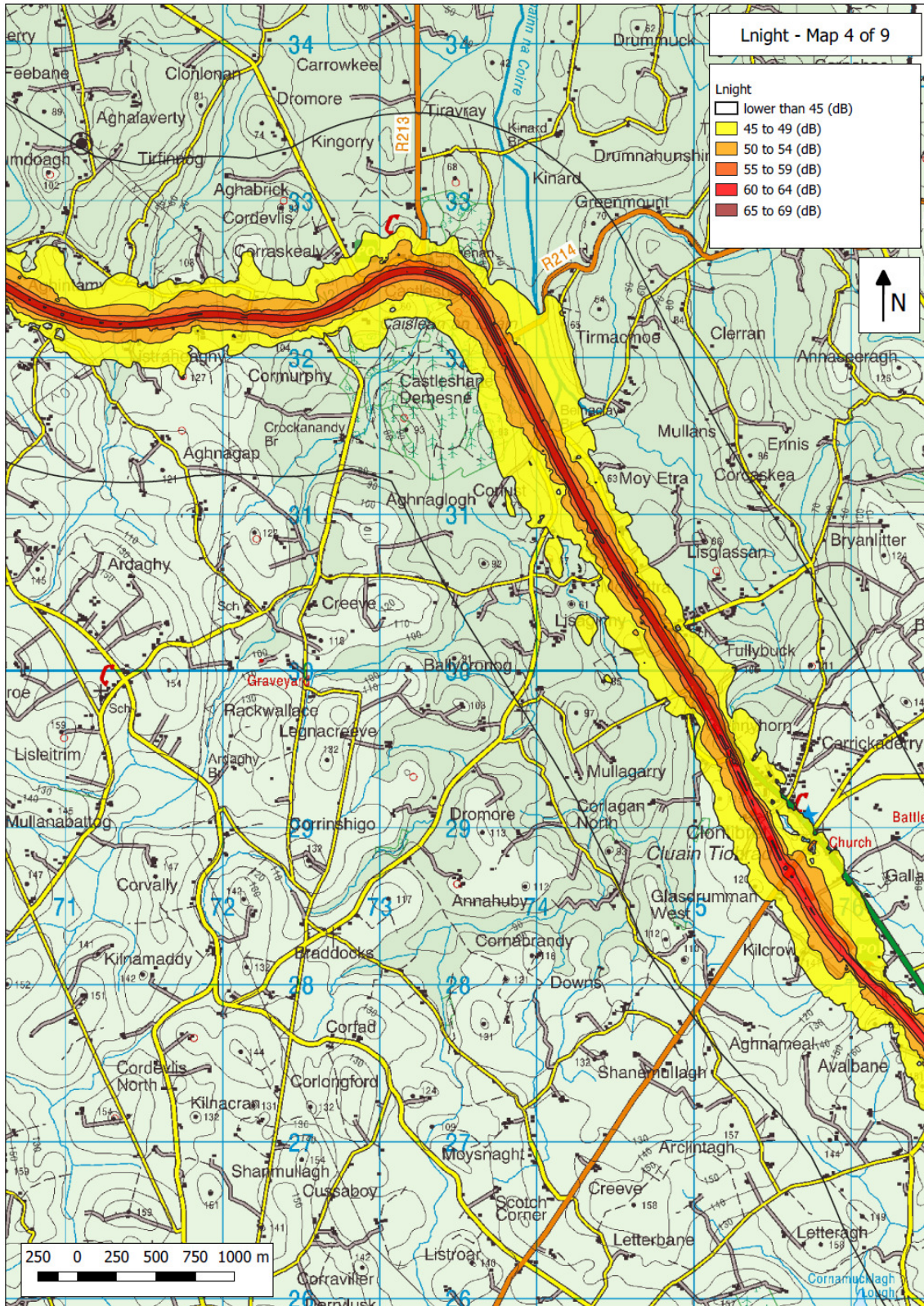


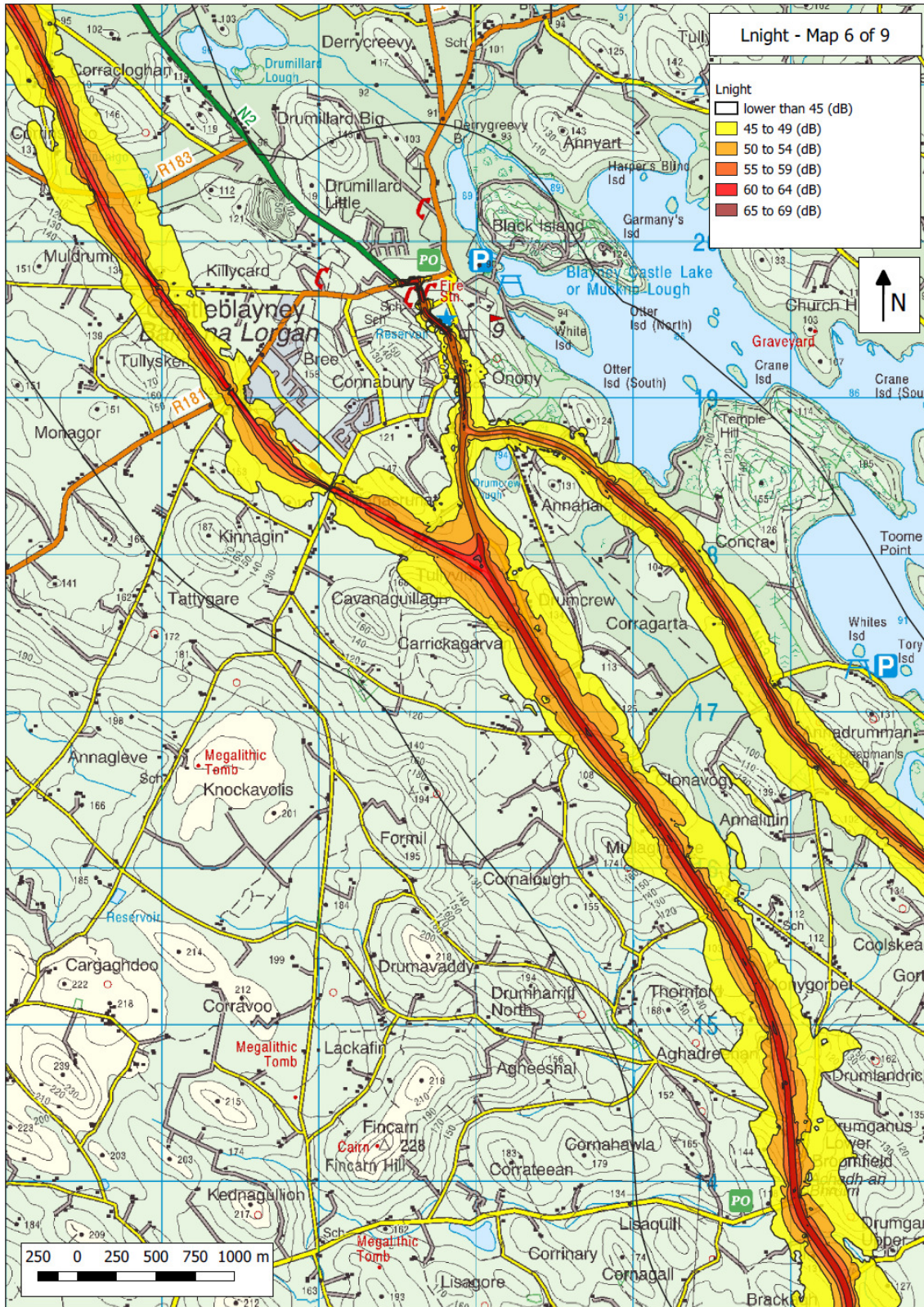


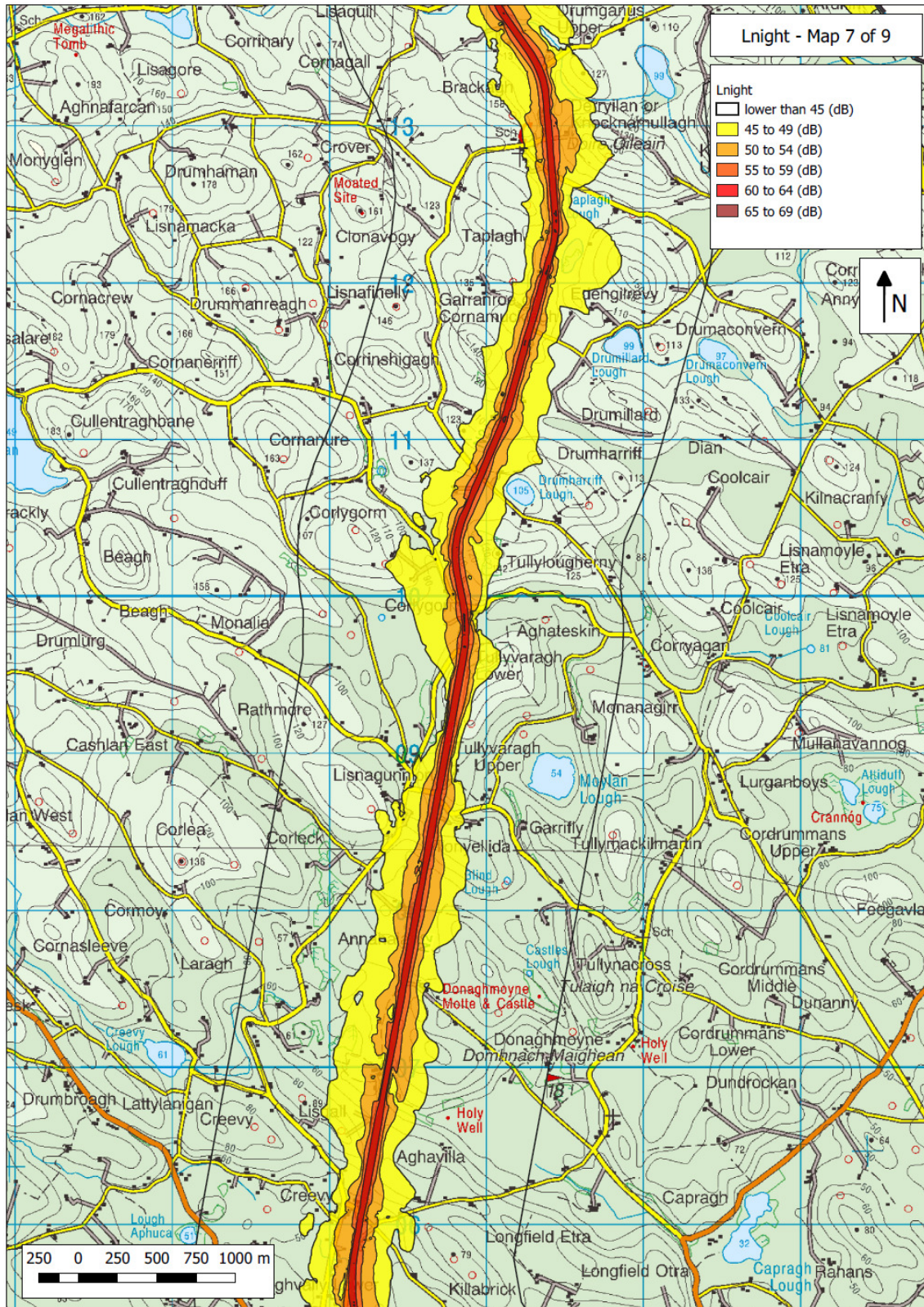


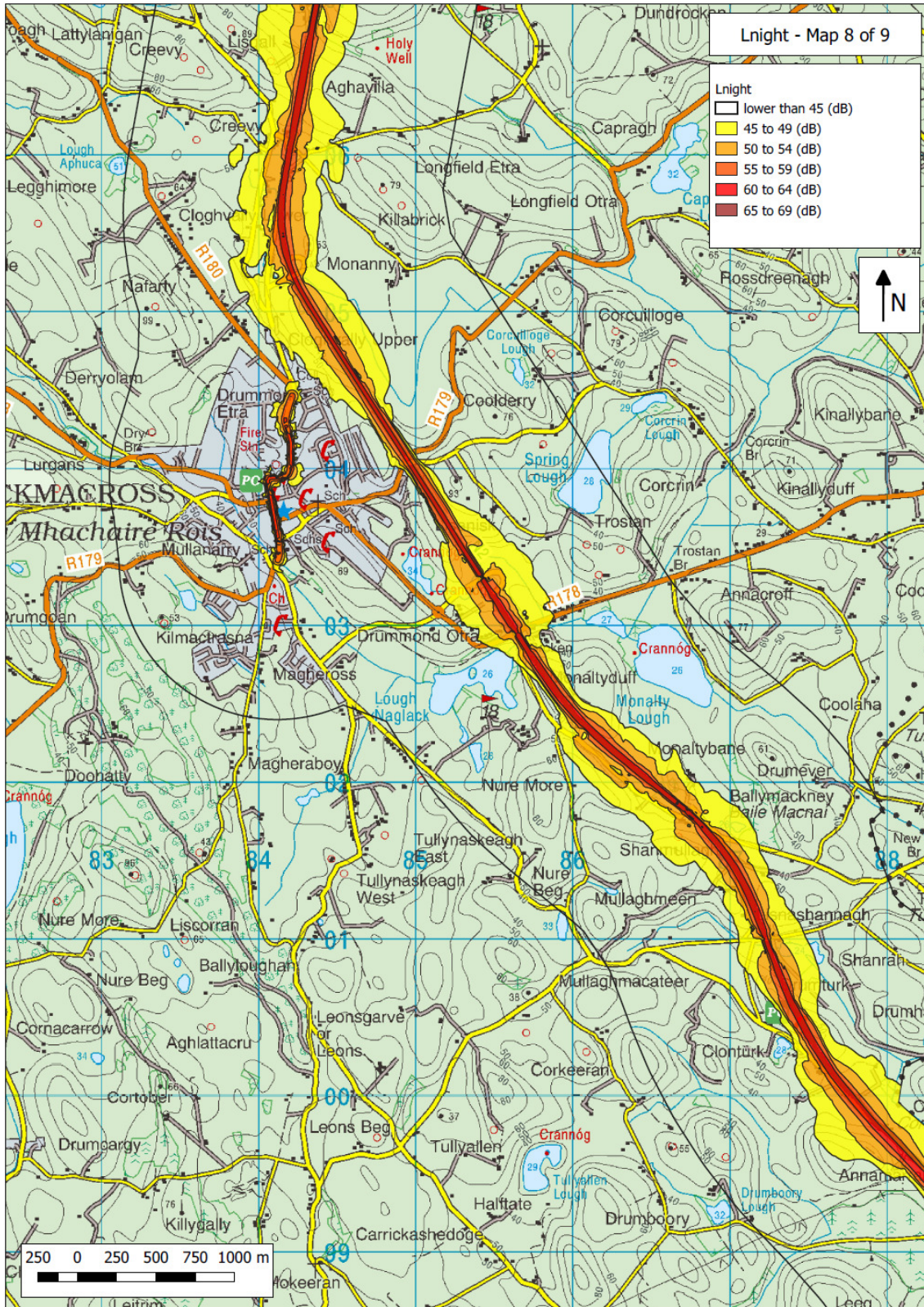












Appendix 2 - Glossary of Acoustic and Technical Terms

Agglomeration	Major continuous urban area as set out within the Regulations
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
ADDT	Average Annual Daily Traffic
EPA	Environmental Protection Agency established under Section 19 of the Environmental Protection Agency Act 1992 (No. 7 of 1992);
CRTN	Calculation of Road Traffic Noise 1988. The Road traffic prediction methodology published by the UK Department of Transport
dB	Decibels
EC	European Commission
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 those defined in Annex I to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevent and control (2)
HCV	Heavy Commercial Vehicle
IPPC	Integrated Pollution Prevention Control Licence
L _{day} (L _d)	Noise indicator for annoyance during the day period L _{Aeq,12hr} (07:00 to 19:00)
Levening (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}	Day-evening-night noise indicator, which is the noise indicator for overall annoyance
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;

Major railway	A railway line which has more than 30,000 train passages per year
Major road	A national, regional or international road which has more than three million vehicle passages per year
TII	Transport Infrastructure Ireland, is a state agency in Ireland, responsible for national road and public transport infrastructure. The body was established in 2015 by merging the former National Roads Authority (NRA) and Railway Procurement Agency (RPA).
Noise Action Plan	A plan designed for the purpose of managing noise issues and their effects, including noise reduction if necessary
Noise Model	All the input data collated and held within a computer program to enable noise levels to be calculated.
Onset level (<i>for noise mitigation</i>)	The noise level at which noise mitigation should be considered by the Local Authority
OSI	Ordnance Survey of Ireland
Scheduled Activity	Activity normally subject to an Integrated Pollution Control Licence under the EPA Acts

Appendix 3: Bibliography and References

EU Directive 2002/49/EC relating to the assessment and management of environmental noise (END Directive).

Environmental Noise Regulations, S.I. No. 140 of 2006

Environmental Protection Agency Act 1992

The Building Regulations (1997-2017)

The Technical Guidance Document E on Sound relating to the Building Regulations/ 2014 (S.I. No.606 of 2014)

Environmental Protection Agency "Guidance Note for Noise Action Planning", July 2009.

EPA Guidance Note for Strategic Noise Mapping for the Environmental Noise Regulations 2006 (Version 2 – August 2011). Revised Section 10: Mapping Methodology for Exposure Assessment - Post Processing and Analysis (October 2017).

EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Jan 2016)

The Environmental Protection Agency Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3) (2011).

The Environmental Protection Agency *Environmental Quality Objectives - Noise in Quiet Areas.*

The National Roads Authority "*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*" (2004),

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

The Department of the Environment, Heritage and Local Government, *Planning Guidelines for Wind Energy Developments* (2006)

The Department of Environment, Community and Local Government, Proposed Revisions to Wind Energy Development Guidelines 2006; Targeted Review in relation to Noise, Proximity and Shadow Flicker – December 11th 2013

The Department of the Environment, Heritage and Local Government, *guidelines for Planning Authorities on Quarries and Ancillary Activities* (2004).

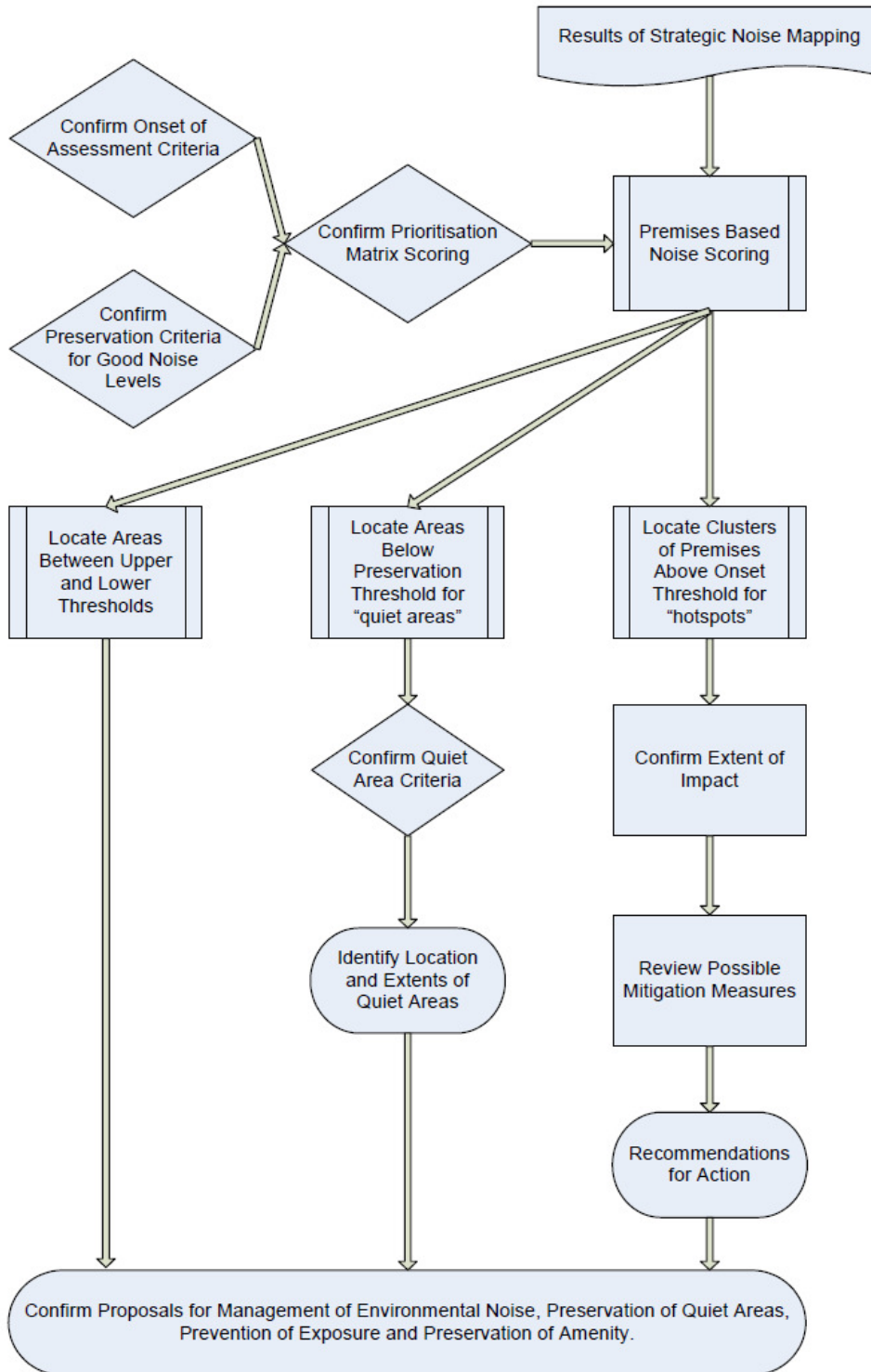
The Government of Ireland - Project Ireland 2040 - National Planning Framework (February 2018)

The County Monaghan Draft Development Plan 2019-2025

The Draft Strategic Environmental Assessment (Environmental Report) of the Draft Development Plan (Feb 2018)

The County Monaghan Landscape Character Assessment (LCA), August 2008

Appendix 4 Overview / flow diagram of process for action planning decision making



Appendix 5: Final/Completed Decision/Selection Matrix

A decision support matrix is a chart which enables identification, analysis and rating of the strength of relationships between various sets of information. It enables a number of different factors to be examined and facilitates the assessment of the relative importance of each.

Table 5.1 presents the prioritisation decision support matrix to be used to support the action planning decision making process.

Table 5.1. Decision Support Matrix to Identify and Prioritise Noisy Areas

Location:				
Decision Selection Criteria		Score Range	Score Range	Subtotal
		L_{den}	L_{night}	
Noise Band	<45	5	6	
	45-49	4	5	
	50-54	3	4	
	55-59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	≥80	5	7	
Type of Location	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
Type of Noise Source	Air	3	4	
	Industry	2	3	
	Rail	2	3	
	Road	3	4	
Total Score				

Each noise sensitive premises is allocated to one of the “Type of Location” categories, and the noise level at the most exposed façade scored as per the “Noise Band” and the source scored as per the “Type of Noise Source”.

An example of the use of the matrix for a residential property exposed to road traffic noise levels of 73 dB L_{den} and 60 dB L_{night} is shown in Table 5.2.

Table 5.2. Decision Support Matrix to Identify and Prioritise Noisy Areas

Location:				
Decision Selection Criteria		Score Range	Score Range	Subtotal
		L_{den}	L_{night}	
Noise Band	<45	5	6	
	45-49	4	5	
	50-54	3	4	
	55-59	2	2	
	60-64	1	3	3
	65-69	2	4	
	70-74	3	5	3
	75-79	4	6	
	≥80	5	7	
Type of Location	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
	Noise Sensitive Location	3	3	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
Type of Noise Source	Air	3	4	
	Industry	2	3	
	Rail	2	3	
	Road	3	4	7
Total Score				18

A score of approximately 17 or above indicates that the threshold levels have been exceeded and the location should be included in the shortlist for further assessment.

Similarly a location with low noise levels may also score above 17, which then indicates that it should be short listed for consideration as a location where environmental noise levels are currently considered good.

Appendix 6: Public Consultation