

LAOIS COUNTY COUNCIL

COMHAIRLE CHONTAE LAOISE



NOISE ACTION PLAN

2019 - 2022

December 2018

EXECUTIVE SUMMARY

This Noise Action Plan 2019 has been prepared by Laois County Council to address environmental noise from major roads with more than three million vehicles per annum. The action planning area covers the M7, M8, N80, N77 and sections of the R445. It also covers the major rail line between Hazelhatch and Portarlinton within the functional area of Laois. It is a follow up to the 2014 Noise Action Plan which addressed environmental noise from roads with more than three million vehicles per annum and the 2008 Noise Action Plan which addressed environmental noise from roads with more than six million vehicles p.a.

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 prioritised 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. According to the World Health Organisation in 2011 “ Environmental noise leads to a disease burden that is second in magnitude only to that from air pollution, among environmental factors in Europe”. The Report ‘ Noise in Europe 2014’ EEA no 10/2014 by the European Environment Agency indicated that exposure to noise in Europe contributes to:

- Over 910,000 cases of hypertension caused by environmental noise each year.
- The total number of hospital admissions related to coronary heart disease and stroke is estimated to be 43 000 per year due to noise.
- About 10,000 premature deaths from heart disease & stroke per year could be related to noise exposure

Noise Mapping Bodies and Local Planning Authorities were assigned responsibility under the regulations to draw up noise maps for the third round of the process 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.
- Major airports with more than **50,000** movements per year -a movement being a takeoff or landing. (Not applicable to Laois).
- Sections of major roads with a flow threshold of **3 million** vehicles per annum.
- Agglomerations with more than **100,000** inhabitants. (Not applicable to Laois)

Local authorities play an active role in noise management in Ireland through dealing with complaints from members of the public.

Transport Infrastructure Ireland (TII) formerly the National Roads Authority (NRA), as the noise mapping body for major national roads, has prepared noise maps for the sections of the National Routes – (M and N routes) in Laois that were confirmed by verified vehicle count data to have more than **3 million** vehicles per annum.

The TII on behalf of Laois County Council has prepared noise maps for Regional roads (R route) with more than **3 million** vehicles per annum.

The TII has estimated from the noise maps and from geo directory data that approximately **4,612** individuals living within the action planning area in Laois may be located in environmental noise bands from 55 to >75dB L_{den} .

Approximately **2,945** individuals may be located in noise bands from 50 to >70dB L_{night}

Iarnród Éireann has prepared noise maps for the main rail line between Hazelhatch and Portarlinton which occurs within the Laois boundary area.

Iarnród Éireann has estimated from the noise maps and from geo directory data that approximately **100** individuals living within the action planning area in Laois may be located in environmental noise bands from 55 to >59dB L_{den} .

The purpose of this Action Plan is to endeavour 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 prioritising 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.

ACTION PLAN POLICY STATEMENT

Laois County Council 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 Planning and Development Act 2000, as amended) 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.

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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 noise¹.

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:

- 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.
- 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.

The Directive defines noise mapping, strategic noise maps and action plans as:

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

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

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

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.

Round One.

Noise mapping bodies made 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 1 Final Noise Action Plan was submitted by Laois County Council to the EPA in 2008 on foot of a public consultation process. The final deadline for reporting of Action Plans to the European Commission was the 18th January 2009. The fundamental objective of the action plans is the prevention and reduction of environmental noise.

Round Two.

Phase 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.

A Draft Noise Action Plan was submitted to the EPA on 20th March 2013. The Draft Plan went to Public Consultation and then the Plan was finalised and approved by Laois County Council in 7th August 2013. The EPA submitted a summary of the Noise Action Plan to the European Commission by 18th January 2014.

Actions following Round Two

There are no specific limits for environmental noise, imposed by the Directive at a Europe wide level, or statutory limits, set down in the Regulations. Neither are there any local limits set down within this Action Plan area. However, the Environmental Protection Agency, in its role as the National Authority has proposed certain onset levels , at the upper and lower end of the scale. These levels have been adopted in the 2014-2018 Action Plan.

o 70dB, Lden and

o 57dB, Lnight are the onset levels where it is appropriate to undertake an assessment for the provision of noise

mitigation measures.

For areas that currently have low levels of noise:

- o 55dB, Lden and

- o 45dB, Lnight are the onset levels where it may be appropriate to consider introducing measures or controls, to preserve the area from any increase in environmental noise, above the existing relatively low level.

Year 2014

- Review Strategic Noise Maps to identify priority areas and populations.
- Review County Policy including Sustainable Travel and Planning Policy to ascertain how these documents can more closely reflect the key objectives of the Noise Action Plan.

Year 2015

- Undertake a Matrix Screening analysis of priority areas.
- Undertake a programme of on-street noise monitoring to verify the data provided in the Strategic Noise Maps and the Matrix Screening
- Review the range of available mitigation measures.

Year 2016

- Undertake a feasibility study for possible mitigation measures.

Year 2017

- Collate data required for the next round of Strategic Noise Maps.

Year 2018

- Review Noise Action Plan and revise where appropriate. (this NAP)

Some particular examples of the mitigation measures introduced over this period include general maintenance and improvement schemes and also replacing HRA with SMA

2014

HD28

N77 Castlewood
N77 Granafallow
N78 Farnans
N80 Graigue
N80 Grange Upper
N80 Cooperhill Demesne

PARR

N80 Derrymoyle to Coolhenry

2016

PARR Schemes

N77 Colt to Tonduff
N80 Stradbally

HD28

N78 Crettyard.
N78 Rushes.
N78 Ballylinan
N78 Killyganard
N80 Cappalough
N80 Laught
N80 Graigue
N80 Coldblow
N80 Rossleaghan
N80 Bloomfield (Roundabout)
N80 Rathillig
N80 Mountmellick road, Portlaoise (Dunnes Stores)

2017

Parr Schemes

N80 Dysart
N80 Forest Upper to Graigue

HD28

N77 The Square Durrow
N77 Tinwear Durrow
N77 Abbeyleigh
N80 Clonbrook Crettyard
N80 Laught or Commons
N80 Grange Upper
N80 Maidenhead
N80 Talbot Hotel Roundabout to Sleaty Rd Roundabout Graiguecullen
N80 Ballickmoyler
N80 Arles
N80 JFL Ave Portlaoise

2018

PARR Scheme

N77 Durrow

Capital Works Programme

N77 Colt
N80 Kyleclonhobert
N80 Mountmellick
N77 Abbeyleigh
N80 Kyletalesha
N80 Glosha
N80 Graiguecullen

Changing the specification of the road surface course, from a material such as Hot Rolled Asphalt to a Stone Mastic Asphalt can lead to a reduction in traffic generated road noise. Reductions of between 2dB(A) and 4dB(A) have been

noted. Changes such as this can be integrated into a Road Maintenance Programme. It should be noted that the acoustic performance of low noise surfaces is known to deteriorate with age.

Repairs to surface irregularities, such as poorly reinstated trenches, bridge joints and other discontinuities in the road surface profile can improve the noise regime. Matters such as these would normally be addressed under regular maintenance programmes.

A summary of the noise results comparison from the TII 2012/217 is shown below

Lden >55dB- 4438 (2102) versus 4612 (2017)

Lden>65dB- 1077(2012) versus 1316 (2017)

Lden>75 dB- 0 (2012) versus 0 (2017)

Lden >50dB- 2940 (2102) versus 2945 (2017)

Lden>60dB- 291(2012) versus 194 (2017)

Lden>70 dB- 0 (2012) versus 0 (2017)

Round Three (Review Phase)

Phase 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.

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 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, therefore Laois County Council is designated for County Laois.
- 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 TII, 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
- 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.

Each local authority is the action planning authority for major roads in the local authority area, therefore Laois County Council is the action planning authority for major national and major non national roads in County Laois.

1.4 Key Phases

1.4.1 Identification of areas to be mapped

In Laois, strategic noise maps and associated action plans must be prepared for major roads based on the criteria. In Laois the major rail line has been identified as the line between Hazelhatch and Portarlinton within the Laois Co Co boundary.

The definition of a major road for this second and this, the **third** noise mapping/action planning phase of the Regulations is a road with more than **3** million vehicles per annum.

For Rounds 1 & 2 the NRA and Laois Co Co identified the following sections of Major Road:

- THE ENTIRE LENGTH OF THE M7 AND M8 MOTORWAYS [66 KILOMETRES; ANNUAL AVERAGE DAILY TRAFFIC FIGURES (AADTs) FOR VARIOUS SEGMENTS VARIED BETWEEN 14,400 AND 21,400 VEH/DAY FOR M7, BETWEEN 10,200 AND 13,300 VEH/DAY FOR M8]
- A SEGMENT OF THE N77 WITHIN THE TOWN OF PORTLAOISE [2 KILOMETRES; AADT 10,500 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN MOUNTMELICK AND STRADBALLY, INCLUDING THE TOWN OF PORTLAOISE [21 KILOMETRES; AADT FOR VARIOUS SEGMENTS VARIED BETWEEN 8,400 AND 13,000 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN BALLICKMOYLER AND THE COUNTY BOUNDARY AT GRAIGUECULLEN [7.5 KILOMETRES; AADT LESS THAN 6,000 VEH/DAY, MAPPED BECAUSE OF SUPER-THRESHOLD LEVELS IN CARLOW SEGMENTS OF THE N80]
- A SEGMENT OF THE R445 WITHIN PORTLAOISE [3 KILOMETRES; AADT 15,000 VEH/DAY]

For Round 3 the NRA and Laois Co Co identified the following sections of Major Road:

- THE ENTIRE LENGTH OF THE M7 AND M8 MOTORWAYS [66 KILOMETRES; ANNUAL AVERAGE DAILY TRAFFIC FIGURES (AADTs) FOR VARIOUS SEGMENTS VARIED BETWEEN 14,400 AND 21,400 VEH/DAY FOR M7, BETWEEN 10,200 AND 13,300 VEH/DAY FOR M8]

- A SEGMENT OF THE N77 WITHIN THE TOWN OF PORTLAOISE [2 KILOMETRES; AADT 10,500 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN MOUNTMELICK AND STRADBALLY, INCLUDING THE TOWN OF PORTLAOISE [21 KILOMETRES; AADT FOR VARIOUS SEGMENTS VARIED BETWEEN 8,400 AND 13,000 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN BALICKMOYLER AND THE COUNTY BOUNDARY AT GRAIGUECULLEN [7.5 KILOMETRES; AADT LESS THAN 6,000 VEH/DAY, MAPPED BECAUSE OF SUPER-THRESHOLD LEVELS IN CARLOW SEGMENTS OF THE N80]
- A SEGMENT OF THE R445 WITHIN PORTLAOISE [3 KILOMETRES; AADT 15,000 VEH/DAY]

For Round 3 Iarnrod Éireann identified the following sections of Major Rail

- SECTION OF CORK-DUBLIN MAINLINE BETWEEN HAZELHATCH-PORTARLINGTON JUNCTION

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. 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} , 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

Both TII and Iarnrod Éireann ran computerised noise modelling programmes for the relevant roads and rail with volumes above 3 million vehicles per year or 30,000 train journeys per year and generated GIS grids of noise levels as an output of the noise modelling process.

The TII and Iarnrod Éireann generated GIS polygon contour layers for the following decibel bands for L_{den} and L_{night} :

	L_{den}	L_{night}
•	55-59	45-49
•	60-64	50-54
•	65-69	55-59
•	70-74	60-64
•	≥ 75	65-69

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

See Appendix 1: Glossary of other acoustic and technical terms. The resultant noise maps are a visual representation of the estimated noise level bands within each action plan area.

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 finalising 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.

Over and above the statutory requirement to seek input from the public and other relevant stakeholders in preparation of the final Noise Action Plan, it is the policy of Laois County Council to maintain good communication with the general public and other stakeholders in all areas.

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

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 and if funded, 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 & GUIDANCE

2.1 National Legislation and Guidance

The Environmental Noise Regulations are concerned with community or environmental noise, which is classified in the draft 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.

Noise sensitive locations such as schools, hospitals, churches, funeral homes, have particular requirements for low level noise environments in order to be able to function effectively. Noise levels in these noise sensitive locations must be managed to address external noise break-in, as well as room-to-room transmission. A high standard of insulation can be applied to improve noise attenuation in these buildings but this measure is rendered relatively ineffective when windows are opened. It also does not protect the external environment around the noise sensitive location from community/environmental noise.

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):

The issues are addressed in Laois through the following documents:

Noise is addressed in the current **Laois County Development Plan**:

The protection of noise sensitive land uses such as residential uses are important in order to foster a good quality of life. Noise associated with construction works is considered to be temporary in nature and therefore is generally not a material consideration. However the Council will strive to shape development throughout the County to minimise the harmful effects of noise pollution on the community of County Laois.

To achieve this, the Development Plan sets down two policy objectives: ENV 12 / P17 Require an assessment of impact of the developments on noise levels; ENV 12 / P18 Restrict development proposals causing noise pollution in excess of best practice standards.

The Development Plan can exert a significant influence on the exposure to environmental noise. As indicated in the EPA Guidance, there are two main scenarios where development can materially influence exposure to environmental noise.

These primarily are:

Bringing people to noise:

- New housing, health care or educational developments near to existing road or rail infrastructure,

Bringing noise to people:

- New, realigned or redesigned roads or railways which increase the level of environmental noise, in the vicinity of noise sensitive locations.

Currently there are no specific limits for environmental noise, imposed by the Directive at a Europe wide level, or statutory limits, set down in the Regulations, or indeed Area Limits proposed in this Action Plan for this Action

Planning Area.

However, until specific planning guidance on environmental noise is indicated at a national level, it is proposed that the planning policy guidance notes issued by the Department of Environment in England and The Scottish Office will be taken into consideration, by the Planning Authority for this Action Planning Area.

The process of the review of the Laois County Development Plan 2017 – 2023 will commence within one year of the adoption of the Regional Spatial and Economic Strategies (RSES). The Strategy for the Eastern and Midlands Region has been prepared and is on public display with an anticipated adoption date of Quarter 1, 2019. It will provide a long-term regional level strategic planning and economic framework in support of the implementation of the National Planning Framework. The RSES is a link between the National Planning Framework, the County Development Plan and the Local Economic and Community Plans.

The Council is committed to consider this Noise Action Plan in any future review of the County Development Plan, or Local Area Plans. Furthermore, the Council will seek to incorporate the principals, aims and objectives of this Action Plan in all future County Development Plans and Local Area Plans and specifically the aim of the Directive: to prevent or reduce the harmful effects due to exposure to environmental noise. As part of this process, it is proposed that planned developments within the Noise Mapping Area will be critically reviewed with respect to the noise band level; the noise sensitivity of the development; appropriate mitigation measures such as building and window orientation; and façade insulation measures. In the Local Area Plans, extensive areas have been zoned —Enterprise and Employment. Within these areas, and where the areas are adjacent to residential developments, due cognisance has been taken of the need for a noise regime that is appropriate to the specific location.

National Planning Framework 2040

The finalised 'National Planning Framework 2040' was published in 2018 and is to be used as the guideline for current planning policy. Specific reference to noise is made under Objective 65:

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

The National Planning Framework will support:

- noise management and action planning measures through strategic noise mapping, noise action plans and suitable planning conditions;
- good acoustic design in new developments, in particular residential development, through a variety of measures;
- the further enjoyment of natural resources through the preservation of low sound levels or a reduction of undesirably high sound levels. Extra value is placed on areas with low sound levels, coined Quiet Areas, because they are deemed to be of environmental quality and to have a positive impact on quality of life and

health.

Planning and Development (Strategic Housing Development) Regulations 2017

Planning applications for housing developments of more than 100 residential units and 200 plus student bed spaces can now be made directly to An Bord Pleanála. New legislation which allows for this type of application was enacted on 19th December 2016 and the associated regulations came in to effect on 3rd July 2017. This new type of application has been introduced as part of Rebuilding Ireland to speed up the planning application process and accelerate delivery of larger housing and student accommodation proposals.

The types of housing applications which can be made direct to An Bord Pleanála are referred to as Strategic Housing Development (SHD) and are defined as follows:

- (a) the development of 100 or more houses on land zoned for residential use or for a mixture of residential and other uses;
- (b) the development of student accommodation units which, when combined, contain 200 or more bed spaces, on land the zoning of which facilitates the provision of student accommodation or a mixture of student accommodation and other uses thereon;
- (c) development that includes developments of the type referred to in paragraph (a) and of the type referred to in paragraph (b), or containing a mix of houses and student accommodation;
- (d) the alteration of an existing planning permission granted under section 34 (other than under subsection (3A)) where the proposed alteration relates to development specified in paragraph (a), (b), or (c).

This legislation has the effect that An Bord Pleanála will be the authority responsible for considering the impact of noise for those types of proposed developments in Laois and not the Local Authority.

With respect to **Development Management** the Development Plan requires that due consideration be given to the noise impact caused by activities such as warehousing, water sports, takeaway premises and home based economic businesses in residential areas etc.. Consideration must be also given to noise pollution at the planning application stages for proposals such as public houses and as part of sustainable development planning.

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.

In relation to general neighbourhood noise problems, Laois County Council encourage complainants to exert their rights under The Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 (S.I. No. 179 of 1994), which provides straightforward access to the Courts by individual or groups concerned about excessive noise³.

2.2.2 IPPC and Waste Licensing

Noise conditions are routinely imposed as part of an IPPC licence. The relevant guidance is set out in the EPA publication "Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to scheduled activities" published by EPA January 2016. This document contains suggested noise limits of 55 dB(A) L_{Ar,T} for daytime and 45dB(A) L_{Aeq,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 Waste Permitting

Laois County Council imposes noise conditions on waste permitted facilities where noise is considered to be a potential issue. These conditions are similar to the EPA waste licence conditions referred to above.

2.2.4 Wind Energy Development Guidelines

With specific regard to wind energy developments, this Department of the Environment, Heritage and Local Government document suggests a "lower fixed limit of 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations". Separate noise limits should apply for day-time and for night-time. During the night the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. **A fixed limit of 43dB(A) will protect sleep inside properties during the night.**

2.2.5 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. A total of 153 quarries (registered under section 261 and 261A) in Laois applied to register. 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) L_{Aeq, 30 mins} during the daytime and 45 dB(A) L_{Aeq, 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).

2.2.6 Building Regulations

The current Irish Building Regulations 2014 Technical Guidance Document E calls for certain constructions to offer "reasonable resistance" to both airborne and impact sound.

' Part E does not address environmental noise through the building facade from external sources such as aircraft, trains, road traffic or industry.' 'Additional guidance is provided in BS 8233 Sound Insulation and noise reduction for buildings Code of practice and sound control for homes.'

2.2.7 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. Laois County Council 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 NRA (now TII) produced 'Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes ' in March 2014.

The Department of Housing, Planning and Local Government has published the following documents relating to sustainable development in the urban environment⁴ :

Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (March 2018)

Spatial Planning and National Roads – Guidelines for Planning Authorities January 2012

Guidelines for Planning Authorities on Sustainable Residential Developments in Urban Areas (Cities, Towns, Villages) May 2009

Design Manual for Urban Roads and Streets Dept of Transport, Tourism and Sport 2013.

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.

Spatial Planning and National Roads – Guidelines for Planning Authorities states '

Planning authorities should engage with applicants and their agents to address, as an integral element of their development proposals, potential negative impacts arising from existing or planned national roads. This could include mitigating impacts through appropriate design of buildings, landscaping features and site layout as part of the

development proposal.’ ‘The Environmental Noise Regulations, 2006 (S.I. No. 140 of 2006) should be taken into account within the development plan and development management processes, as well as relevant noise maps and noise action plans prepared under the Regulations for specific roads.’

‘The Regulations apply to national and non-national roads with traffic volumes above a prescribed level. Accordingly, all proposals in respect to noise sensitive developments within the zone of influence of such existing or of planned new roads should identify and implement, where appropriate, mitigation measures in relation to noise and other effects listed above. The costs of implementing the mitigation measures concerned should be borne by the developer’

Design Manual for Urban Roads and Streets states ‘The main factors which determine the level of road noise and air pollution are traffic volume, speed, levels of congestion and the proportion of HGVs. Many of these issues may be substantially addressed by directing large volumes of traffic (and in particular HGVs) away from cities, towns and villages and by reducing speeds (see Table 3.2).

The creation of a permeable street network which promotes walking, cycling and public transport will also lead to reductions in vehicular traffic and less concentration of traffic and consequently of noise and air pollution’.

SPEED AND NOISE REDUCTION TRAFFIC AND NOISE REDUCTION

Speed Reduction	dB (A) Reduction
from 70-60 km/h	1.8
from 60-50km/h	2.1
from 50-40km/h	1.4

Traffic Volume Reduction	dB (A) Reduction
30%	1.6
40%	2.2
50%	3.0
75%	6.0

Table 3.2 of DMURS 2013

Pro PG May 2017

A document titled Pro PG Planning and Noise Professional Practice -Guidance on Planning & Noise for New Residential Development was published in 2017 in the UK. This document is to provide a useful guidance to those assessing Planning Applications in Laois County Council.

2.2.8 Conference of European Directors for Roads

The following is an extract from EPA Guidance Feb 2018:

In 2017 CEDR published the following three reports.

- Technical Report 2017-01: State of the art in managing road traffic noise: noise-reducing pavements
- Technical Report 2017-02: State of the art in managing road traffic noise: noise barriers
- Technical Report 2017-03: State of the art in managing road traffic noise: cost-benefit analysis and cost-effectiveness analysis

In 2017 TII commenced work to produce the following two Standards Documents:

The Authority has now undertaken a review of the initial draft Guidelines for the Treatment of Noise and Vibration in National Road Schemes. This review was based on the experiences acquired from the implementation of the original draft guidelines and on a validation study that was undertaken to assess the applicability of the specified design criteria and the functionality of the various Transport Research Laboratory (TRL) conversion methodologies for Irish road conditions. This review provides guidance on the revised design criteria and the application of validated approaches to deriving the Lden values as well as an overview of the baseline monitoring and model validation procedure.

The new Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes is based on the lessons learned from post EIA noise evaluations studies and research undertaken on the design of noise barriers. It provides advice and information for use by acousticians and it is also relevant for traffic, motorway and pavement engineers. The advice amplifies and supplements the original noise guidelines and it should be read in conjunction with that document.

EPA Network

- Progress report on measures on road traffic noise in the EU, March 2012
- Progress report on measures on rail traffic noise in the EU, June 2014
- Progress report on aircraft noise abatement in Europe v3, July 2015

2.2.9 Health

The World Health Organisation has said in 2011 that 'Environmental noise leads to a disease burden that is second in magnitude only to that from air pollution, among environmental factors in Europe'.

WHO-Europe in October 2018 published WHO Environmental Noise Guidelines for the European Union which includes a review of evidence on the health effects of environmental noise such as: sleep disturbance, annoyance, cognitive impairment, mental health and wellbeing, cardiovascular diseases, etc. The guidelines assess several environmental noise sources such as aircraft, rail, road and wind turbines, and review the evidence on health benefits from noise mitigation and interventions to decrease noise levels.

Summary of the Report findings were as follows.

The GDG *strongly recommends* reducing average noise exposure due to road traffic below 53dB Lden as noise above this level is associated with adverse health effects

The GDG *strongly recommends* reducing noise exposure due to road traffic below 45dB as noise above this level is associated with adverse effect on sleep

The GDG *strongly recommends* reducing average noise exposure due to rail traffic below 54dB Lden as noise above this level is associated with adverse health effects

The GDG *strongly recommends* reducing noise exposure due to road traffic below 44dB as noise above this level is associated with adverse effect on sleep

The following reports also provide a broad understanding of the impact of noise on health, and methodologies developed to estimate the burden of disease on the exposed population:

- EEA -Good Practice Guide on Noise Exposure and Potential Health Effects 2010
- WHO -Burden of Disease from Environmental Noise 2011
- WHO -Methodological Guidance for Estimating the Burden of Disease from Environmental Noise 2012
- EEA & JRC -Environment and Human Health 2013
- RIVM -Health Implication of Road, Railway and Aircraft Noise in the European Union 2014

There was a European Commission Noise Conference in April 2017, where the WHO outlined the latest findings on the health implications of noise. The European Environment Agency (EEA) outlined the exposure that European citizens face from harmful levels of noise.

The EPA are commencing an Environmental Noise & Health Research project. They have stated that:

“It will provide a state of knowledge review of the relationship between environmental noise and health/wellbeing, and provide a national estimate of the burden of disease from environmental noise in disability-adjusted-life-years (DALYs). The plan is to combine noise modelling and health microdata to examine causal relationships between noise exposure and health and wellbeing outcomes at the city-wide scale for Dublin and Cork, and to develop recommendations and guidelines for the integration of noise considerations into relevant policy streams.”

2.3 County Planning Policy

2.3.1 Laois County Development Plan 2017 to 2023

The Laois County Development Plan **2017 to 2023** sets out objectives in relation to transport, environment and development management which directly and/or indirectly influence the impact of noise. LDP 6.4.4 Development Plan Policy: Noise Pollution:

“Laois County Council adopted the 2014-2018 Noise Action Plan in 2013, which is in accordance with Environmental

Noise Regulations (SI 140 of 2006). The aim of the plan is to avoid, prevent and reduce, on a prioritised basis the harmful effects, including annoyance due to the long term exposure to environmental noise. “

Noise impacts are required to be addressed in Traffic and Transport Assessments for large developments.

In relation to developments alongside distributor roads, the Roads authority has mapped setback distances to ensure that noise levels are at an acceptable level at the houses close to such roads.

When the Laois County Development Plan 2017 to 2023 is up for review the guidance and objectives in relation to noise can be reviewed and amended as necessary.

It is the policy of the Council to:

ES12 Require an assessment of impact of the developments on noise levels, having regard to the provisions of the Environmental Protection Agency (EPA) Acts 1992 and 2003 and the EPA Noise Regulations 1994 when assessing planning applications;

ES13 Ensure that relevant planning applications comply with the provisions of any Noise Action Plan or noise maps relating to the area;

ES14 Restrict development proposals causing noise pollution in excess of best practice standards;

ES15 Regulate and control activities likely to give rise to excessive noise, other than those activities which are regulated by the EPA;

ES16 Ensure new development does not cause an unacceptable increase in noise levels affecting noise sensitive properties. Proposals for new development with the potential to create excessive noise will be required to submit a construction and/or operation management plan to control such emissions;

ES17 Require activities likely to give rise to excessive noise to install noise mitigation measures and monitors. The provision of a noise audit may be required where appropriate.

3.0 DESCRIPTION OF ACTION PLANNING AREA

3.1 County Laois.

County Laois is an inland county with an area of 1,720 square kilometres and a population of 84,732 (2016 census). The area for which Noise Mapping was conducted is 190 square kilometres – a 120 metre band along the Motorways, National Roads and Regional Roads which exceed the threshold set down in the Regulations: a Major Road with more than 8,000 vehicles per day, or thereabouts. The total length of roads that meets this criterion in County Laois is approximately 100 kilometres.

The area exposed Lden for which Noise Mapping associated with major rail was 1720 square kilometres. However the area identified as Lden >55dB was 1.05 square kilometres.

Laois is an inland County in the south midlands of Ireland covering an area of 171,990 hectares, which equates to 2.4% of the national landmass. Occupying a strategic position near the centre of the country, County Laois is land locked and shares borders with five adjoining counties Carlow, Kildare, Kilkenny, Offaly and Tipperary.

Administratively, it is part of the four County Midland Region along with Counties Offaly, Westmeath and Longford. In terms of travel patterns Laois is under the influence of the Greater Dublin Area (GDA). At its nearest, County Laois is approx 70 km from the Dublin metropolitan area. This relative proximity to the capital has had a major effect on both the nature and extent of development and the associated traffic movements, particularly in the northern and eastern parts of the County. The travel time between Laois and Dublin continues to decrease as a consequence of improved road and rail infrastructure between the two places.

Laois is in the special planning area of Laois Offaly Westmeath and Longford on Eastern Midland Regional Assembly which is preparing an Regional Spatial and Economic Strategy at present. A draft has been issued and is currently on display until mid January. Laois is within an outer region in this area.

In physical terms, the landmass of County Laois consists of a central plain containing most of the productive agricultural land, surrounded by a number of upland areas including the Slieve Bloom Mountains in the northwest, Killeslin Plateau in the South East and Cullahill Mountain in the south. Though not as extensive as in Counties Offaly and Kildare, there are significant cutaway peatlands in the County mainly situated between Portlaoise, Mountrath and Abbeylax. ¹

3.3 Transport Infrastructure in Laois

3.3.1 Road/Rail Network

- THE ENTIRE LENGTH OF THE M7 AND M8 MOTORWAYS [66 KILOMETRES; ANNUAL AVERAGE DAILY TRAFFIC FIGURES (AADTs) FOR VARIOUS SEGMENTS VARIED BETWEEN 14,400 AND 21,400 VEH/DAY FOR M7, BETWEEN 10,200 AND 13,300 VEH/DAY FOR M8]
- A SEGMENT OF THE N77 WITHIN THE TOWN OF PORTLAOISE [2 KILOMETRES; AADT 10,500 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN MOUNTMELICK AND STRADBALLY, INCLUDING THE TOWN OF PORTLAOISE [21 KILOMETRES; AADT FOR VARIOUS SEGMENTS VARIED BETWEEN 8,400 AND 13,000 VEH/DAY]
- A SEGMENT OF THE N80 BETWEEN BALICKMOYLER AND THE COUNTY BOUNDARY AT GRAIGUECULLEN [7.5 KILOMETRES; AADT LESS THAN 6,000 VEH/DAY, MAPPED BECAUSE OF SUPER-THRESHOLD LEVELS IN CARLOW SEGMENTS OF THE N80]
- A SEGMENT OF THE R445 WITHIN PORTLAOISE [3 KILOMETRES; AADT 15,000 VEH/DAY]

¹ 2.1 Laois County Development Plan 2017-2023

- SECTION OF CORK-DUBLIN MAINLINE BETWEEN HAZELHATCH-PORTARLINGTON JUNCTION (RAIL) GREATER THAN 30,000 JOURNEYS

The roads can be further broken down between urban and rural roads:

- 12% OF THE SEGMENTS ARE WITHIN URBAN AREAS WITH SPEED LIMITS OF 50 OR 60 KILOMETRES PER HOUR.
- 88% IS IN RURAL AREAS WITH SPEED LIMITS OF 100 AND 120 KILOMETRES PER HOUR.

As County Laois does not have an airport, only environmental noise from roads and rail is the subject of this current Action Plan.

3.4 Population Data.

The study area for the roads section of this Action Plan – the 120m wide corridor along the major roads with in excess of some 8000 vehicles per day – can be broken down as set out in 3.1 above. These are:

- 12% OF THE SEGMENTS ARE WITHIN URBAN AREAS WITH SPEED LIMITS OF 50 OR 60 KILOMETRES PER HOUR.
- 88% IS IN RURAL AREAS WITH SPEED LIMITS OF 100 AND 120 KILOMETRES PER HOUR.

The Strategic Noise Maps [see section 5.2] indicate that the following population is above the onset levels [see section 6.2] – that is the level indicated by the EPA at which consideration should be given to assessment of noise mitigation measures:

- In excess of 70dB, Lden [an estimated 123 people in this Action Plan]
- In excess of 57dB, Lnight [an estimated 812 people in this Action Plan]

The study area for the rail section of this Action Plan – consists of a total area 1.05 km². The area of line from Portarlington to Hazelhatch has 39,000 journeys per year.

3.4 Extent of Action Planning Area

The Laois 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. Vehicle count data was obtained from Laois County Council's roads' surveys and TII surveys for the M7, M8, N80, N77. The TII data identified the M7, M8, N80, and the N77 as major roads which needed to have noise mapping. Laois County Council identified parts of the R445 as roads which needed noise mapping. See more detailed descriptions in Section 1.4.1

For the rail mapping, a model was created for any objects within 1000m of the rail line where there is greater than 30,000 passages per year. Under the Regulations, noise from Heavy Rail is regarded as affecting an area if it causes noise of LDEN of 55dB (or greater) and/or an LNight of 50dB (or greater) at any receiver point.

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 modelling to be affected by noise levels of greater than 45dB(A) Lnight and/or 55dB(A) Lden.

4.0 RESPONSIBLE AUTHORITY FOR ACTION PLANNING

4.1 Name and Contact Details

Laois County Council,
Roads Section,
Áras an Chontae,
Portlaoise,
Co. Laois.
Telephone number : 0578664000
Fax number: 057 8622313
Email: roads@laoiscoco.ie

4.2 Description of other bodies of relevance.

The Local Roads Authority ie Laois County Council is responsible for the maintenance and upkeep of non-national routes. The primary goal of the Roads Authority is to keep the roads safe. The Roads section in consultation with the TII undertakes traffic calming measures where warranted by high vehicle speed and numbers passing through settlement areas and accident statistics.

5.0 SUMMARY OF NOISE MAPPING RESULTS

5.1 Overview of the preparation of the noise map

The roads identified as falling above the 3 million threshold and rail with greater than 30,000 journeys have been listed in Section 1.4.1. The Environmental Noise Regulations require the TII and Iarnród Éireann to develop noise mapping for National Roads and Rail while Laois County Council is required to develop noise mapping for regional roads. A centralised approach to noise mapping of roads over the 3 million threshold was adopted. The TII developed noise maps for national roads and for regional roads the TII developed noise mapping on behalf of Laois County

Council. These counts were used initially to identify the Regional roads above the 3 million threshold. Following on from this many roads and sections of roads were eliminated from the study. In order to get more accurate data on individual roads, particularly in Portlaoise, it was decided to use a Radar counter which would yield data on speeds as well as volumes and vehicle lengths. Manual count data would not have included information on speed. The conditions under which the counts were undertaken were taken to represent the normal situation and were converted to AADT using TII Expansion Factors for Short Period Traffic Counts.

The strategic noise maps were prepared by the TII using the recommended interim method of noise assessment set out in the second schedule of the Regulations. 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).

The TII generated GIS grids of noise levels as an output of the noise modelling process. GIS polygons were generated from the grids. The polygons are maps showing the noise contour bands in 5dB contours from 55dB to >75dB for Lden and from 45dB to >70dB Lnight.

In general, the calculation of noise levels from rail takes place in two stages within the noise mapping software:

- The assessment of the level of noise emitted from the rail source (i.e. the source emission); and
- The assessment of noise attenuation en-route from the point of emission to the receptor (i.e. propagation attenuation).

Following the assessment of noise levels across the receiving environment (i.e. following completion of the strategic noise maps), further datasets are required to undertake statistical population analysis, such as number of dwellings and number of population within the receiving environment exposed to the rail noise. Reporting of this statistical data is a requirement of the Directive.

The input datasets to the noise mapping software are classified as:

- **Source input data:** defining the position and characteristics of the source of the rail noise;
- **3D model pathway input data:** defining the adjacent environment within which the noise propagation occurs; and
- **Population input data:** defining the location and characteristics of the population exposed to the environmental noise

5.2 Presentation of results.

5.2.1 Noise Contour Maps

The strategic noise maps for Laois 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_{den} and L_{night} . These are defined as follows (more detailed definitions can be found in Appendix I):

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

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

5.2.2 Summary Exposure Statistics

The population exposure methodology was prepared by the EPA during the noise mapping process. The method is described in Guidance Note for Strategic Noise Mapping For the Environmental Noise Regulations 2006 Version 2 August 2011 Revised Section 10: Methodology for Exposure Assessment -Post Processing and Analysis October 2017 By the ENVIRONMENTAL PROTECTION AGENCY" in Appendix II.

In summary, population exposure in each noise contour band was generated by cross referencing geodirectory locations with population data to create a set of population figures for each stretch of major road in the country. A

summary report was provided to each local authority to assist in preparation of the action plans. The estimated population exposure results for Laois are shown in tables 2 and 3 below.

Table 2: Population Exposure Data, (L_{den})

Decibel Level Contour	Approx number of people
55-59	1989 (road) + 100 (rail)
60 -64	1307
65 -69	1193
70 -74	123
> 75	0

Table 3: Population Exposure Data, (L_{night})

Decibel Level Contour	Approx number of people
50 -54	1462
55 -59	1289
60 -64	194
65 -69	0
> 70	0

The total action plan area for road is subdivided approximately as follows:

>55dB Lden 53 km²

>65dB Lden 12 km²

>75dB Lden 1.5km²

The total action plan area for rail is subdivided approximately as follows:

>55dB Lden 0.81 km²

>65dB Lden 0.24 km²

>75dB Lden 0 km²

The TII and Iarnród Éireann was the source of above data.

5.3 Limitations of the noise mapping process.

5.3.1 Limitations of the computer modelling method

The data used to generate the noise maps was obtained from computer modelling rather than from actual noise measurement. This approach is in accordance with the Noise Regulations. There are technical and practical reasons for using computer modelling 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 modelling 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, Laois County Council 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 modelling 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 Limitations of the vehicle count data

The noise mapping produced is based on counts taken in 2016. Further counts will ascertain if volumes are increasing or decreasing in each subsequent year.

6 IDENTIFYING AREAS TO BE SUBJECT TO NOISE MANAGEMENT ACTIONS

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 EPA recommends that the proposed onset levels for assessment of noise mitigation measures for noise due to

rail traffic should be as follows:

- . 68dB, L_{den} and
- . 59dB, L_{night}

These criteria were applied to the data supplied by TII and filtered as such. The priority matrix was then applied to any of the properties that met these criteria.

These properties were then modelled in GIS to identify the priority locations.

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 was applied, based on work carried out by Dublin Agglomeration. See Table 4 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

In Laois, the noise source is the same for all assessments i.e. noise from major roads. It has been suggested in EPA Noise Guidance Document that each Action Planning Authority may impose an additional weighting factor to the matrix to include the number of residents at each address. However Laois County Council 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 may be 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 Local Authorities to prioritise actions. A matrix assessment score of **16** 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. This is less than the score of 17 applied by Dublin City Council.

Table 4. Matrix A: Decision Support Matrix to identify and prioritise noisy areas

Priority Matrix				
Location		Eg. School Main Street		
Decision Selection Criteria		Score Range L_{den}	Score Range L_{night}	Sub Total
Noise Band	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	Town centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive	3	3	
	Open countryside	3	3	
	Recreational open space	2	2	
Type of noise source				
	Road	3	4	
Total score				

6.2 Preservation of noise levels in quiet areas and noise sensitive locations.

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 areas identified in Laois for which noise mapping has been carried out therefore quiet areas are not relevant to this action plan.

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 noise maps were examined to identify any noise sensitive locations situated within the action planning area. Any noise sensitive locations identified will be tested against Matrix 'A' –Table 4 above to establish whether mitigation measures need to be carried out to improve the existing noise situation..

6.3 Areas identified as requiring further measurements.

The areas identified using the criteria in sections 6.1 and 6.2 were modelled in GIS .

This helped with identifying priority locations. The areas identified are include in the map in Appendix VI

It is proposed to undertake further manual monitoring in priority areas identified to verify the theoretical modelling. Quotations will be sought from acoustic consultants to carry out these works to verify the theoretical calculations. Funding for these works will be sought from TII inspector.

The data from manual monitoring will be analysed and if they verify an issue and further actions are warranted, a cost benefit analysis will be carried out to review best options.

7. MITIGATION & 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 gradient. 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, powertrain, 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 IV

The rolling noise emissions of tyres are regulated under the following EU regulations.

Regulation No 661/2009:

Concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor -

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. The 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.

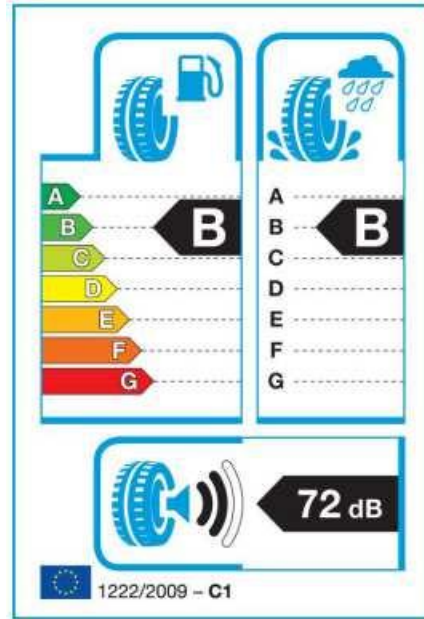
Tyre class	section width (mm)	values in dB(A)
C1A	≤185	70
C1B	>185 ≤215	71
C1C	>215 ≤245	71
C1D	>245 ≤ 275	72
C1E	>275	74

Extract from Part C 1.1 Regulation No 661/2009:

Regulation 1222/2009:

Labelling of tyres with respect to fuel efficiency and other essential parameters –

In support of Regulation 661/2009 this Regulation establishes a framework for the provision of harmonised information on tyre parameters through labelling, allowing end-users to make informed choice when purchasing tyres. As from 1 November 2012 the EU Energy labels for tyres must be available from tyre sellers, tyre distributors and vehicle suppliers /distributors(when a choice is offered between tyre types) and show information on fuel consumption, wet grip and rolling noise levels, as shown below. It deals with the tyre's external noise level (expressed in decibels), not any tyre noise heard inside the vehicle.



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 Laois with the opening of the M7 and M8 Motorways. Noise barriers were installed at a number of locations. Where areas are identified by further assessment as requiring possible mitigation, it may be possible to install noise barriers on major roads away from residential areas (where pedestrian access is not an issue).

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. (see CEDR Technical Report 2017-01 in relation to noise reducing pavements).

Research has indicated that road pavement surface texture defines the level of road tyre noise emission from the road pavement. The following road surface types may reduce road tyre noise:

- Smaller aggregate sizes in a thin layer pavement

- Stone Mastic Asphalt (SMA) with an altered grading curve to have a lower proportion of fine aggregates and a higher void content
- Porous asphalt which is a very open graded asphalt mix – application in two layers is said to further reduce noise levels.
- Concrete pavements with mechanical surface treatments to reduce noise emission
- Poroelastic -still under development. Rubber granulate is used to replace some of the stone aggregate. Durability is a challenge and further research is required.

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.

Examples include: 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 (see section 2.2.7)

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. Some of these acoustical planning measures although not all, are within the control of the planning authority.

7.3. Proposed Measures for Laois Action Planning Area

7.3.1 Mitigation Measures:

Residences located within the action planning area will be tested using the decision matrix -Matrix

A -to prioritise areas for which further assessment may be required.

Reducing traffic density is the most effective way to reduce road noise emissions. Laois County Council will strive to reduce traffic density on a countywide basis by:

Promoting Public Transport:

It is the policy of the Council to:

TRANS 61 Support the maintenance and enhancement of rail infrastructure and associated facilities in County Laois, particularly the

- Examination of options for how to increase the capacity of the Dublin to Galway line in compliance with the requirements of the Habitats and Birds Directives ;
- Develop a light rail link between the main line service at Portlaoise and the Togher National Enterprise Park

in order to develop a large intermodal facility;

TRANS 62 Support provision of additional rail links within the midlands region or other regions adjoining County Laois;

TRANS 63 Encourage co-ordination by providers to promote linked up services enabling complete coverage of the county independent of private vehicular transport and promote the provision of appropriately sited and designed facilities, bus shelters and bus lanes which facilitate increased public transport usage; all of which contribute to the development of integrated sustainable transport systems.

It is the policy of the Council to:

TRANS 64 Encourage the establishment of an intermodal facility, in Portlaoise; Laois County Development Plan 2017-2023 Page 111 of 216.

TRANS 65 Encourage the provision of shared bus stop facilities in appropriate locations in urban centres such as train stations as designated in the County Settlement Hierarchy to facilitate public and private operators;

TRANS 66 Support the provision of bus services:

- i. Connecting principal towns in Laois with Dublin, Dublin Airport, Kilkenny, Carlow, Roscrea, Tullamore and other towns;
- ii. Connecting principal and key towns within the County;
- iii. Provided as part of the Rural Transport Initiative which serve to improve access to principal and service towns and counteract rural isolation;

TRANS 67 Work with rural transport providers facilitate and promote sustainable options for rural transport given the increased running costs.

Promoting cycling

It is the policy of the Council to:

TRANS38 Support community-led or authority/agency- led projects that would deliver identified strategic cycling links, where appropriate;

TRANS 39 Promote walking and cycling as sustainable transport modes and healthy recreation activities throughout the county;

TRANS 40 Encourage and facilitate safe walking and cycling routes in the county, as a viable alternative to the private car, in accordance with initiatives contained within 'Smarter Travel, A Sustainable Transport Future

2009-2020’;

TRANS 41 Support the installation of infrastructure measures (for example new/wider pavements, road crossings and cycle parking facilities), retrofitted if necessary, which facilitates, and encourages safe walking and cycling;

TRANS 42 Promote cycling and pedestrian friendly development layouts, provide facilities at public transport nodes, towns and villages, plan for and make provision for the integration of cyclist and pedestrian needs when considering new development proposals,

TRANS 43 Investigate the possibility of developing and utilising existing abandoned road/ rail infrastructure for the purposes of walking and cycling.

Improved traffic management and smoothing traffic flows.

Improvements to traffic management are proposed as follows in Portlaoise:

- Pedestrianising some town centre streets.
- Designation of cycle routes.
- Provision of a bus route in conjunction with the NTA
- Use of one-way systems.
- Modifications to junction types. Where appropriate, new traffic calming areas will be designated and existing traffic calming measures will be optimised.

Laois County Council will consider improvement or changes to road surfaces during routine road maintenance, where necessary, by:

- Improving the quality of road surfaces by ongoing road maintenance programmes.
- Using low-noise road surfaces where appropriate. See CEDR Technical Report 2017-01

Surfacing schemes being completed under the HD 28, PAR and Capital Maintenance Works Programme will identify the use of Stone Mastic Asphalt as a preferred surfacing material where possible due to its acoustic values.

Where relevant, Laois County Council will investigate the feasibility of extending speed limit zones. For major national roads, this would be done in consultation with the TII.

In certain rural areas Laois Co Co are proposing to move speed limit signs further out beyond town boundaries. These proposals are currently with Elected Members for ratification. Examples of these locations area at Owenass Bridge, Donaghmore, Kennel Cross Road, Kilbride Bridge Portarlinton, Killeshin, Newtown, Portarlinton and The Heath.

Laois County Council will ensure that council-owned fleet vehicles are maintained to an adequate level to minimise

unnecessary noise generation. Consideration will be given to using quieter vehicles such as electric rather than diesel.

7.3.2 Protection Measures for future improvement:

Laois County Council will endeavour 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:
 - For new developments proposed within the current action planning area or
 - For developments proposed near major roads (i.e. traffic volumes in excess of 3 million vehicles per annum or otherwise on a case by case basis).
- Where developments are planned adjacent to major roads, to incorporate acoustical planning into the development design e.g. designing the development so that the access road is adjacent to the major road noise source. It may also involve the use of buffer zones and/or noise barriers and traffic calming measures.
- To ensure that all future developments are designed and constructed so as to minimise noise disturbance.

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

Laois County Council 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.

Laois County Council 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. Laois County Council 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 modelling 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.

Areas identified as requiring further study are highlighted in the map in Appendix VI.

Laois County Council will endeavour to ensure that sufficient traffic count data collected on a continuous basis. This will be updated in 2019.

Map Roads website will be updated with latest site information on conditions of local road network and maintenance programmes so future noise modelling will be as accurate as possible

7.3.4 Consultative Measures

In areas where Laois County Council do not have a regulatory role, but where improvements in regulatory controls will effect a reduction in environmental noise from major roads, Laois County Council will consult and liaise with the relevant authorities.

These areas may include:

- Liaising with the 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 the TII to impose set back distances for developments alongside national roads.
- Consult with the Department of Housing 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
- Recommend to the Planning Authority that measures proposed in this action plan be included in any revision to the Laois County Development Plan and in relevant Local Area Plans.
- Implement new guidance document on pre planning for noise through planning applications – to be published on Laois Co Co Website. See appendix VII

8. PUBLIC PARTICIPATION

The purpose of the Public Consultation is to allow for public participation in preparation and review of the Laois Noise Action Plan. The Draft Laois Noise Action Plan 2018 will be advertised and submissions invited. The draft plan will be made available for inspection in Laois County Council, Aras an Chontae, JFL Avenue, Portlaoise, Co. Laois and it will also be published on the Laois County Council website www.laois.ie. A newspaper notice will be placed in the Laois Nationalist and the Leinster Express inviting submissions from the general public. Submissions/comments were made in writing and addressed to:

Administrative Officer,
Roads Section,
Laois County Council
Áras an Chontae,
JFL Avenue,
Portlaoise,
Co. Laois.

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

In addition to the general public, the following stakeholders will also be asked to comment on the draft noise action plan:

- Department of Transport, Tourism and Sport
- Department of Environment, Community and Local Government
- Transport Infrastructure Ireland (formerly NRA)
- Environmental Protection Agency
- Kilkenny County Council
- Carlow City and County Council
- Kildare County Council
- Offaly County Council
- Strategic Policy Committee on Environment and Consumer Protection.

After the Public Consultation and timeframe for Submissions passed, the submissions will be considered, responses formulated and the Noise Action Plan finalised.

In Appendix V of the finalised Laois Noise Action Plan 2019, comments on the submissions are included and the public informed of decisions taken.

The finalised Laois Noise Action Plan 2019 will be published. A newspaper notice will be placed in the Leinster Express and Laois Nationalist newspaper advertising the fact that the Laois Noise Action Plan 2019 is

available.

9. IMPLEMENTATION PROGRAMME

9.2 Targets and Objectives:

It is the aim of this 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 onto two (2018 to 2019):

Application of the matrix assessment method described in section 6.1 to identify from noise maps specific areas for which further assessment may be warranted (i.e. monitoring). Completed as part of this NAP.

Year Two (2019):

- Initiate monitoring in specific areas identified, to determine existing noise levels in dB(A).
- Seek approval of funding from TII Inspector for monitoring equipment/consultants
- Cost benefit analysis if theoretical results are verified and identify issue
- Identify appropriate mitigating measures for specific locations for which corrective measures are required.

Undertake consultative measures outlined in 7.3.4 above.

Year three to four (2020 to 2021):

- Commence implementation of the relevant actions as outlined in section 7, where funding is available
- Ensure that adequate traffic flow data is collected for all roads in the county.
- Ensure Map Roads website holds latest surface and speed limit information for the county

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 annual interim summary report should 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.

10. 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 to other local authority sections eg. Road's Health and Safety.

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 considerably¹⁴. 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, Laois County Council propose to assign the monetary benefit to noise mitigation measures as recommended above -€25 per dB (Lden) 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.

11. SUMMARY AND CONCLUSIONS

The Laois County Council Action Plan addresses road noise from

- THE ENTIRE LENGTH OF THE M7 AND M8 MOTORWAYS (66 KILOMETRES)
- A SEGMENT OF THE N77 WITHIN THE TOWN OF PORTLAOISE (2 KILOMETRES)
- A SEGMENT OF THE N80 BETWEEN MOUNTMELICK AND STRADBALLY, INCLUDING THE TOWN OF PORTLAOISE (21 KILOMETRES)
- A SEGMENT OF THE N80 BETWEEN BALLICKMOYLER AND THE COUNTY BOUNDARY AT GRAIGUECULLEN (7.5 KILOMETRES)
- A SEGMENT OF THE R445 WITHIN PORTLAOISE (3 KILOMETRES)
- MAJOR RAIL LINE PORTARLINGTON-HAZELHATCH WITHIN LAOIS COUNTY BOUNDARY

Lands adjacent to these roads/rail are considered to be located within the action planning area where noise mapping has indicated that the environmental noise levels may be 55dB_{Lden} 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}**

And for rail

• **68dB, L_{den} and**

• **59dB, L_{night}**

In terms of management of existing road noise, the first action proposed under the current plan was to use a decision matrix to identify areas for possible further assessment. 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 (L_{den}), per household per year.

The effective management of future road/rail noise within the action planning area can be addressed to some extent through the planning process (acoustical planning). It is recommended that developers address the impact of road noise in assessment of new developments and design developments to minimize noise nuisance. For acoustical planning to be a useful tool, it can only be incorporated as a series of objectives into the Laois County and Local Area Development Plans. Changes to supporting legislation will be required in order to effectively implement acoustical planning into the planning process.

Appendix I-Glossary of acoustic and technical terms

Glossary

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 (eg 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):

Noise Level dB (A)	Description
120	Threshold of Pain
95	Pneumatic drill (at 7m distance)
83	Heavy diesel lorry (40km/h at 7m distance)
81	Modern twin-engine jet (at take-off at 152m distance)
70	Passenger car (60km/h at 7m distance)
60	Office environment
50	Ordinary conversation
40	Library
35	Quiet bedroom
0	Threshold of hearing

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 Licence: Integrated Pollution Prevention and Control Licence (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'¹⁶.

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.

Appendix II- Summary of Method (Roads)

Summary of method used to generate statistics of population exposed to noise from roads

The following is extracted from “Guidance Note for Strategic Noise Mapping For the Environmental Noise Regulations 2006 Version 2 August 2011 Revised Section 10: Methodology for Exposure Assessment -Post Processing and Analysis October 2017 By the ENVIRONMENTAL PROTECTION AGENCY”

Please refer to EPA website link

<http://www.epa.ie/pubs/advice/noisemapping/noisemappingrevisionoct2017.html>

Appendix III- Summary of Method (Rail)

Summary of method used to generate statistics of population exposed to noise from rail.

The following is extracted from “Iarnród Éireann Strategic Noise Mapping – Main Report December 2017 “

Identify data sources

The first stage of the process for the production of datasets was to undertake an initial collection of the raw GIS, electronic and paper datasets. All datasets used were to be no more than 3 years old as set out by the END.

Source Input Dataset

The ‘Source Input dataset’ for the noise model was generated from Iarnród Éireann’s Infrastructure Asset Management database and the Working Timetable 2016.

The EPA Guidelines for Strategic Noise Mapping (Ver 2, Aug 2011) and the Iarnród Éireann Source Input dataset for Round 1 were used as to assist and inform the development of the data specification requirements for the noise mapping software.

The Infrastructure Asset Management database provided details of all track assets along the network, including track type, track support, cuttings and embankments and bridge/elevated track details. The Infrastructure Asset Management database, coupled with driver simulation tele-viewer, was used to determine barriers/walls/fencing. Traffic numbers on the network for 2011 were obtained from the 2011 Iarnród Éireann Working Timetable. The provides accurate data on traffic flow for all scheduled train movements on the rail network (including passenger trains, freight trains, empty workings, other non-passenger trains) during daytime, evening and night periods along the network and also includes details on locomotive and carriage type, trainset configuration and speed limits/permanent speed restrictions.

These two sources were considered adequately detailed to compile a robust source input dataset for the rail environment.

3D Pathway Input Dataset

The 3D Pathway Input datasets were sourced from the following:

Ground Profile dataset

The foundation of the 3D model environment is the digital terrain model (DTM) obtained under licence from the Ordnance Survey of Ireland (OSI).

This dataset was paired with detailed Lidar topographic data along the rail corridor.

Buildings

The building dataset for Dublin Agglomeration Area is an amalgam of 2-D OSI large scale vector mapping and 2.5D closed building polygon dataset. Detailed building height data was available from lands within the functional control of Iarnród Éireann Strategic Noise Mapping – Main Report December 2017

Dublin City Council. Assumed building heights, were assigned to the 2-D building polygons for all other areas (assumed heights of 8m were assigned for residential buildings and 12m were made for commercial buildings).

Ground Cover

Within the Dublin Agglomeration Area, a dataset highlighting areas of acoustically soft ground was used. This was derived from the 1:15,000 OSI Digi City dataset for Dublin. This was then checked against high resolution ortho photography and satellite imagery and amended where appropriate.

Elsewhere, the Corine 2012 Land Cover dataset, available from EPA was used to distinguish land cover. This distinguished between soft ground (largely agricultural) and hard ground (urban and built land).

Bridges

Bridges were manually created in the Source Input dataset. However, care was exercised when assessing the 3-D pathway dataset to ensure the digital terrain model accounted for over and underbridges.

Barriers

Noise barriers were assessed as part of the Source Input dataset.

Meteorology

Default meteorological values were used as part of the base model.

Identification of Gaps, Anomalies and Uncertainties

No significant gaps or anomalies were determined in datasets. However some manipulation of available datasets was required to construct a 3D pathway input dataset.

With respect to building heights different methods were used for the building height dataset within the Dublin Agglomeration Area and alongside the Major Rail section outside agglomerations (i.e. within County Laois).

Building heights were assumed using standardised heights dependent on functional building use, whereby 8m was assigned to residential building and 12m assigned to commercial buildings. The approach took account of the guidance provided in WG-AEN GPGv2 Toolkit 15.

Field survey work to reduce data gap

No field survey work was undertaken.

Develop Noise Model Datasets

Develop input datasets to meet specification (data manipulation required)

At the outset, it was decided to use ArcGIS to manage the spatial datasets.

Each input datasets were prepared and/or provided in ESRI shapefile format (.shp) for developing a final datasets for integration into the noise modelling software. WG-AEN GPG v2 Toolkits and assumptions were made to fill data gaps.

Document use of WG-AEN GPG v2 Toolkits and assumptions to fill data Gaps

WG-AEN GPG v2 Toolkit 8 provided information on the means of populating the rail source dataset.

WG-AEN GPG v2 Toolkit 15 was used and provided guidance on generating the building dataset and the accuracy/uncertainties based on the various approaches. Relatively precise building height data was available for lands within Dublin City Council's functional area. However arbitrary height data was used elsewhere.

WG-AEN GPG v2 Toolkit 13 provided appropriate guidance in the development of the ground cover dataset.

WG-AEN GPG v2 Toolkit 14 provided guidance on the means by which barrier heights may be assessed.

Document data checks and QA

The information used for generating datasets was considered to represent the most relevant and appropriate information sources for the purposes of the Strategic Noise mapping.

Peer review checks of the datasets were undertaken prior to importing to the GIS platform. Further quality assurance checks were undertaken when the data was progressed within the GIS software but prior to export to the noise modelling software. Further sense checks and cross reference checks were made of

the Strategic Noise Maps when produced to ensure, insofar as was possible, that the output was relevant to on-the-ground conditions. Iarnród Éireann Strategic Noise Mapping – Main Report December 2017

Noise Level Calculations

Documentation of noise mapping software system

The Predictor LimA Software Suite Type was used for predicting noise levels of Major Heavy Rail and All Heavy Rail along Iarnród Éireann network .

This software is promoted by its manufacturers to be the market's most powerful and intuitive software for environmental noise calculation. The Predictor-LimA Software Suite is an efficient software package for environmental noise projects. The Suite bundles the intuitive Predictor™ software and the powerful LimA™ software in one, integrated, state-of-the-art package.

Together, the functionality of Predictor and the flexibility of LimA allow quick and easy environmental noise calculation and analysis. The LimA software provides the tools to do in-depth specialist work and fully integrate environmental noise calculations in other systems. The key features of the Predictor-LimA Software Suite are as follows:

- Intuitive and accurate modelling;
- Time-saving, integrated bookkeeping for model datasets and results;
- Powerful result analysis and "what-if" scenarios;
- Integration in environmental management, traffic management and GIS as noise-calculation core
- Automated reverse engineering and instant noise maps using measurements; and
- Automated workflows, including calculation, plots and more.

The processing conformed, as far as is practicably known, to the RMR Interim computation procedures.

The default setting of the model were used for computation.

Efficiency settings were not used in the running of noise models.

Appendix IV-Bibliography

Bibliography

- 1 Directive 2002/49/EC relating to the assessment and management of environmental noise.
- 2 SI 140 of 2006, Environmental Noise Regulations 2006.
- 3 EPA Guidance Note for Noise Action Planning, EPA Version 2 August 2011, Revised Section 10 October 2017, Updated sections February 2018.
- 4 CSO Census data 1996, 2002, 2006, 2011, 2016 www.cso.ie
- 5 TII Expansion Factors for Short Period Traffic Counts
- 6 Draft Noise Action Plan for Dublin Agglomeration, Brian MacManus.tyr
- 7 Quarries and Ancillary Activities: Guidelines for Planning Authorities, DOEHLG April 2004.
- 8 Laois County Development Plan 2017-2023.
- 9 WHO Estimating the Burden of disease from Environmental Noise 2012
- 10 RIVM Health Implication of Road, Railway and Aircraft Noise in the EU 2014
- 11 CEDR Technical Report 2017-01
- 12 Iarnród Éireann Strategic Noise Mapping – Main Report December 2017
- 13 WHO Environmental Noise Guidelines for European Union 2018
- 14 <http://www.epa.ie/pubs/advice/noisemapping/noisemappingrevisionoct2017.html>

Appendix V- EU Noise Emission Limits for New Road Vehicles

Regulation (EU) 540/2014

ANNEX III

LIMIT VALUES

The sound level measured in accordance with the provisions of Annex II, mathematically rounded to the nearest integer value, shall not exceed the following limits:

Vehicle category	Description of vehicle category	Limit values expressed in dB(A) [decibels (A)]		
		Phase 1 applicable for new vehicle types from 1 July 2016	Phase 2 applicable for new vehicle type from 1 July 2020 and for first registration from 1 July 2022	Phase 3 applicable for new vehicle type from 1 July 2024 and for first registration from 1 July 2026
M	Vehicles used for the carriage of passengers			
M ₁	power to mass ratio ≤ 120 kW/1 000 kg	72 ⁽¹⁾	70 ⁽¹⁾	68 ⁽¹⁾
M ₁	120 kW/1 000 kg < power to mass ratio ≤ 160 kW/1 000 kg	73	71	69
M ₁	160 kW/1 000 kg < power to mass ratio	75	73	71
M ₁	power to mass ratio > 200 kW/1 000 kg number of seats ≤ 4 R point of driver seat ≤ 450 mm from the ground	75	74	72
M ₂	mass ≤ 2 500 kg	72	70	69
M ₂	2 500 kg < mass ≤ 3 500 kg	74	72	71
M ₂	3 500 kg < mass ≤ 5 000 kg; rated engine power ≤ 135 kW	75	73	72
M ₂	3 500 kg < mass ≤ 5 000 kg; rated engine power > 135 kW	75	74	72
M ₃	rated engine power ≤ 150 kW	76	74	73 ⁽²⁾
M ₃	150 kW < rated engine power ≤ 250 kW	78	77	76 ⁽²⁾
M ₃	rated engine power > 250 kW	80	78	77 ⁽²⁾
N	Vehicles used for the carriage of goods			
N ₁	mass ≤ 2 500 kg	72	71	69
N ₁	2 500 kg < mass ≤ 3 500 kg	74	73	71
N ₂	rated engine power ≤ 135 kW	77	75 ⁽²⁾	74 ⁽²⁾
N ₂	rated engine power > 135 kW	78	76 ⁽²⁾	75 ⁽²⁾
N ₃	rated engine power ≤ 150 kW	79	77	76 ⁽²⁾
N ₃	150 kW < rated engine power ≤ 250 kW	81	79	77 ⁽²⁾
N ₃	rated engine power > 250 kW	82	81	79 ⁽²⁾

Appendix VI- Strategic Noise Maps

See book of A3 drawings

Appendix VII-Proposed Information Sheet to be added to Laois Co Co website to assist future planning applicants

Appendix VIII- Details of Public Consultation

Details of Public Consultation

~~Members of the Environment SPC were informed by letter that the Draft Plan had been prepared and were also issued with a copy of the newspaper notice in advance of its publication. The notice directed members to the Laois County Council website for details.~~

~~Councillors were informed of the Draft Plan and were issued with a copy of the newspaper notice in advance of its publication which directed them to the Laois County Council website.~~

~~The Public Consultation process commenced with the publication of a notice in the Leinster Express newspaper on XXXXXX 2019.~~

~~A presentation on the Draft Noise Action Plan 2013 was made to the Environmental and Water Services Strategic Policy Committee on XXXXX. The Committee agreed to place the Draft Noise Action Plan 2018 before the full Council meeting for consideration.~~

~~Copies of the Draft Noise Action Plan 2018 were issued to the following bodies:-~~

- ~~● Department of Transport, Tourism and Sport~~
- ~~● Department of Environment, Community and Local Government~~
- ~~● National Roads Authority~~
- ~~● Environmental Protection Agency~~
- ~~● Irish Aviation Authority~~
- ~~● Carlow County Council~~
- ~~● Kilkenny City County Council~~
- ~~● Kildare County Council~~
- ~~● Offaly County Council~~
- ~~● Tipperary County Council~~

~~xxxxxxxxxxxxxx comments were received.~~

~~The Draft Noise Action Plan was available for inspection at the locations outlined on the advertisement ie. Offices and Libraries of Laois County Council in the Action Plan areas. It was also placed on the Laois County Council website. Closing date for receipt of submissions was XXXXX 2018.~~

Submissions received

~~xxxxx submissions were received and are summarised below along with a summary response.~~

~~Submission 1:XXX~~

~~Response to Submission 1:XXX~~

~~Submission 2:XXX~~

~~Response to Submission 2:XXX~~

~~Submission 3:XXXX~~

~~Response to Submission 3: XXXX~~

~~Laois County Council would like to thank those who made submissions.~~

~~A presentation was made to the Council Meeting of Laois County Council on XXXXX for consideration by Members of Laois County Council.~~

~~The above submissions were outlined along with the responses.~~

~~No alteration or additions were requested by the Council Members and the Draft Noise Action Plan 2019 was approved by the Council.~~

~~The Laois County Council Noise Action Plan 2019 has now been approved and is in place.~~

January 2019.

COMHAIRLE CHONTAE LAOISE
LAOIS COUNTY COUNCIL

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

**NOTICE OF PUBLIC CONSULTATION ON DRAFT NOISE
ACTION PLAN 2018 IN RESPECT OF COUNTY LAOIS.**

Laois County Council invites submissions from the public on the draft Noise Action Plan 2018, 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 Laois. 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 major roads and the corrective measures that may be considered to address these issues.

The draft plan and associated maps will be available for inspection at the following locations for a period not less than four weeks beginning on the date of publication of this notice:

- Roads Section, Laois County Council, Áras an Chontae, JFL Avenue, Portlaoise (during normal working days from 9.00 a.m. to 5.00 p.m).

The plan may also be accessed on the Laois County Council website www.laois.ie.

Submissions or observations on the draft plan are invited from the general public. These submissions may be made in writing to :

Administrative Officer,
Roads Section,
Laois County Council,
Áras an Chontae,
JFL Avenue,
Portlaoise,
Co. Laois.

or by email to roadsadmin@laoiscoco.ie up to and including **1st March 2019**

“For insertion in Laois Nationalist and Leinster Express”: **January 2019**