



Kildare County Council

Third Noise Action Plan 2019 - 2023

September 2019

Kildare County Council,
Áras Chill Dara,
Devoy Park,
Naas,
Co. Kildare.

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Kildare County Council Third Noise Action Plan 2019 - 2023

For the third round of noise action planning under the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018 in place of the revoked Environmental Noise Regulations 2006, S.I. No. 140 / 2006.

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Executive Summary

General

This third Noise Action Plan 2019 - 2023 is an update of the second Noise Action Plan 2014 - 2018 and has been prepared in accordance with the requirements of the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018 in place of the revoked Environmental Noise Regulations 2006, S.I. No. 140 / 2006. These Regulations give effect to the EU Directive 2002/49/EC relating to the assessment and management of environmental noise.

The aim of the document is to provide an overview of the requirements of the Regulations, to review the results of the strategic noise mapping within Kildare County Council, (as set out in Section 5), and to set out an approach to the strategic management and control of environmental noise over the next five years.

The objectives of the Noise Action Plan are to avoid, prevent and reduce on a prioritised basis, where necessary, the harmful effects due to long term exposure to environmental noise. This can be achieved by taking a strategic approach to managing environmental noise and following a balanced approach in the context of sustainable development.

The Regulations set out a requirement for the assessment of noise impact through the use of strategic noise maps. In Kildare, for "Major Roads", revised Strategic Noise Maps for national roads were completed in 2017 by the Transport Infrastructure Ireland (TII) formerly referred to as the National Roads Authority (NRA). Revised Strategic Noise Maps for non-national roads were completed by Kildare County Council / TII and for "Major Railways" by the Iarnród Éireann (Irish Rail) in 2017. There are no "Major Airports" in County Kildare. The results have been presented as maps and summary tables of statistics showing the estimated area, number of dwellings and people exposed to noise from "Major Roads" and "Major Railways" within the area covered by the noise mapping. (Please see the interpretation for a "Major Road", Major Railway" and "Major Airport" as contained in the Definitions sections on page v of this Plan).

This Noise Action Plan 2019 - 2023 primarily considers the long term environmental noise impact from "Major Road" and "Major Rail" traffic noise sources and sets out an approach to review noise impact levels.

In 2017 Kildare County Council as lead partner procured RPS Consulting Engineers for the delivery of the noise mapping requirements for Non-National Roads under the Environmental Noise Directive for Kildare, Carlow, Clare, Donegal, Galway City and County Council, Kerry, Kilkenny, Laois, Limerick, Longford, Louth, Meath, Monaghan, Offaly, Roscommon, Sligo, Tipperary, Waterford City and County Council, Westmeath, Wexford and Wicklow County Councils. RPS worked in conjunction with TII in producing the Strategic Noise Maps 2017 facilitating the aforementioned analysis.

On review of Iarnród Éireann Strategic Noise Mapping Report dated December 2017, it was concluded from the population exposure assessment that "Major Heavy Rail and All Heavy Rail" was not a significant contributor to the overall noise environment. This was consistent with the findings of the 2nd Round Noise Action Plan 2014 – 2018.

The 2019 - 2023 Noise Action Plan proposes noise levels thresholds for this assessment of 70 dB (A) L_{den} , and 57 dB (A) L_{night} for both "Major Roads" and "Major Railways" set in accordance with the Environmental Protection Agency (EPA) "Guidance Note for Noise Action Planning, July 2009". These limits are arbitrary at present as there is no existing legislation that limits environmental noise to a particular value. The limits are the same as those used in the previous two County Noise Action Plans.

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A summary of road noise exposure and rail noise exposure to people, dwellings and area statistics is given in Section 5.2 of this Plan. In the analysis of the 2017 Strategic Noise Mapping results for “Major Roads” it was concluded:

1. Approximately 99.7% of the population (221,385 people) were living in the county below this plan’s set L_{den} threshold of 70 dB (A) in 2017.
2. The 2017 strategic noise mapping for “Major Roads” indicated approximately 745 people were currently exposed to noise levels in excess of this plan’s set L_{den} threshold of 70 dB (A). This represents approximately 0.3% of the county’s population.
3. Approximately 97.7% of the population (216,945 people) were estimated to be living in the county below the 55 – 59 dB (A) L_{night} noise contour in 2017 and therefore below this plan’s set L_{night} threshold of 57 dB (A).
4. The 2017 strategic noise mapping for “Major Roads” indicated approximately 907 people were currently exposed to L_{night} noise levels greater than 60dB (A), in excess of this plan’s set L_{night} threshold of 57 dB (A). This represents 0.40% of the county’s population. It is further noted the 2017 strategic noise mapping indicated approximately 4278 people were exposed to noise levels within the 55 – 59 dB (A) L_{night} noise contour. This is approximately 1.9% of the county’s population. It is also noted the approximate number of people and percentage of population exposed to noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.

It was concluded from the 2017 Strategic Noise Mapping for “Major Railways” that:

1. 100% of the population were living in the county below this plan’s set L_{den} threshold of 70 dB (A) in 2017.
2. Therefore, no people in the county were exposed to noise levels greater than this plan’s set L_{den} threshold of 70 dB (A) in 2017.
3. Approximately 99.8% of the population (222,000 people) were living in the county below 55 – 59 dB (A) L_{night} noise contour and therefore below this plan’s 57 dB (A) L_{night} threshold.
4. The 2017 strategic noise mapping for “Major Railways” indicated approximately 500 people were currently exposed to L_{night} noise levels in the 55 – 59 dB (A) noise contour. This represents 0.2% of the population. It is also noted this approximate number of people and percentage of population exposed to these noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.
5. Again, no people in the county were exposed to noise levels greater than 59 dB (A) L_{night} .

The results clearly indicate that noise from “Major Roads”, as opposed to “Major Railways”, is the dominant source of noise affecting people.

In comparing the strategic noise mapping results of the second Noise Action Plan, the general trend in the reduction in the numbers of people exposed to the various noise contour bands in this Noise Action Plan can be attributed to better noise modelling methods, both in improved data collection and calculation techniques.

It can be concluded that a very small number and percentage of the population is exposed to noise levels above the L_{den} and L_{night} thresholds of this Noise Action Plan from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. In total, approximately 0.3% of the population is exposed to noise levels in excess of this plan’s set L_{den} threshold of 70 dB (A) and 2.1% of the population is exposed to noise levels in excess of this plan’s set L_{night} threshold of 57 dB (A) from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. Again, this 2.1% of the population exposed to noise levels

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above this plan's set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no statistical information indicating the approximate number of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.

From the analysis of the 2017 strategic noise mapping for Kildare it can be concluded only a very small percentage of the overall population of Kildare is actually affected by noise levels that exceed the L_{den} and L_{night} thresholds of this plan.

A priority list of areas needing further examination will be developed. The process will include confirmatory noise measurements, the undertaking of an assessment of potential noise mitigation measures which will then be subject to a cost benefit analysis in order to make recommendations for viable, cost effective, noise mitigation action. This process is subject to funding availability.

This action plan sets out a number of proposals for the prevention and avoidance of increasing levels of environmental road noise. This can be implemented through the planning and development process which is applicable throughout County Kildare.

There are fifteen population centres potentially exposed to noise from "Major Roads" in the county. These population centres are Athgarvan, Celbridge, Clane, Johnstown, Kilcock, Kilcullen, Kildare, Kill, Leixlip, Maynooth, Monasterevin, Naas, Newbridge, Prosperous and Sallins. There are five population centres potentially exposed to noise from "Major Railways" in the county. These population centres are Caragh, Kildare, Newbridge, Monasterevin and Sallins.

The Regulations apply to environmental noise from "Major Roads" and "Major Railways" to which people are exposed to near schools and hospitals. There are fifteen schools and one hospital potentially exposed to noise from "Major Roads". No hospitals or schools are detrimentally exposed to noise from "Major Railways". (Please see the Strategic Noise Maps 2017 for "Major Roads" and "Major Railways" in Appendices C and D of this Plan).

Summary of Actions

1. Planning & Development

The integration of noise management into the planning and development process can support proper planning and sustainable development near sources of long term environmental noise, such as roads and railways in the county by taking, inter alia, the following actions:

- Review county planning development and develop guidance for the needs of planners and engineers in Kildare County Council in order to mitigate for noise in the county from "Major Roads" and "Major Railways". This guidance document will also involve the development of a set of standard conditions to be attached to the grant of planning permission pertaining to noise mitigation measures,
- A significant trust of future action will focus on land use zoning and the siting of "noise sensitive receptor" development",
- Where noise is currently an issue, ensure any future development will improve the existing noise situation by:
 - i. Requiring noise impact assessments as part of the planning and development process for proposed noise sensitive development(s) which may be below the scale associated with full EIA requirements within the study area, and
 - ii. Ensuring the implementation of noise abatement measures for proposed noise sensitive development(s) within the study area by the imposition of conditions pursuant to the grant of planning permission.

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- The design of national roads in the county shall be in accordance with the Transport Infrastructure Ireland (TII) “Guidelines for the Treatment of Noise and Vibration in National Road Schemes” (2004) and the “Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes” (March 2014),
- Implement the use of “Pro PG: Professional Practice Guidance on Planning & Noise, New Residential Development. (May 2017)” with regard to proposed residential development near “Major Roads” and “Major Railways” during the planning application process.

2. Noise Reduction of Existing Sources

In an ideal scenario, sufficient funding would be provided to mitigate the effects of adverse environmental noise across the county. In practice, the absence of funding means that any noise reduction from existing sources will most likely come from opportunities to introduce noise reduction measures as part of the roads maintenance function of Kildare County Council.

3. Relevant Actions of the Third Noise Action Plan 2019 - 2023

Relevant actions from this plan are as follows:

- Review Strategic Noise Maps to identify Priority Noise Areas through the use of a Priority Decision Support Matrix and guidance documents and confirm the extent of the noise impact in these areas with noise monitoring surveys, subject to funding being available,
- Review Strategic Noise Maps to identify “Quiet Areas in Open Country” through the use of a Priority Decision Support Matrix and guidance documents and confirm the extent of the noise impact in these areas with noise monitoring surveys, subject to funding being available,
- Draw up a list of hotspots for noise mitigation review. (Note: This and other subsequent mitigation measures will only be carried out if there is funding available),
 - i. Feasibility study for possible options for mitigation, subject to funding being available,
 - ii. Cost benefit analysis for feasible measures, subject to funding being available,
 - iii. Draw up list of cost effective interventions, subject to funding being available,
 - iv. Undertake cost effective actions, subject to funding being available,
- Review of Round 3 Noise Action Plans.

4. Preservation of “Quiet Areas”

The preservation of relatively quiet areas in the vicinity of major noise sources and “Quiet Areas in Open Country” will be considered and reviewed as part of the implementation of this noise action plan. Any possible designations which may be recommended by such a process would go to public consultation prior to submission to the Minister for adoption.

5. Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA)

It has been determined by Kildare County Council that formal screening for SEA and AA is not required at this current stage as any significant proposed works on “Major Roads” and “Major Railways” will be subject to a formal screening process during the planning and development process.

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6. Planning for the Fourth Action Plan 2024 - 2028

- Prepare relevant information for 2022 strategic noise mapping,
- Estimate extent of sources under 2022 strategic noise mapping,
- Set out data requirements for 2022 strategic noise mapping,
- Collate, capture and consolidate data required for 2022 strategic noise mapping by using the Common Noise Assessment Methods in Europe (Cnossos – EU) in assessing and managing environmental noise in Europe consisting of road, railway, aircraft and industrial noise whilst having further consideration to building heights,
- Undertake an annual review of progress on the implementation of this noise action plan.

7. Public Consultation for Draft Noise Action Plan 2019 – 2023

This Draft Noise Action Plan went on public display from the 25th July 2019 to the 16th August 2019 for submissions from members of the public to be submitted by 4.00 pm on the 30th August 2019 in accordance the Department of Public Expenditure and Reform “Consultation Principles & Guidance” document dated November 2016.

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Definitions

The following definitions are in accordance with the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018:

(Relevant) Action Planning Authority.	Kildare County Council.
Environmental Noise.	Unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic and from sites of industrial activity including those defined in Annex I to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution, prevention and control.
L _{den} .	(Day-evening-night noise indicator) means the noise indicator for overall annoyance during the day, evening and night period.
L _{night} .	(Night-time noise indicator) means the noise indicator for sleep disturbance.
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 takeoff or landing of an aircraft.
Major Railway.	A railway line which has more than 30,000 passages per year.
Major Road.	A national, regional or international road which has more than three million vehicle passages per year.
Noise Mapping.	The presentation of data on an existing or predicted noise situation in terms of 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.
Noise Mapping Bodies.	Transport Infrastructure Ireland (TII). Iarnród Éireann (Irish Rail). Dublin Airport Authority. (DAA) Dublin City Council and the County Councils of Dún Laoghaire / Rathdown, Fingal and South Dublin. Cork City and County Councils. All other relevant Local and Roads Authorities.
Quiet Area in Open Country.	An area, delimited by an action planning authority following consultation with the Agency and approval by the Minister that is undisturbed by noise from traffic, industry or recreational activities.

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Glossary of Acoustic Terms and Abbreviations

Term	Definition
AA	Appropriate Assessment
Attribute Data	A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height
Attributing (Data)	The linking of attribute data to spatial geometric data.
CDER	Conference of European Directors.
Cnossos - EU	Common Noise Assessment Methods in Europe (Cnossos – EU) in assessing and managing environmental noise in Europe consisting of road, railway, aircraft and industrial noise.
CRN	The Calculation of Railway Noise 1995. The railway prediction methodology published by the UK Department of Transport.
CRTN	The Calculation of Road Traffic Noise 1988. The road traffic prediction methodology published by the UK Department of Transport.
DALY	Disabled Adjusted Life Year.
Data	Data comprises information required to generate the outputs specified, and the results specified
dB	Decibel
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
EC	European Commission
END	Environmental Noise Directive (2002/49/EC)
ESRI	Environmental Systems Research Institute
EU	European Union
GIS	Geographic Information System
INM	Integrated Noise Model
Irish National Grid (ING)	The official spatial referencing system of Ireland
ISO	International Standards Organisation
Metadata	Descriptive information summarising data
NA	Not Applicable
Noise Bands	Areas lying between contours of the following levels (dB): L_{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_n <50, 50 – 54, 55 – 59, 60 – 64, 65 – 69, >70
Noise Levels	Free-field values of L_{den} , L_d , L_e , L_n , and $L_{A10,18h}$ at a height of 4m above local ground level
Noise Level - L_d - Daytime	L_d (or L_{day}) = $L_{Aeq,12h}$ (07:00 to 19:00)
Noise Level - L_e - Evening	L_e (or $L_{evening}$) = $L_{Aeq,4h}$ (19:00 to 23:00)
Noise Level - L_n - Night	L_n (or L_{night}) = $L_{Aeq,8h}$ (23:00 to 07:00)

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Term	Definition
Noise Level - L_{den} - Day/Evening/Night	A combination of L_d , L_e and L_n as follows: $L_{den} = 10 * \log \left(\frac{1}{24} \left\{ 12 * 10^{(L_{day}/10)} + 4 * 10^{(L_{evening}+5)/10} + 8 * 10^{(L_{night}+10)/10} \right\} \right)$
Noise Level - $L_{A10,18h}$	$L_{A10,18h} = L_{A10,18h}$ (06:00 to 24:00)
Noise Level - $L_{Ar,T}$	$L_{Ar,T}$ = The equivalent continuous A-weighted sound pressure level during a specified time interval, T, plus specified adjustments for tonal character and impulsiveness of the sound.
Noise Level - $L_{eq,T}$	The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T.
Noise Level - $L_{Aeq,T}$	The A-weighted equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. It is used to describe many different types of noise and can be measured directly with an integrating sound level meter.
Noise Mapping (Input) Data	Two broad categories: (1) Spatial (eg. road centre lines, building outlines) (2) Attribute (eg. vehicle flow, building height – assigned to specific spatial data)
Noise Mapping Software	Computer program that calculates required noise levels Based on relevant input data
Noise Model	All the input data collated and held within a computer program to enable noise levels to be calculated.
Noise Model File	The (proprietary software specific) project file(s) comprising the noise model
Output Data	The noise outputs generated by the noise model
OSI	Ordnance Survey for Ireland
Processing Data	Any form of manipulation, correction, adjustment factoring, correcting, or other adjustment of data to make it fit for purpose. (Includes operations sometimes referred to as 'cleaning' of data)
QA	Quality Assurance
RMR	The railway noise calculation method published in the Netherlands in 'Reken- en Meetvoorschrift Railverkeerslawaai '96, Ministerie Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 20 November 1996'.
SEA	Strategic Environmental Assessment
Spatial (Input) Data	Information about the location, shape, and relationships among geographic features, for example road centre lines and buildings.
WG - AEN	Working Group – Assessment of Exposure to Noise
XPS	The French road traffic noise calculation method published in 'NMPB-Routes-96 (SETRA-CERTULCPC-CSTB)', referred to in 'Arrêté du 5 mai 1995 relatif au bruit des infrastructures routières, Journal Officiel du 10 mai 1995, Article 6' and in the French standard 'XPS 31-133'.

1. Introduction

1.1 Background

This Third Noise Action Plan has been developed by Kildare County Council in its role as a designated Action Planning Authority under the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018 in place of the revoked Environmental Noise Regulations 2006, S.I. No. 140 / 2006 (herein after referred to as "the Regulations").

This plan aims to provide an overview of the requirements of the Regulations, to review the results of the strategic noise mapping completed in 2017 within County Kildare and to set out an approach to the strategic management and control of environmental noise over the next five years.

The Third Noise Action Plan (2019 – 2023) is an update on the Second Noise Action Plan (2014 - 2018). It has been prepared with reference to the Environmental Protection Agency's (EPA) "Guidance Notes for Noise Action Planning for the first round of the Environmental Noise Regulations (2006)" documents dated July 2009, August 2011, January 2016, October 2017 and June 2018.

This document is to be read in conjunction with this plan's definitions and glossary of acoustic technical terms and abbreviations set out in pages vi, vii and viii.

1.2 Noise

Noise is typically defined as "unwanted sound", sound being pressure variations in the air which the human ear can detect. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0dB is nominally the "threshold of hearing" and 120dB is nominally the "threshold of pain".

One effect of using the decibel scale is that a doubling of the sound energy results in a 3 dB increase in the sound level. As illustrated in Figure 1.1 if one lawnmower produces a sound level of 60 dB, and we add a second one the same, we will measure a total of 63 dB. If we had 10 of these lawnmowers we would measure about 70 dB.

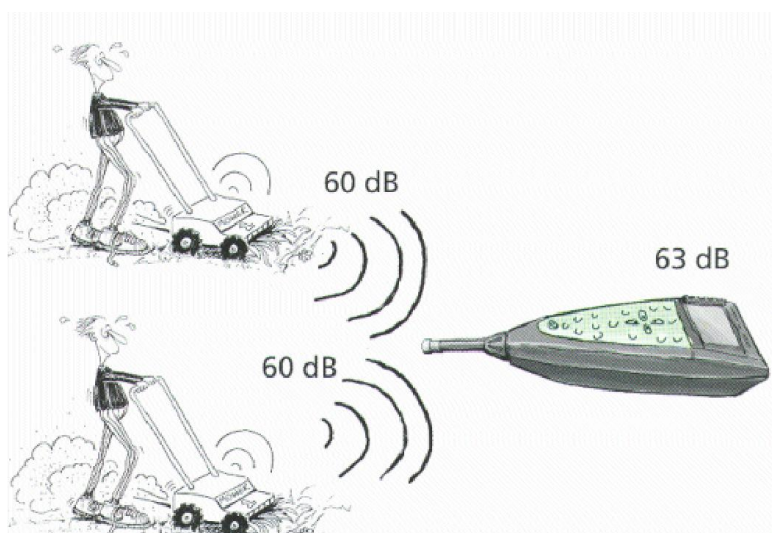


Fig 1.1 Twice the sound energy measures 3 dB more. (Bruel & Kjaer Environmental Noise Booklet 2000)

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Depending upon the circumstances and characteristics of the sound in question, a change in level of 3dB is just perceptible, whereas an increase of 10dB is perceived as a subjective doubling of loudness.

The frequency of sound is the rate at which a sound wave oscillates and is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250Hz. A mechanism known as "A-weighting" has been adopted in order to account for this nonlinearity of the human ear. Sound levels expressed using "A-weighting" are typically denoted dB (A). An indication of the level of some common sounds on the dB (A) scale is presented in Figure 1.2, which shows a quiet bedroom at around 35 dB (A), a nearby noisy HGV at 90 dB (A) and a pneumatic drill at about 100 dB (A).

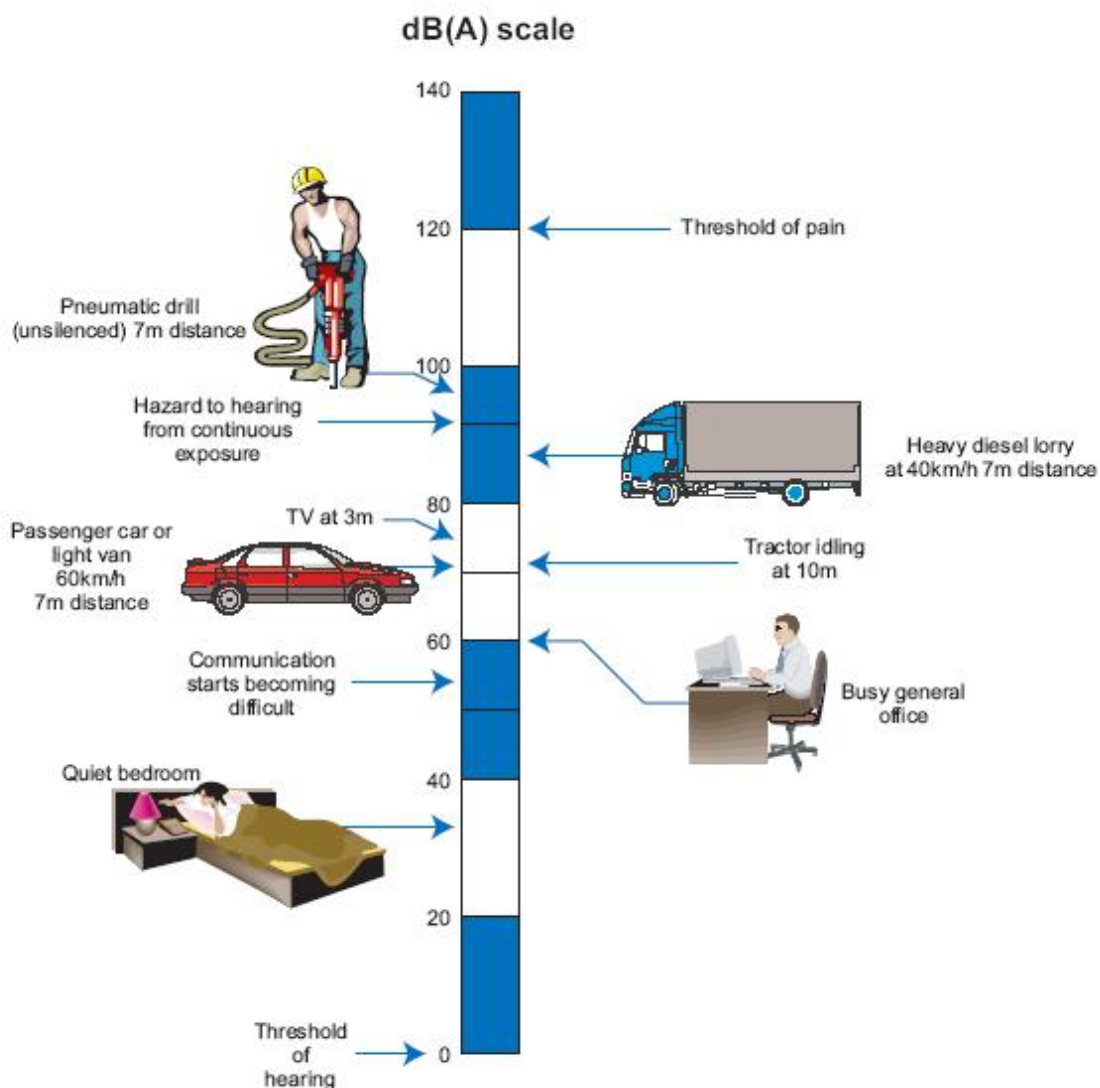


Fig 1.2 The level of typical common sounds on the dB (A) scale. (NRA Guidelines for the Treatment of Noise and Vibration in National Road Schemes 2004.

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1.3 Noise Indicators

There are many ways of defining sound pressure levels through the use of statistical indicators. The choice of relevant indicator is often related to the type or nature of the sound being represented. In order to provide a standardised approach to the description of long term environmental noise the Directive specifies the use of two noise level indicators when preparing environmental noise maps and action plans; these two indicators are L_{den} and L_{night} . L_{den} is a noise rating indicator, rather than a sound level, and is based upon the day, evening and night time noise levels, with weightings applied for the different periods. L_{night} is typically used to assess sleep disturbance.

- L_{day} is the A-weighted long-term average sound level between 07.00 and 19.00
- $L_{evening}$ is the A-weighted long term-average sound level between 19.00 and 23.00
- L_{night} is the A-weighted long-term average sound level between 23.00 and 07.00
- L_{den} is the 24 hour noise rating level determined by the averaging of the L_{day} , with the $L_{evening}$ plus a 5 dB penalty, and the L_{night} plus a 10 dB penalty.

The long term, annual average, day, evening and night values are determined and then combined to provide the indicated L_{den} yearly average. The penalties are applied to the evening and night time periods during the assessment of L_{den} to take into account evidence that response to noise levels is not uniform throughout the 24 hour period. For example, a given indicated level of noise during the day may be deemed acceptable by the majority of people, however that same level of noise at night may be deemed less acceptable. The formula used to calculate L_{den} is presented in this plan's glossary of acoustic technical terms and abbreviations.

1.4 Effects of Noise on Health

The World Health Organization (WHO) Environmental Noise Guidelines for the European Region published in 2018 is the first of their kind globally in providing recommendations for protecting human health from exposure to environmental noise originating from transportation (road traffic, railway and airport) noise, wind turbine noise and leisure noise. The guidelines provide the public health burden from environmental noise which can be a cause of:

1. Hearing impairment and tinnitus,
2. Cardiovascular disease and strokes,
3. Cognitive Impairment,
4. Adverse birth outcomes,
5. Hypertension,
6. Annoyance,
7. Detrimental effects on sleep leading to after-effects including fatigue and depression,
8. Detrimental effects on quality of life,
9. Detrimental effects on mental health and wellbeing.

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The WHO "Burden of disease from Environmental Noise" (2011) concluded:

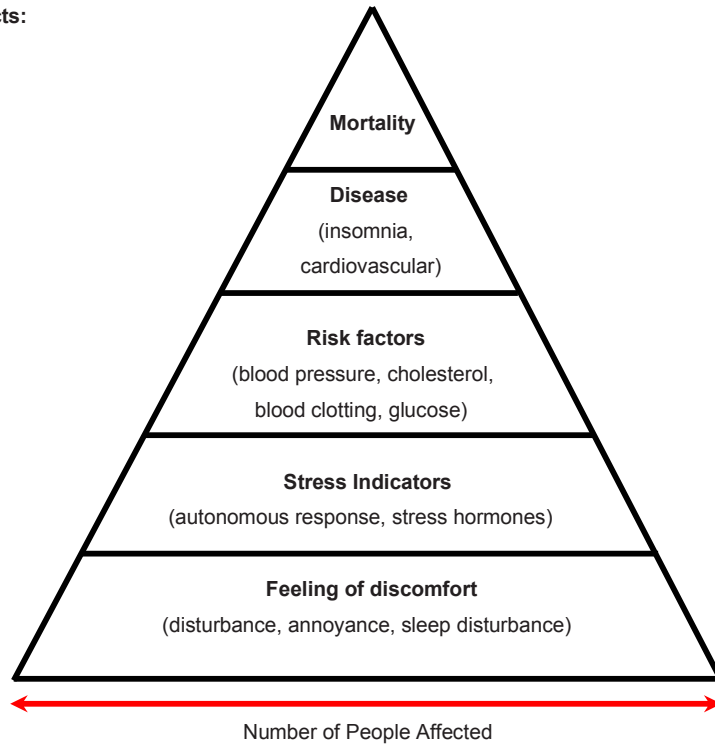
"It is estimated that the dis-ability-adjusted life years (DALYs) lost from environmental noise in the western Europe countries are 61,000 years for ischaemic heart disease, 45,000 years for cognitive impairment of children, 903,000 years for sleep disturbance and 654,000 years for annoyance. If all of these are considered together, the range of burden would be 1.0 – 1.6 million DALYs. This means that at least 1 million healthy life years are lost every year from traffic – related noise in western European countries, including the EU Member States. Sleep disturbance and annoyance related to road traffic noise constitute most of the burden of environmental noise in western Europe."

The DG Environment commission a study on the health implications of road, railway and aircraft noise for the European Union (EU) 2014. In the European Environmental Agency's report dated 2014, it found that exposure to noise in Europe contributes to:

1. Approximately 10,000 cases of premature death in Europe each year,
2. Over 900,000 cases of hypertension are caused by environmental noise annually,
3. 43,000 hospital admissions in Europe per annum,
4. Road traffic is the most dominant source of environmental noise in Europe. An estimated 125 million people are affected by noise levels greater than 55 decibels (dB) L_{den} ,
5. Approximately 20 million adults are annoyed by environmental noise and a further 8 million people suffer sleep disturbance due to environmental noise.

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Pyramid of Noise Effects:



Source: Babisch, 2002, based on WHO, 1972.

Noise exposure can increase blood pressure and vasoconstriction. After prolonged exposure, susceptible individuals may develop more permanent effects such as hypertension and heart disease. (WHO Guidelines for Community Noise 1999).

The WHO has previously suggested that environmental noise intensifies the development of latent mental disorder. Symptoms cited include anxiety, stress, nervousness, nausea, headaches, instability, argumentativeness, sexual impotency and mood changes. Studies on the use of drugs such as tranquillisers and sleeping pills and on mental health admission rates do suggest links between environmental noise and adverse effects on mental health. (WHO Guidelines for Community Noise 1999).

The detrimental effect of environmental noise in the learning ability of children has been found that schools in the vicinity of airports have adversely affected the reading ability of pupils (Hygge et al., 2002) and road traffic and airport noise has adversely affect the health and cognitive abilities of children. (Stansfeld et al., 2005).

The following reports are considered relevant in providing a broad understanding of the impact that noise has on health. Methodologies have been developed to estimate the burden of disease on an exposed population.

1. WHO-Guidelines for Community Noise (1999),
2. WHO LARE Report – Noise effects and morbidity, 2004.
3. WHO-Night Noise Guidelines for Europe (2009),
4. EEA- Good Practice Guide on Noise Exposure and Potential Health Effects (2010),
5. WHO- Burden of Disease from Environmental Noise (2011),
6. WHO- Methodological Guidance for Estimating the Burden of Disease from Environmental Noise (2012),

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7. EEA & JRC- Environment and Human Health (2013),
8. RIVM Report- Health Implication of Road, Railway and Aircraft Noise in the European Union (2014), and
9. WHO-Environmental Noise Guidelines for the European Region (2018).

1.5 Purpose and Scope of the Directive

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

The aim of the Directive is to establish a common approach across Europe to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. The Directive addresses the management of environmental noise issues and effects which arise from road traffic, railways, major industrial sites and aircraft departing from and arriving at airports. The Directive does not apply to noise caused by an exposed person, noise from domestic activities, noise created by neighbours, noise at places of work, noise inside means of transport, or noise due to military activities in military areas.

In support of its aims, the Directive sets out a three stage approach:

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 (this document), 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 most recent Strategic Noise Mapping was undertaken in Ireland during 2017 by the designated noise mapping bodies. The END required all European Union (EU) Member States to undertake the assessment of noise levels from “Major Roads”, “Major Railways” and “Major Airports” across Europe.

Using these noise level results with population distribution information the noise exposure of the population living within the assessment areas was estimated. The Environmental Protection Agency (EPA) is required to report to the European Commission the relevant information on population exposure to noise.

Information on environmental noise and its effects, including the results of the strategic noise mapping, is available to the public from the EPA at: <https://gis.epa.ie/EPAMaps/>. This helps towards achieving the aims of the second stage of the Directive.

The third phase of the work under the Directive requires designated Action Planning Authorities to produce Noise Action Plans for the third round in 2018 and every five years thereafter.

1.6 Purpose and Scope of the Regulations

The Environmental Noise Regulations 2006 were brought into effect by the Minister for the Environment, Heritage and Local Government to provide for the implementation of the Directive into Irish Law. These Regulations were revoked and remade by the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018 which came into effect from the 31st December 2018.

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The scope of the Regulations is the same as for the Directive and as such they do not have regard to neighbourhood noise, nuisance or noise from machinery used outdoors, which are addressed under separate legislation.

The Regulations designate certain organisations as responsible for the production of the Strategic Noise Maps in the first stage and certain organisations as being responsible for the development of action plans in the third stage of executing the requirements of the Directive.

1.7 Roles and Responsibilities of Designated Bodies

The Regulations designate the EPA as the national authority responsible for overseeing the implementation of the Regulations. The EPA is required to provide advice and guidance to the relevant noise mapping bodies and action planning authorities. The EPA is responsible for reporting to the European Commission the information relating to strategic noise mapping and action planning.

1.7.1 Noise mapping bodies

Under the Regulations the following organisations have been designated as noise-mapping bodies:

For the agglomeration of Cork:

Cork City Council and Cork County Council.

For the agglomeration of Dublin:

Dublin City Council and the County Councils of Dun Laoghaire/Rathdown, Fingal and South Dublin.

For the agglomeration of Limerick:

Limerick City Council and the County Councils of Limerick and Clare.

For “Major Roads”:

Transport Infrastructure Ireland for national roads classified in accordance with Section 10 of the Roads Act 1993 (No.14 of 1993) and the relevant road authority, or local authorities, for major roads not classified as national roads.

For “Major Railways”:

Iarnród Éireann (Irish Rail).

For “Major Airports”:

The relevant airport authority, in this case Dublin Airport Authority for Dublin Airport, on behalf of the action planning authority or authorities concerned.

1.7.1.1 Responsibilities

The 2006 Regulations had previously stated that the designated noise mapping bodies were required to make a strategic noise map no later than the 30th June 2017, for each of the following areas, in respect of the calendar year 2016:

1. An agglomeration with more than 100,000 inhabitants,
2. Any “Major Road” with more than 3 million vehicle passages per year (approximately 8,220 per day),
3. Any “Major Railway” with more than 30,000 train passages per year (approximately 82 per day),and
4. Any “Major Airport” with more than 50,000 aircraft take-off or landing movements per year (approximately 137 per day).

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1.7.2 Action Planning Authorities

Under the 2018 Regulations the following organisations have been designated as action planning authorities:

For the agglomeration of Cork:

Cork City Council and Cork County Council.

For the agglomeration of Dublin:

Dublin City Council and the County Councils of Dún Laoghaire / Rathdown, Fingal and South Dublin.

For the agglomeration of Limerick:

Limerick City Council and the County Councils of Limerick and Clare.

For “Major Railways”:

The local authority or local authorities within whose functional area or areas the major railway is located.

For “Major Roads”:

The relevant local authority or local authorities within whose functional area or areas the major road is located; and

For “Major Airports”:

The local authority or local authorities within whose functional area the major airport is located.

1.7.2.1 Responsibilities

Action Planning Authorities are responsible for the making and approving of action plans, in consultation with the EPA and the noise mapping body for the relevant noise map. Action plans must satisfy the minimum requirements set out in the Fourth Schedule of the Regulations which is based upon Annex V of the Directive.

Action Planning Authorities are required to ensure that:

1. The public are consulted on proposals for action plans,
2. The public are given early and effective opportunities to participate in the preparation and review of action plans,
3. The results of public participation are taken into account in finalising action plans or reviews of action plans,
4. The public are informed of the decisions taken in relation to action plans, and
5. Reasonable time-frames are adopted to allow sufficient time for each stage of public participation.

As with the strategic noise maps, the action plans are to be reviewed at least every 5 years after the date of their approval.

1.8 Key Phases

The Directive sets out a process design to provide a means of managing environmental noise in a consistent manner across the EU. The Regulations set out the approach to meeting the requirements of the Directive within Ireland. Responsibility for undertaking the phases of work required under the Regulations is shared between the noise mapping bodies and the action planning authorities.

The following is an overview of how the work has been undertaken:

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1.8.1 Identification of areas required to be mapped

Section 3.2 describes how the noise mapping areas were identified and which areas were mapped within County Kildare.

1.8.2 Preparation of Strategic Noise Maps

The approach set out within the Regulations is to first undertake strategic noise mapping within cities, then consider major sources outside cities and then assess the numbers of people exposed to noise within 5 dB noise level bands. Section 5.1 describes the development of the strategic noise maps.

1.8.3 Publication of the extent of noise impact

Section 5 of this Noise Action Plan presents a summary of the results of the noise mapping and the exposure analysis for the noise mapping undertaken within County Kildare.

1.8.4 Development of the Noise Action Plans

In line with the Regulations, the Kildare Local Authority is responsible for developing a noise action plan as there are sections of "Major Roads" and "Major Railways" within the County area. Section 3 of this Noise Action Plan describes the sections of "Major Roads" and "Major Railways". There are no "Major Airports" or agglomerations within the county.

Section 9 sets out the approach to public consultation on the Noise Action Plan which aims to provide members of the public and key stakeholders with an important opportunity to review, inform and affect the final approach set out within the Noise Action Plan. A review of the responses from the public consultation and information about how the process affected the proposed approach and will be contained in Section 9 and Appendix H of this Plan.

1.8.5 Implementation of the Action Plan

Section 10 of this Action Plan sets out the proposed approach to implementation of this Noise Action Plan between 2019 and 2023. However, any action proposed is subject to the availability of funding.

1.8.6 Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA)

It has been determined by Kildare County Council that formal screening for SEA and AA is not required at this current stage as any significant proposed works on "Major Roads" and "Major Railways" will be subject to a formal screening process during the planning and development process.

2. Existing Noise Management

The Directive aims to prevent and reduce where necessary environmental noise through the adoption of action plans. The action plans are a means of managing environmental noise from “Major Roads”, “Major Railways” and “Major Airports”.

In relation to environmental noise the following require consideration and management:

1. New roads, railways, airports, industry or recreational activities adjacent to residential properties or noise sensitive premises such as schools, hospitals or recreational spaces,
2. New residential properties or noise sensitive premises such as schools or hospitals, adjacent to existing roads, railways, airports, industry or recreational activities,
3. The development of mixed residential / commercial use buildings, and multi-part residential buildings,
4. The management of noise levels within noise sensitive properties, such as schools and hospitals, to address external noise break-in, as well as room to room transmission and noise levels within public spaces,
5. Noisy neighbours, barking dogs. (Not covered by the Directive),
6. Gardening machinery, construction activities, ice cream vans and street cleaning. (Not covered by the Directive),
7. Air-conditioning equipment. (Not covered by the Directive),
8. Public house, night clubs, restaurants, hotels or other recreational activities. (Not covered by the Directive),
9. Industrial operations, workshops and factories. (Not covered by the Directive),
10. Wind energy turbine noise. (Not covered by the Directive), and
11. Noise emanating from quarries and ancillary processes. (Not covered by the Directive),

Many of the above aspects may be addressed in some way through the planning and development process for new or altered developments. Others need to be addressed as noise nuisance issues that are regulation by other authorities.

2.1 EU Legislation

The European Council (EC) is responsible for a number of important elements of legislation which contribute to the overall management of environmental noise. Below is a brief overview of the other key EC Directives relating to noise which are primarily related to the control of noise emission. Any noise control measures considered desirable which relate to emission from sources within the scope of these Directives would require the EC to amend the relevant Directive, and then each Member State to adopt the amendment, before the desired effect would be experienced.

In this context it is important to note that the Local Authority will not be able to effect changes to this legislation.

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2.1.1 Aircraft noise

2.1.1.1 Noise operation restrictions at EU airports – Directive 2002/30/EC

This Directive established rules and procedures with respect to the introduction of noise related operating restrictions at EU airports. This Directive implemented (in EC legislation) the so called “balanced approach” to managing aircraft agreed and recommended by International Civil Aviation Organisation (ICAO) since October 2001. The approach comprises of four principal elements including reduction of aircraft noise at source, land-use planning and management measures, noise abatement operational procedures and operating restrictions. In February 2008 the Commission adopted a report on the implementation of Directive 2002/30/EC.

2.1.2 Outdoor machinery – Directive 2000/14/EC

This Directive relates to the noise emission by equipment for use outdoors. It covers a wide range of hand operated equipment for use on construction sites or in gardens, such as lawnmowers and compressors, through to large construction machinery such as drilling rigs and loaders. There was an amendment issued as Directive 2005/88/EC which brought about a reduction in the noise limits for some types of machinery. The Directive has been enacted in Ireland as European Communities (Noise Emission by Equipment For Use Outdoors) Regulations S.I. No. 632 of 2001, and the Amendment as S.I. No. 241 of 2006.

2.1.3 Recreational Craft – Directive 2003/44/EC

This Directive is an amendment to Directive 94/25/EC regarding the regulations relating to recreational craft, such as motorboats and powered water craft with an engine and exhaust system. The Directive sets out maximum permissible sound emission levels and describes a test procedure.

2.1.4 Road traffic noise:

2.1.4.1 Motor vehicles - Directive 70/157/EEC

Permissible sound level and the exhaust system of motor vehicles, Directive 70/157/EEC, was originally brought into force in 1970, and has been amended on a number of occasions, the most recent being in June 2007 (Commission Directive 2007/34/EC) to bring into force the new drive by noise test procedure and noise emission limits. Vehicle type approvals were presently carried out according to the test procedures specified in Directive 92/97/EC, which itself was an amendment of Directive 70/157/EEC. The test procedure involves driving an unladen vehicle over a specifically designed test surface laid in an open area, with the vehicle rapidly accelerating from a low speed in a low gear. The test has been criticised on the basis that full throttle acceleration is not representative of normal driving conditions. This led to a revised testing procedure being developed by the United Nations Economic Commission for Europe (UNECE) based upon noise emissions at approximately 75% of maximum engine speed. The new test procedure was adopted by the EC in 2007 and introduced into force by an amendment to Directive 70/157/EC in June 2007, setting a deadline of July 2008 for Member states to adopt the Directive as Regulations and bring them into force.

2.1.4.2 Motor cycles - Directive 97/24/EC

Annex I of the Directive sets out permissible noise limits for two and three wheel motor vehicles, including motorcycles and mopeds. There have been a number of amendments to the Directive, but none to date have altered the maximum permissible noise emission levels.

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

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

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

In support of Regulation 661/2009, this Regulation establishes a framework for the provision of harmonised information on tyre parameters through labelling, allowing end-users to make informed choice when purchasing tyres.

As from the 1st November 2012 the EU Energy labels for tyres must be available at point of sale and show information on fuel consumption, wet grip and rolling noise levels, as shown in Figure 2.1.

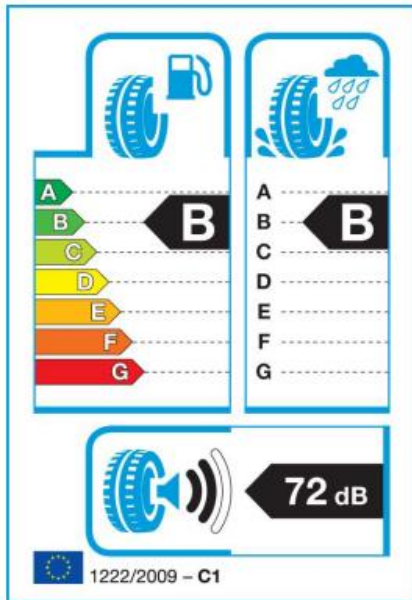


Figure 2.1: Example of EU Energy label for tyres

2.1.5 Railway Noise

The management of railway noise by the EC is not via obligatory Directives, rather by non-obligatory Commission Decisions connected with the Directive 2001/16/EC on the interoperability of the trans-European conventional rail system. The decisions relate to the Technical Specification for Interoperability (TSI) which aims to enable the movement of railway vehicles and carriages across national boundaries between Member States and to provide for a uniform level of performance. In 2002 the EC adopted a decision relating to a TSI for high speed trains which included noise limit values, whilst it was in 2006 that noise limit values for rolling stock, including freight wagons, were first introduced.

2.1.6 Common Noise Assessment Methods in Europe (Cnossos – EU)

The CNOSSOS-EU methodological framework forms the basis for amending Annex II of Directive 2002/49/EC of the European Parliament and of the Council relating to the assessment and management of environmental noise in Europe consisting of road, railway, aircraft and industrial noise to be used after the adoption by the Member States for the purpose of strategic noise mapping. CNOSSOS-EU aims at improving the consistency and comparability of noise assessment results across the EU Member States which are performed on the basis of the data becoming available through the consecutive rounds of strategic noise mapping in Europe.

The European Directive 2015/996EC (19th May 2015) sets out established common noise assessment methods according to Directive 2002 / 49 EC for determining L_{den} and L_{night} by computation. Member states were required to use these methods from the 31st December 2018. This methodology will be adopted for the 4th Round of Strategic Noise Mapping.

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2.2 National Legislation and Guidance

Legislation and guidance within Ireland reflects the requirements of the EC Directives as discussed above. As mentioned, many have been adopted into Irish statutory instruments to produce Regulations. In addition to these EC driven Regulations, there are a number of other pieces of national legislation and guidance which relate to the management and control of environmental noise.

2.2.1 The Environmental Protection Agency Act 1992

The existing statutory provisions have primarily come about on foot of the Environmental Protection Agency Act of 1992. The Act identifies noise as a form of environmental pollution and contains provisions for dealing with noise “which is a nuisance or would endanger human health or damage property or harm the environment.” Sections 106 to 108 of the Act are of direct relevance to noise, and may be summarised as follows:

1. **Section 106** gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property. These powers may include imposing noise limits, either exceedance values or emission values, controlling sources of noise and the imposition of charges for noise pollution,
2. **Section 107** gives powers to local authorities and the EPA to serve notice to take steps to control noise from any premises, process or work,
3. **Section 108** sets out a process whereby noise issues may be taken to the District Court, which may make an order requiring that the person or body responsible for the noise takes steps to eliminate or ameliorate the noise in question.

The powers set out within the Environmental Protection Agency (EPA) Act 1992 largely relate to the control of noise nuisance and therefore may be applicable to neighbourhood noise, music, industry and other such activities. At present there is no statutory guidance on the application and use of the Act, however, within the framework of the Regulations the EPA does have the powers to develop such guidance.

2.2.2 National Roads Authority (NRA) Guidelines

In the absence of a regulatory assessment method or limit values the NRA (now Transport Infrastructure Ireland, TII) undertook to issue the document “Guidelines for the Treatment of Noise and Vibration in National Road Schemes” in 2004 which sets out the procedures to be followed in respect of “the planning and design of national road schemes”. This was supplemented by, and should be read in conjunction with, the “Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes” in March 2014.

The Guidelines review common practice in Ireland at the time as well as the relevant approach within the UK. They go on to recommend an approach to measuring existing levels of environmental noise in areas near to proposed new or altered national roads, indicate an approach to undertaking a noise impact assessment of the proposed road, present a design goal for the introduction of mitigation measures to reduce the potential noise impact on the surrounding environment. The design goal is set at 60 dB (A) L_{den} , an earlier version also included a proposal for a 50 dB (A) L_{night} criteria, however this was dropped ahead of the final publication mainly due to the calculation of future night time noise levels being shown to be less robust than desirable when actual night-time traffic flow data was not available. It is important to consider that the design goal is not a statutory limit value, rather a target for best practice design where mitigation is feasible.

In 2017 TII commenced work in producing the following standards documents:

1. A Standards Document regulating to noise impact assessment of “Proposed National Roads”, and
2. A Standards Document regulating the management of noise and vibration during construction stage.

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2.2.3 Planning And Development

Local Authorities have it within their powers to set conditions relating to noise pursuant to the grant of planning permission. However, there is currently no national policy or guidance which addresses the issue of noise limits in the planning and development process.

The Department of the Housing, Planning And Local Government (DHPLG), previously the Department of Environment, Heritage and Local Government (DEHLG), has published the following documents relating to sustainable development in the urban environment:

- Quality Housing for Sustainable Communities. Best Practice Guidelines for Delivering Homes Sustaining Communities 2007.
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities) March 2018,
- Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities. (Cities, Towns & Villages) May 2009,
- Urban Design Manual: A best practice guide (A companion document to the Draft Planning Guidelines on Sustainable Residential Development in Urban Areas) May 2009, and
- Urban Development and Building Heights, Guidelines for Planning Authorities December 2018.

2.2.4 IPPC Licensing

In January 2016, the EPA published a further Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4). The updated guidance was intended to assist licensed sites with the assessment of their potential and actual noise impact on the local environment. It also recommended an evening limit and gave further advice in relation to appropriate noise limits in areas of low background noise.

2.2.5 Wind Energy Planning Guidelines

The then Department of the Housing, Planning And Local Government (DEHLG), now the Department of Housing, Planning and Local Government (DHPLG) published Wind Energy Planning Guidelines which indicated that the imposition of Conditions pursuant to planning permission should address issues of:

1. Noise level limits,
2. Locations at which those limits apply,
3. Time of day at which the limit applies,
4. Parameters to be measured for control purposes, and
5. Access to information generated by the monitoring programme.

The EPA also published a Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3). It proposed a cumulative site and turbine noise limit of 55 dB $L_{A,T}$ for daytime, 45 dB L_{Aeq} for night-time and the wind turbine noise not to exceed 45 dB L_{Aeq} at any time or to contain any significant tonal components.

2.2.6 Quarries and Ancillary Activities

The EPA's Environmental Management Guidelines "Environmental Management in the Extractive Industry (Non Scheduled Minerals) (2006)" outlines primary sources of noise associated with quarrying and offers guidance in relation to the correct approach to be followed in respect of assessment and mitigation. Recommended noise limit values are 55dB $L_{Aeq,1hr}$ and 45dB $L_{Aeq,15min}$ for daytime and night-time respectively. In respect of blasting, the Guidance Document states:

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"In relation to blasting activities within quarry development, it is recommended that the following vibration and air pressure ELVs are adopted and applied at the nearest vibration and air overpressure sensitive location. (e.g. a residential property):

"**Air overpressure:** 125 dB (linear maximum peak value), with a 95% confidence limit."

2.2.7 Building Regulations 1997 – 2014

The aim of the Part E Technical Guidance Document "Sound" of the Building Regulations 1997 – 2014 is to ensure that dwellings achieve reasonable levels of sound insulation from sound transmission emanating from adjoining buildings or differently occupied parts of the same building. The types of sound to be considered are airborne and impact sounds and sound arising from reverberation. The purpose of these Regulations is to protect occupants from airborne and impact noise generated in and around dwellings and common internal areas.

The Building Regulations 1997 – 2014 do not address environmental noise through a building's facade from external sources emanating from road, rail, aircraft and industrial activities.

2.3 County Policy Documents

Within County Kildare there are a number of relevant plans with policies and objectives contained therein which are relevant within the context of noise action planning. These are briefly reviewed below:

2.3.1 Kildare County Development Plan 2017 - 2023

In the Kildare County Development Plan 2017 - 2023 (CDP) the Council sets out strategies in relation to transportation, environment and development control, which directly and / or indirectly influence the impact of noise. In doing so, the County Development Plan sets out policy statements and objectives that can have a direct and/or indirect influence the impact of noise from traffic and rail in areas such as public transportation, cycling and walking, motorways, national roads, distributor relief roads, the County Council's roads programme and local roads. This plan highlights that commuting patterns rely heavily on private car transport.

- 66% of commuters use private car transport.
- 18% use bus and/ or rail for their daily commute.
- 16% of commuters walk or cycle to work, school or college. This latter figure is well below the regional average of 22%.

If the current trends continue congestion will increase, transport emissions and noise levels will increase which in turn could have a detrimental effect on quality of life and economic competitiveness in the county.

Specific references are made to the County Noise Action Plan in the Roads and Streets Network Objective RSO 3 and in Chapter 7 Infrastructure, Pollution Control – Water, Air and Noise as set out below:

2.3.1.1 CDP Chapter 6 Movement And Transport

It is an objective of the Council to:

CDP RSO 3: Implement the recommendations of the Kildare Noise Action Plan 2013 - 2018 to seek to reduce, where necessary, the harmful effects of traffic noise, through appropriate mitigation measures that meet the best environmental options not entailing excessive cost (BATNEEC).

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2.3.1.2 CDP Chapter 7 Infrastructure

CDP Section 7.6.4 Pollution Control – Water, Air and Noise:

The importance of a clean environment for the economic and social life of the county is well recognised. In relation to water, air and noise pollution continuous effective monitoring and enforcement in relation to pollution control measures is imperative and will continue over the period of the Plan. The Kildare Noise Action Plan (2013) seeks to avoid, prevent and reduce where necessary the harmful effects of long term exposure to environmental noise. (sic).

CDP Section 7.6.7: Policies: Pollution Control – Water, Air and Noise:

It is the policy of the Council to:

CDP PC 1: Implement the provisions of EU and National Legislation on air, light and noise control and other relative legislative requirements, as appropriate, in conjunction with all relevant stakeholders.

It is the policy of the Council to:

CDP PC 2: Implement the relevant spatial planning recommendations and actions of the Kildare Noise Action Plan 2013 – 2018.

CDP PC 6: Enforce where applicable, the provisions of the Environmental Noise Regulations (2006).

CDP PC 7: Ensure that noise levels caused by new and existing developments throughout the county do not exceed normally accepted standards and that new developments shall incorporate measures to ensure compliance with the Environmental Noise Regulations 2006 and any subsequent revision of these Regulations.

CDP PC 9: Require activities likely to give rise to excessive noise to install noise mitigation measures and monitors.

CDP Section 7.6.8: Objectives Environmental Services:

It is an objective of the Council to:

CDP EN 4: Facilitate the implementation of the Kildare Noise Action Plan 2013 – 2018 and Litter Management Plan 2016 – 2019 and any subsequent amendments during the period of this Plan.

It should be noted the implementation of the aforementioned policies and objectives relevant to this Noise Action Plan is wholly dependent on adequate funding being made available.

2.3.2 Kildare County Council Corporate Plan 2015 – 2019

In the Corporate Plan 2015 - 2019, the Council seeks to influence the impact of noise directly and indirectly by the adoption of strategies in relation to areas such as road safety campaigns, provision of traffic calming, road improvement schemes and the continued maintenance of the road network.

2.4 Strategic Policy Content

The following is a number of European, National and Regional Frameworks, Guidelines, Strategies, Policies, Manuals, Programmes and Plans that are relevant within the context of noise action planning. These are briefly reviewed as set out below:

2.4.1 National Planning Framework 2040

The National Planning Framework 2040 will provide guidance for high-level strategic planning and development for the country over the next 20+ years, so that as the population grows, that growth is sustainable in economic, social and environmental terms. The National Planning Framework 2040 in conjunction with the National Development Plan will set the context for each of Ireland's three regional assemblies to develop their Regional Spatial and Economic Strategies taking account of, and co-ordinating Local Authority

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County and City Development Plans in a manner that will ensure national, regional and local plans align. Policy Objective 65 of the National Planning Framework 2040 applies to this Noise Action Plan.

National Policy Objective 65 of the Framework states:

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

2.4.2 National Development Plan 2018 - 2027

The National Development Plan sets out the investment priorities that will underpin the successful implementation of the new National Planning Framework (NPF). This will guide national, regional and local planning and investment decisions in Ireland over the next two decades, to cater for an expected population increase of over 1 million people.

The National Development Plan demonstrates the Government’s commitment to meeting Ireland’s infrastructure and investment needs over the next ten years, through a total investment estimated at €116 billion over the period.

2.4.3 Transport Strategy for the Greater Dublin Area 2016 – 2035

This transport strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. The Greater Dublin Area covers the counties of Dublin, Meath, Kildare and Wicklow. The strategy provides for a transport planning policy in which other agencies involved in land use planning, environmental protection and the delivery of other infrastructure such as housing, water and power can align their investment priorities.

2.4.4 Regional Planning Guidelines for the Greater Dublin Area 2010 – 2022

The Regional Planning Guidelines set out the planned direction for growth within the Greater Dublin Area up to 2022 by giving regional effect to national planning policy under the National Spatial Strategy (NSS). These Guidelines also have a crucial role in supporting regionally important infrastructure and the investment priorities of the National Development Plan.

2.4.5 Spatial Planning And National Road Guidelines for Planning Authorities, DECLG (2012)

The Spatial Planning And National Road Guidelines for Planning Authorities set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions outside the 50 – 60 km/h speed limit zones for cities, towns and villages. These guidelines encourage a shift towards more sustainable travel and transport in accordance with the Government’s transport policy objectives set out in Smarter Travel: A New Transport Policy for Ireland 2009 – 2020.

2.4.6 Smarter Travel – A Sustainable Transport Future – a New Transport Policy for Ireland 2009 – 2020

This transport policy is designed to reverse current traffic congestion and travel patterns in order to reduce the social public health impacts, economical impact and environmental impacts such as climate change. To bring about such change emphasis is placed, inter alia, on promoting more sustainable forms of travels such public transport, walking and cycling.

2.4.7 National Cycle Policy Framework 2009 – 2020

The back drop to this policy is the Smarter Travel – A Sustainable Transport Future – a New Transport Policy for Ireland 2009 – 2020. The purpose of the National Cycle Policy Framework is to create a strong cycling culture in Ireland and to have all cities, towns and rural areas to be bicycle friendly. Cycling contributes to an improved quality in life and the public domain which in turn promotes benefits to the economy and environment.

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2.4.8 Rural Transport Programme

The purpose of the Rural Transport Programme is to provide a quality nationwide community based public transport system in rural Ireland which responds to local needs. Seventeen Transport Co-ordination Units (brand name Local Link), manage the delivery of rural transport services nationally on behalf of the Authority.

Key features of the Rural Transport Programme include:

- Completing 1.9 million passenger journeys per annum with 0.9 million of those journeys provided for Free Travel Passengers. These figures include 0.2 million passengers who required assistance.
- Providing an average of 150,000 service trips annually.
- Travelling over 11.8 million kilometres annually.

Over 400 Private Operators provide the services involving up to 900 drivers. As well as providing regular public transport services and demand responsive services, the Programme also funds the provision of "Once Off" trips for individuals and community/voluntary groups to help address rural social exclusion. 62% of service trips are defined as either fully or partially accessible.

2.4.9 National Mitigation Plan

The National Mitigation Plan is the first step for the Country to achieve the level of decarbonisation required. It is a complete Government Plan, reflecting in particular the central roles of the key Ministers responsible for the sectors covered by the Plan – Electricity Generation, the Built Environment, Transport and Agriculture, as well as drawing on the perspectives and responsibilities of a range of other Government Departments.

The measures implemented through this first Plan will lay the foundations for transitioning Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050. To support this ongoing work, the Plan also includes over 100 individual actions for various Ministers and Public Bodies to take forward as we move to implementation of what will be a living document. Importantly, the Government recognises that this first Plan does not provide a complete roadmap to achieve the 2050 objective, but begins the process of development of medium to long term mitigation choices for the next and future decades.

2.4.10 National Adaptation Framework

Ireland's first statutory National Adaptation Framework (NAF) was published on the 19th January 2018. The purpose of this national strategy is to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts. The NAF was developed pursuant to the Climate Action and Low Carbon Development Act 2015. The NAF builds on the work already carried out under the National Climate Change Adaptation Framework (NCCAF, 2012). The NAF outlines a whole of government and society approaches to climate adaptation in Ireland. Under the NAF a number of Government Departments will be required to prepare sectoral adaptation plans including one for Transport Infrastructure in relation to a priority area that they are responsible for. Work on these plans will begin in 2018. Local Authorities are required to prepare local adaptation strategies. The NAF will be reviewed at least once every five years.

2.4.11 National Climate Change Adaptation Framework

The purpose of the National Climate Change Adaptation Framework was to provide the policy context for a strategic national adaptation response to climate change in Ireland. It was designed to evolve over time as planning and implementation progresses, and as further evidence becomes available. It provided a clear mandate for the relevant Government Departments, Agencies and Local Authorities to commence the preparation of sectoral and local plans with the view of publishing these draft plans in 2014. Through co-coordinated planning, the adaptation challenge could therefore be addressed in a timely, progressive and determined manner as part of the essential transition towards a competitive, low carbon, climate resilient future.

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2.4.12 7th Environmental Action Programme (EAP)

The 7th Environmental Action Programme (EAP) is guiding European Environmental Policy to 2020 providing a long term direction for the European Union's Environment to 2050.

The three key objectives identified in the policy are:

1. To protect, conserve and enhance the Union's natural capital,
2. To turn the Union into a resource-efficient, green, and competitive low-carbon economy, and
3. To safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing.

The Policy contains the following objective to decrease noise pollution in the European Union by 2020, moving closer to WHO recommended levels:

"Policy Objective 3: To safe guard the Union's citizens from environment related pressures and risks to health and wellbeing.

49. Available data on long-term average exposure show that 65% of Europeans living in major urban areas are exposed to high noise levels and more than 20% to night time noise levels at which adverse health effects occur frequently.

54. In order to safeguard the Union's citizens from environment- related pressures and risks to health and well-being, the 7th EAP shall ensure that by 2020:

b. noise pollution in the Union has significantly decreased, moving closer to WHO recommended levels.

This requires, in particular:

(ii) Implementing an updated Union noise policy aligned with the latest scientific knowledge, and measures to reduce noise at source, and including improvements in city design."

2.4.13 Design Manual for Urban Roads and Streets, DTTS and DECLG 2013 (DMURS)

Design Manual for Urban Roads and Streets (DMURS) incorporates good planning and design practice to support and encourage more sustainable travel patterns in urban areas. This manual provides guidance in the creation of a permeable street network promoting walking, cycling and public transport in order to reduce private vehicular traffic and traffic concentrations. This in turn leads to a reduction in both air and noise pollution.

2.4.14 Design Manual for Roads and Bridges (DMRB)

This document sets out procedures for undertaking the environmental assessment of new road schemes, including the assessment of the potential noise impacts from the road traffic generated on.

2.4.15 Conference of European Directors for Roads (CEDR)

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.

3. Description of the Action Planning Area

3.1 Introduction

The Kildare Local Authorities cover an area of approximately 1,693 km² and is populated by 222,130 people (2016 census). The roads network length in the county is approximately 2613 km. The roads network consists of the following:

1. 108 km of Motorway,

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2. 134 km of National Roads (TII 2015),
3. 482 km of Regional Roads, and
4. 1889 km of Local Roads.

3.2 Extent of the action planning area

3.2.1. "Major Roads"

Kildare Local Authorities and Transport Infrastructure Ireland identified the extent of "Major Roads" using traffic count data to identify any sections of motorways, national roads or regional roads with more than 3 million vehicle passages per year. The traffic counts used were undertaken for a typical year as opposed to a year when temporary non-typical conditions might apply.

The total length of "Major Roads" (as defined in the Regulations included within the strategic noise mapping was 235 km. The "Major Roads" are categorised into:

1. 108 km of Motorways,
2. 9 km of National Roads,
3. 112 km of Regional Roads, and
4. 7 km of Local Roads.

Appendix C contains the Strategic Noise Mapping 2017 for County Kildare displaying the "Major Road" Network.

In Kildare the motorways identified and included within the strategic noise mapping were as follows:

Motorway	Approximate Length
M4	32.70 km
M7	36.40 km
M9	38.50 km

Table 3.1. Lengths of Motorways in Kildare designated as Major Roads.

In Kildare the major national roads identified and included within the strategic noise mapping were as follows:

National Road	Approximate Length
N7	8.50 km
N81	0.50 KM

Table 3.2. Lengths of National Roads in Kildare designated as "Major Roads".

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The following Regional Roads were classified as “Major Roads” either in total or in part:

Regional Road and Location	Approximate Length
R125	1.00 km
R148	16.00 km
R149	1.30 km
R158	0.70 km
R403	14.40 km
R405	2.50 km
R406	6.80 km
R407	20.50 km
R410	3.00 km
R413	2.80 km
R415	0.50 km
R416	4.40 km
R445	21.00 km
R447	4.40 km
R448	7.20 km
R449	5.00 km

Table 3.3. Lengths of Regional Roads in Kildare designated as “Major Roads”.

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The following Local Roads were classified as “Major Roads” either in total or in part:

Local Road and Location	Approximate Length
L203	4.30 km
L204	0.90 km
L301	0.20 km
L407	0.70 km
L507	0.90 km

Table 3.4. Lengths of Local Roads in Kildare designated as “Major Roads”.

Mapping involved estimating noise levels at and adjacent to the “Major Roads” detailed above. In the context of the noise action plan this refers to all areas exposed to noise from the “Major Roads” above a level of L_{den} 55 dB(A) and L_{night} 50 dB(A). Appendix C includes maps which show the extent of the areas of strategic noise mapping arising from road traffic. These maps refer to all areas exposed to noise from the “Major Railways” above a level of L_{den} 55 dB(A) and L_{night} 45 dB(A).

3.2.2 “Major Railways”

Iarnród Éireann (Irish Rail) identified that the extent of “Major Railways” had increased in the County from Cherryville Junction near Kildare Town to the Laois border by approximately 10.00 km. The length of major railway in Kildare is approximately 45.00 km. Iarnród Éireann (Irish Rail) developed the Strategic Noise Mapping for the “Major Railways” in the County. Appendix D includes maps which show the extent of the areas of strategic noise mapping arising from rail traffic.

3.2.3 “Agglomerations” and “Major Airports”

In County Kildare there are no “Agglomerations” or “Major Airports”.

Within the areas covered by the strategic noise mapping of road and rail traffic, the noise action plan sets out a proposed approach to undertaking a review of the requirement for any necessary noise reduction measures, and outlines a method by which noise mitigation measures will be assessed for feasibility. This is in line with the requirements of the Directive and Regulations.

In addition to this statutory requirement, Kildare County Council may set in place measures aimed at preventing and avoiding an increase in the harmful effects of environmental noise, including annoyance, which shall be applicable throughout the County Kildare administrative area. These measures go beyond the objectives of the Regulations and are proposed in the context of sustainable development and the protection of residential amenity for all regions of the county and considered to be in line with the strategic objectives of the County Development Plan in offering a sustained or enhanced environment for all citizens of Kildare.

3.3 Description of the topography / geographical location

The area covered by the strategic noise mapping includes a mixture of urban and rural settlements in the centre and northern eastern part of the county. In addition, some areas of natural beauty and recreational areas are included within the study area. These include the National Stud, the Curragh, walks along the Grand Canal (the Naas - Corbally Branch) and along the Royal Canal near Moyvalley.

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3.4 Description of the General Population

There are fifteen population centres potentially exposed to noise from "Major Roads" in the county. These population centres are Athgarvan, Celbridge, Clane, Johnstown, Kilcock, Kilcullen, Kildare, Kill, Leixlip, Maynooth, Monasterevin, Naas, Newbridge, Prosperous and Sallins.

There is generally minimal exposure to environmental noise from motorways at adjacent residential property where the planning and construction of motorways took place before such residential development. However, there are a few significant cases where housing estates have been developed after the planning and construction of a motorway which has given rise to complaints from residents.

There are five population centres potentially exposed to noise from "Major Railways" in the county. These population centres are Caragh, Kildare, Newbridge, Monasterevin and Sallins.

3.5 Location of Noise Sensitive Groups

Certain locations and building uses are considered to be more sensitive to environmental noise pollution than others. The main priority of the Directive is to manage environmental noise exposure in residential areas. The Directive, Regulations and EPA guidance all indicate that the Action Planning Authority should take due consideration of the noise sensitive locations, if any, in addition to residential dwellings.

Following consideration it has been determined that for the purpose of the assessment of potential noise mitigation measures under the Action Plan, the following are considered noise sensitive locations:

1. Residential properties,
2. Hospitals, and
3. Schools.

Arising from road traffic, the following hospitals and schools are identified as noise sensitive:

Leixlip:

1. San Carlo Junior National School
2. San Carlo Senior National School

Maynooth:

1. St. Mary's National Boys School

Celbridge:

1. Scoil na Mainistreach

Clane:

1. Clane Hospital
2. St. Patrick's Boys School (Scoil Phádraig Claonagh)
3. Scoil Naisiunta Bhríde

Prosperous:

1. Scoil an Linbh Iosa

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Kilcullen:

1. Cross and Passion College
2. St. Brigids National School

Newbridge:

1. Holy Family National School
2. St. Conleth's Infants National School
3. Holy Family Secondary School

Kilcock:

There are no schools or hospitals in Kilcock that are exposed to noise levels above this Plan's 70 dB (A) L_{den} and 57 dB (A) L_{night} thresholds.

Kildare:

There are no schools or hospitals in Kildare that are exposed to noise levels above this Plan's 70 dB (A) L_{den} and 57 dB (A) L_{night} thresholds.

Monasterevin:

There are no schools or hospitals in Monasterevin that are exposed to noise levels above this Plan's 70 dB (A) L_{den} and 57 dB (A) L_{night} thresholds.

Naas:

1. Gaelscoil Chill Dara

Kill:

1. St Brigid's National School
2. Saplings Special School

Johnstown:

There are no schools or hospitals in Johnstown that are exposed to noise levels above this Plan's 70 dB (A) L_{den} and 57 dB (A) L_{night} thresholds.

There are no hospitals and schools identified as noise sensitive arising from "Major Railways" in the county.

It is important to note that only properties with these uses which are located within the area of strategic noise mapping near to the "Major Roads" and "Major Railways" will be considered in the review of potential noise mitigation measures. Within the county area there will be many more such properties which are not in close proximity to the "Major Roads and "Major Railways" under review, and will thus not be included within the noise mitigation assessment under the action plan.

The locations considered to be noise sensitive in close proximity to the "Major Roads" may, subject to funding, be provided with some protection from further erosion of the noise climate through the measures set out within the action plan to prevent and avoid high levels of environmental noise exposure in the future.

4. The Responsible Authority for Action Planning

4.1 Name and contact details for the Responsible Authority

Kildare County Council is the designated Action Planning Authority under the Environmental Noise Regulations (2018) and is responsible for the production and implementation of the Noise Action Plan for County Kildare.

The address of the authority is given below:

**Kildare County Council,
Áras Chill Dara,
Devoy Park,
Naas,
Co. Kildare.**

Any communication in relation to this Noise Action Plan should be addressed to the:

**Senior Executive Officer,
Roads, Transportation & Public Safety Department,
Level 4,
Kildare County Council,
Áras Chill Dara,
Devoy Park,
Naas,
Co. Kildare.**

**Telephone: 045 980200
Fax: 045 980240
Email: noise@kildarecoco.ie**

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

4.2.1 Noise limit values

There are no specific noise limit values currently in place within the county except for those arbitrary threshold values indicated in this Plan which are as follows:

Day-Evening Night time Noise Value: 70 dB (A) L_{den}

Night time Noise Value: 57 dB (A) L_{night}

These limits are consistent with those used by other Local Authorities and with EPA guidance.

4.2.2 Existing Local Policies

In the case of planning applications by third parties for industrial or commercial developments close to residential areas, the Council would normally apply the following maximum limits that would apply to measurements taken in the vicinity of adjacent noise sensitive receptors:

Daytime	55 dB (A) Leq
Night-time	45 dB (A) Leq (or exceptionally 40 dB(A) Leq)

Where an environmental impact assessment is required as part of the planning process, noise would normally be one of the impacts considered and noise limits imposed through the imposition of planning conditions. This would be decided on a case by case basis.

In relation to outdoor events licensed, pursuant to Section 254 of the Planning and Development Act 2000 - 2018, the Council would normally apply a maximum permissible limit of 65 dB L_{Aeq} at noise sensitive locations.

In the case of national roads proposed by the Council, the assessment of noise impact is undertaken in accordance with the NRA Guidelines from 2004 as specified in section 2.2.3. All new national roads are designed, where feasible, to meet the following criteria:

Free field residential façade criteria	60dB (A) L_{den}
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This is applied both to the year of opening and the design year of the scheme, i.e. 15 years after opening. Kildare Local Authority apply the same criteria to the design of new regional roads. In addition, contract documents generally specify the following noise limits during the construction phase of infrastructure projects.

Day	Working Hours	Level (dB L_{Aeq})	Maximum (dB L_{Amax})
Monday-Friday	07:00 – 19:00	70	80
Monday-Friday	19:00 – 22:00	60	65
Saturday	08:00 – 16:30	65	75
Sundays & Bank Holidays	08:00 – 16:30	60	65

Source: Noise levels are the maximum permissible noise levels at the facade of dwellings during construction as indicated in the Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004.

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In relation to the position of structures relative to roads, the Kildare County Development Plan 2017 - 2023 prohibits new developments within a specified distance or "building line" to a particular road classification. The road classifications and associated distances are:

Road Classification	Building Line
Motorways	91.0m
National Primary	91.0m
National Secondary	91.0m
Regional Roads	31.0m
Urban / County Road	18.5m
Distributor Road	18.5m

To date, the Council has not specified any minimum level of noise insulation for proposed developments.

As part of their work, the Local Authority's road maintenance section resurfaces roads and fills in potholes. Where resurfacing is undertaken in urban areas and where existing carriageways are narrow, an appropriate thin layer surfacing can produce less noise when trafficked. Where carriageways are relatively wide and where a Local Authority receives noise complaints arising from traffic, it would be considered to have the carriageway resurfaced. The website fixmystreet.ie is a new interface by which the public can bring potholes to the attention of the Local Authorities. Repairs to potholes can lead to a reduction in traffic noise.

With regard to the assessment of noise nuisance in the context of the EPA Act 1992, Kildare Local Authorities did not develop a documented policy statement during the time span of the Noise Action Plan 2014 - 2018, but may consider developing one in the future. Furthermore, Kildare Local Authority may adopt any forthcoming national guidance having regard to noise assessment standards for use by Planning Authorities nationwide.

4.2.3 Current noise mitigation plans

In Kildare there are multi-annual programmes for the construction of national, regional and local roads, promotion of public transport and sustainable transport and traffic management in towns having regard to guidance to noise. The details of these schemes are contained in Appendix A: "Summary of the construction and upgrade of roads within the County".

4.2.3.1 Sustainable Modes/ Promotion of Public Transport

In accordance with the principles of sustainability and the National Spatial Strategy, the Kildare Local Authority promotes modal shift by policies and actions encouraging the greater use of sustainable modes and public transport. Actions include the designs for the provision of cycle facilities, footpaths and the implementation of mobility impaired schemes and for schemes such as the Naas Inner Relief Road Project, the Dublin Road Corridor Cycling Upgrade Scheme, the Athy Distributor Road Scheme, the Craddockstown / Ballycane Junction Improvement Scheme and the Craddockstown Road Pedestrian / Cycle Upgrade Scheme. The 'It's Your Time' initiative also supports this strategy by facilitating the location of business in proximity to a skilled workforce, thereby reducing the need for commuting.

4.2.3.2 Traffic Management Plans

Traffic Management Plans have been developed for the towns of Maynooth, Celbridge, Kilcock, Clane, Naas, Athy, Monasterevin, Kildare and Newbridge. They are designed to make best use of existing road space especially in existing town centres. In addition to promoting modal shift and encouraging sustainable modes, the Traffic Management Plans seek to improve the environment in general and the noise environment in particular by calming traffic and, where applicable, by diverting traffic away from town centres. The Traffic Management Plans are also designed to improve junction efficiency thereby reducing delays to motorised traffic.

Note: Modal shift means replacing a saturated means of transport with another to make the first less congested.

5. Summary of the Results of Strategic Noise Mapping 2017

5.1 Methodology of Noise Mapping

The strategic noise mapping process is a predominantly technical process requiring an array of different input datasets across large geographical areas. For example, assessment of noise levels from major roads requires information on traffic flow level, percentage of traffic flow which is heavy goods vehicles, mean traffic speed, road gradient, road surface type and texture depth, location of noise barriers and bridges, location and height of buildings, landscape topography and type of ground cover. The assessment of noise levels from "Major Railways" employs an equivalent range of data. These datasets are combined to form 3D computer models, through which an assessment of noise propagation is undertaken using specialist computer software systems.

An updated methodology for the exposure assessment for the Round 3 Noise Action Plan, was issued by the EPA in October 2017 as a revised Section 10: "Methodology for Exposure Assessment – Post Processing and Analysis" of the original EPA Guidance document (August 2011).

Significant improvements in data and calculation methods have occurred since the Round 2 Strategic Noise Mapping from 2012. These improvements, inter alia, have included:

5.1.1 Improved terrain model data

As an example, for the Dublin agglomeration a highly detailed LiDAR derived 1.00 metre contour data set was used for Round 3 as opposed to the 10.00 metre Ordnance Survey (OS) contour dataset for Round 2. This terrain model change would tend to lead to an increase in screening effects. An example of this would be that improvements in building height data sets would increase the screening effect and reduce the extent of noise contours and exposures.

5.1.2 Improved Traffic Data for the County

Improved traffic data, for example for heavy goods vehicles, would produce either a higher or lower level of noise emissions from a road source depending whether there was an increase or decrease of this type of vehicle using the road.

5.1.3 Revised Census Data (Census 2016) and the resolution of this Census Data in utilizing Small Area Population statistics (SAPs) in Round 3 as opposed to Electoral Districts (EDs) in Round 2

The most recent Census was held on 24 April 2016, and published by CSO at various resolution levels, including Province or County, Province County or City, Regional Authority, Constituency, Electoral Division and Small Areas. Data is not made available at Census Output Area level; rather these are merged up to these Small Area Population Statistics (SAPS) level which provides for the highest level of resolution available to the location of the population. There are 18,641 SAPS covering Ireland in the 2016 Census output data.

5.1.4 Improvements in mapping and data calculation methods

It was found that Round 2 Strategic Noise Mapping overestimated the population exposure to noise and this is reflected in the Round 3 Strategic Noise Mapping results and the reduction in population figures exposed to the relevant noise bands. The noise maps have been a product of assimilating a collection of digital data sets over the past 10 years in conjunction with TII, OSI and Local Authorities. Over this period there have been significant improvements in the assessment of the natural and built environment of the county. As a result, strategic noise modelling has produced an increase in the detail and accuracy of data producing more reliable noise modelling results. This in turn has resulted in lessening the tendency to over-predict noise impact. The methodology for Round 3 is based on the Small Areas Population Statistics (SAPs) published by the Central Statistics Office (CSO), GeoDirectory delivery point data from An Post and OSI including PRIME2 datasets (July 2016).

5.1.5 GeoDirectory

The GeoDirectory data products are developed by OSI and An Post to provide a single point location object for each building in Ireland. The complete dataset is available with the "GeoAddress Locator" product, and each point location has a number of attributes which may be useful in identifying both vacant and occupied dwellings and whether a building is in use for residential or commercial purposes or both

5.1.6 Transport Infrastructure Ireland (TII) Roads Database

The roads database contains information, inter alia, on:

- Type of carriageway,
- Speed limits,
- Location of Noise Barriers,
- Road widths,
- Surface type and texture,
- Surface depth.

This data base is relevant in the completing Strategic Noise Mapping.

5.1.7 As-Built drawings of new and upgraded roads

Once a new road has been constructed such as the R407 Sallins By-Pass Scheme or where a road has been upgraded such as the M7 Road Widening Scheme a contractor is required to submit as-drawings and documentation to Transport Infrastructure Ireland (TII), in this case. The relevance to strategic noise mapping is that these drawings contain records of any noise mitigation measures in place for these new works including noise barrier locations, specifications and configurations.

The results of the strategic noise mapping process help to gain an understanding of:

- Where environmental noise is located,
- The approximate magnitude of noise levels within the assessment area, and
- Approximately how many people are exposed to differing levels of environmental noise.

For major national roads in Kildare the strategic noise mapping and modelling was undertaken by the TII. For non-national roads, Kildare Local Authority prepared the data sets and the mapping and modelling was undertaken by RPS Consulting Engineers in conjunction with TII commencing in 2017 and completed in 2018.

5.2 Presentation of Results

Grids of noise levels for major roads and for major railways were produced for an annual average 24 hour day, using two different noise indicators, L_{den} and L_{night} . These grids of noise level results were then categorised into 5 dB wide noise level bands above 55 dB (A) L_{den} and 50 dB (A) L_{night} . These noise level bands may then be displayed as coloured areas on noise level maps, and used as the basis for statistical analysis to estimate the extent of exposed areas, and the number of exposed dwellings and number of exposed people. These statistical exposure results were submitted to the EC in December 2017 by the EPA.

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5.2.1 Strategic Noise Maps

The results of the strategic noise mapping within County Kildare are presented in Appendices C and D as a series of coloured 5 dB (A) wide noise level bands above 55 dB (A) L_{den} and 50 dB (A) L_{night} for "Major Roads" and above 55 dB (A) L_{den} and 45 dB (A) L_{night} for "Major Railways".

5.2.2 Road Noise - Summary of exposure to people, dwellings and area statistics

The following tables and corresponding commentaries compares the 2012 Strategic Noise Mapping results to those of 2017 and the current exposure levels to people in this Plan from which Priority Noise Areas and Quite Areas can be identified.

L_{den} Noise Band	2012 Approximate Number of People	2012 Approximate Number of People as a % of Total Population in Kildare	2017 Approximate Number of People	2017 Approximate Number of People as a % of Total Population in Kildare	Increase / decrease in the number of people in comparison of the 2012 and 2017 noise mapping results
<55	176,806	84.0%	195,790	88.1%	-18,984
55-59	18,687	8.9%	14,394	6.5%	- 4,293
60-64	9,075	4.3%	7,869	3.5%	- 1,206
65-69	4,775	2.3%	3,332	1.5%	- 1,443
70-74	963	0.46%	730	0.3%	- 233
>=75	6	0.003%	15	0.007%	+ 9
Total	210,312	100%	222,130	100%	+ 11,818

Table 5.1: The estimated total number of people exposed in each 5 dB (A) L_{den} noise level band within County Kildare over an average 24 hour period in 2012 and 2017.

Census 2016: Total population of Kildare: 222,130.

Census 2011: Total population of Kildare: 210,312.

1. The population in Kildare increased by 11,817 to 222,130 people from 2012 to 2016, (Census 2016)
2. Approximately 99.70% of the population (221,385 people) were exposed to noise levels below this plan's set L_{den} threshold of 70 dB (A) in 2017.
3. From the 2017 Strategic Noise Mapping results it would appear 745 people are exposed to noise levels greater than this plan's set L_{den} threshold of 70 dB (A).
4. The approximate number of people exposed above the threshold of 70 dB (A) L_{den} noise band decreased from 969 in 2012 to 745 in 2017, representing a reduction of 23%.
5. The approximate number of people exposed to noise equal or great than 75 dB (A) L_{den} increased from approximately 6 to 15 people in 2017.
6. The approximate number of people exposed to noise levels greater than 55 dB (A) L_{den} has declined to 26,340 in 2017, 12% of the total population. In 2012 33,506 people were exposed noise levels greater than 55 dB (A) L_{den} which was then 16% of the population of Kildare. This represents a decrease of 21%.

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7. The approximate number of people exposed in the 55 – 59 dB (A) L_{den} noise band decreased from 18,687 in 2012 to 14,394 in 2017, representing a reduction of 23%.
8. The approximate number of people exposed in the 60 – 64 dB (A) L_{den} noise band decreased from 4,775 in 2012 to 3,332 in 2017, representing a reduction of 30%.

Tables 5.2 and 5.3 summarises the approximate number of people, dwellings and area above listed thresholds within County Kildare over the day and evening L_{den} in 2012 and 2017 respectively.

L_{den} Noise Band	2012 Approximate Area Km ²	2012 Approximate Number of Dwellings	2012 Approximate Number of People
>55	133	13,080	33,506
>65	34	2,510	5,744
>75	7	2	6

Table 5.2: 2012 Weighted 24 Hour Road Traffic Flow (L_{den}) - Estimated Number Of People in dB (A) Bands and as Percentage of Overall Population

L_{den} Noise Band	2017 Approximate Area Km ²	2017 Approximate Number of Dwellings	2017 Approximate Number. of People
>55	143	9,591	26,340
>65	33	1,629	4,077
>75	7	5	15

Table 5.3: 2017 Weighted 24 Hour Road Traffic Flow (L_{den}) – Estimate of Area, No. of Dwellings and People within L_{den} Noise Bands .

1. The approximate number of people exposed to noise levels above the threshold L_{den} value of 70 dB (A) of this Noise Action Plan decreased from 969 in 2012 to 745 in 2017 representing a reduction of 23%.
2. The approximate number of dwellings subjected to noise levels above 65 dB (A) L_{den} reduced from 2,510 in 2012 to 1,629 in 2017 representing a reduction of 35%.
3. The approximate number of people exposed to noise levels above 65 dB (A) L_{den} reduced from 5,744 in 2012 to 4,077 in 2017 representing a reduction of 29%.
4. The approximate number of people exposed to noise levels greater than 55 dB (A) L_{den} has declined from 33,506 people in 2012 to 26,340 in 2017 representing a reduction of 21%.
5. The approximate number of dwellings subjected to noise levels above 55 dB (A) L_{den} reduced from 2,510 in 2012 to 1,629 in 2017 representing a reduction of 35%.

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Table 5.4 below summarises the estimated total number of people exposed in each 5 dB (A) L_{night} noise level band within County Kildare over an average 24 hour period in 2012 and 2017.

L_{night} Noise Band	2012 Approximate Number of People	Approximate Number of People as a % of Total Population in Kildare	2017 Approximate Number of People	Approximate Number of People as a % of Total Population in Kildare	Increase / decrease in the number of people in comparison of the 2012 and 2017 noise mapping results
<50	192600	91.6%	207,981	93.6%	+15,381
50-54	10,232	4.9%	8,964	4.0%	-1,268
55-59	6,343	3.0%	4,278	1.9%	-2,065
60-64	1,114	0.5%	882	0.4%	-232
65-69	23	0.01%	22	0.01%	-1
>70	0	0.0%	3	0.001%	+3
Total	210,312		222,130		+11,818

Table 5.4: Summary of the estimated total number of people exposed in each 5 dB (A) L_{night} noise level band within County Kildare over an average 24 hour period in 2012 and 2017.

Census 2016: Total population of Kildare: 222,130.

Census 2011: Total population of Kildare: 210,312.

1. Approximately 97.6% of the population (216,945 people) were exposed to noise levels below the L_{night} threshold of 55 dB (A) in 2017 and therefore below this plan's L_{night} set threshold of 57 dB (A). This is an increase of 1.2% from approximately 96.4% of the population in 2012 exposed to noise below L_{night} 55 dB (A).
2. The approximate number of people exposed in the 50 – 54 dB (A) L_{night} noise band decreased from 10,232 in 2012 to 8,964 in 2017, representing a reduction of 12%.
3. The approximate number of people exposed in the 55 – 59 dB (A) L_{night} noise band decreased from 6,343 in 2012 to 4,278 in 2017, representing a reduction of 33%.
4. The approximate number of people exposed in the 60 – 64 dB (A) L_{night} noise band decreased from 1,114 in 2012 to 882 in 2017, representing a reduction of 21%.
5. The approximate number of people exposed to noise levels greater than 55 dB (A) L_{night} declined from 7480 to 5185 representing an approximate 31% reduction from 2012 to 2017.
6. Approximately 2.3 % of the population of Kildare (5185) were exposed to noise levels noise levels greater than 55 dB (A) L_{night} in 2017. There is no statistical analysis to indicate the approximate number of people exposed to noise levels above or below this plan's L_{night} threshold of 57 dB (A) in the L_{night} noise band 55 – 59 dB (A).

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Table 5.5 summarises the approximate number of people, dwellings and area above listed thresholds within County Kildare over the L_{night} noise bands in 2012.

L_{night} Noise Band	2012 Approximate Area Km ²	2012 Approximate Number of Dwellings	2012 Approximate Number of People
>50	83	7,089	17,712
>60	18	585	1,137
>70	2	0	0

Table 5.5: Weighted 24 Hour Road Traffic Flow (L_{night}) – Estimate of Area, Number of Dwellings and People in dB (A) Bands in 2012.

Table 5.6 summarises the approximate number of people, dwellings and area above listed thresholds within County Kildare over the L_{night} noise bands in 2017.

L_{night} Noise Band	2017 Approximate Area Km ²	2017 Approximate Number of Dwellings	2017 Approximate Number of People
>50	84	5,356	14,149
>60	17	403	907
>70	2	1	3

Table 5.6: Weighted 24 Hour Road Traffic Flow (L_{night}) – Estimate of Area, Number of Dwellings and People in dB (A) Bands in 2017.

1. The approximate number of people exposed to noise levels greater than 50 dB (A) L_{night} has declined from 18,849 people in 2012 to 15,059 in 2017 representing a reduction of 20%.
2. The approximate number of people exposed to noise levels above L_{night} 60 dB (A) reduced from 1,137 in 2012 to 907 in 2017 representing a reduction of 20%.
3. There is no statistical analysis to indicate the approximate number of people exposed to noise levels above or below the L_{night} threshold of 57 dB (A) in the 55 – 59 dB (A) noise band.
4. The approximate number of dwellings subjected to noise levels above L_{night} 50 dB (A) reduced from 585 in 2012 to 403 in 2017 representing a reduction of 31%.
5. The approximate number of dwellings subjected to noise levels above L_{night} 60 dB (A) reduced from 7089 in 2012 to 5,356 in 2017 representing a reduction of 24%.
6. The approximate number of people exposed to noise levels above the threshold L_{night} value of 70 dB (A) in 2017 was 3 people in 1 dwelling. No people or dwellings were exposed to this noise level in 2012.

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5.2.3 Rail Noise - Summary exposure to people, dwellings and area statistics

Table 5.7 summarises the estimated total number of people exposed in each 5 dB (A) L_{den} noise level band within County Kildare over an average 24 hour period in 2012.

L_{den} Noise Band	2012 Approximate Number of People	2012 Approximate Number of People as % of Total Population in Kildare
<45	203,800	97.0%
45-49	2,300	1.1%
50-54	1,900	0.9%
55-59	900	0.4%
60-64	600	0.3%
65-69	600	0.3%
70-74	0	0%
>=75	0	0%
Total	210,100	100%

Table 5.7: Weighted 24 Hour Rail Traffic Flow (L_{den}) - Estimated Number of People in dB Bands and as Percentage of Overall Population in 2012.

Table 5.8 summarises the estimated total number of people exposed in each 5 dB (A) L_{den} noise level band within County Kildare over an average 24 hour period in 2017.

L_{den} Noise Band	2017 Approximate Number of People	2017 Approximate Number of People as % of Total Population in Kildare
0-54	219800	98.79%
55-59	1100	0.49%
60-64	1000	0.45%
65-69	600	0.27%
70-74	0	0.0%
>=75	0	0.0%
Total	222500	100%

Table 5.8: Weighted 24 Hour Rail Traffic Flow (L_{den}) - Estimated Number of People in dB Bands and as Percentage of Overall Population in 2017.

1. In 2012 and 2017 no people were exposed to noise levels above the L_{den} threshold of 70 dB (A) of this Noise Action Plan due to rail noise.
2. In 2012, 2100 people were exposed to L_{den} noise levels between 55 dB (A) and 69 dB (A) in comparison to 2700 people in 2017.

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Table 5.9 below summarises the approximate number of people, dwellings and area above listed L_{den} Noise Bands within County Kildare over an average day in 2012.

L_{den} Noise Band	2012 Approximate Area Km ²	2012 Approximate Number of Dwellings	2012 Approximate Number of People
>55	5.91	800	2200
>65	1.5	300	700
>70	0.51	0	0
>75	0.01	0	0

Table 5.9: Weighted 24 Hour Rail Traffic Flow (L_{den}) – Estimate of Area, Number of Dwellings and People in dB (A) Bands in 2012.

Table 5.10 below summarises the approximate number of people, dwellings and area above listed L_{den} Noise Bands within County Kildare over an average day in 2017.

L_{den} Noise Band	2017 Approximate Area Km ²	2017 Approximate Number of Dwellings	2017 Approximate Number of People
>55	7.54	1000	2700
>65	1.87	200	600
>70	0.52	0	0
>75	0.00	0	0

Table 5.10: Weighted 24 Hour Rail Traffic Flow (L_{den}) – Estimate of Area, No. of Dwellings and People in dB (A) Bands in 2017.

1. No people or dwellings were subjected to noise levels above this Plan's threshold of 70 dB (A) L_{den} in 2012 and 2017.
2. The approximate number of people exposed to noise levels greater than 65 dB (A) L_{den} decreased from 700 to 600 people representing a 14% decrease.
3. The people exposed to noise levels greater than 65 dB (A) L_{den} (600) is approximately 0.3% of the overall survey population.
4. The approximate number of people experiencing noise levels greater than 55 dB (A) L_{den} increased from 2200 people to 2700 people representing a 23% increase.
5. The people exposed to noise levels greater than 55 dB (A) L_{den} (2700) is approximately 1.2% of the overall survey population.
6. The approximate number of dwellings subjected to noise levels greater than 55 dB (A) L_{den} increased from 800 to 1000 dwellings representing a 25 % increase.
7. The approximate number of dwellings subjected to noise levels greater than 65 dB (A) L_{den} decreased from 300 in 2012 to 200 in 2017 representing a reduction of 33%.

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8. The approximate exposed L_{den} area within County Kildare increased from 5.91 Km² to 7.54 Km². The area increases were areas within the following Noise bands:
- 55 – 59 dB (A): 0.75 Km² increase in area.
 - 60 – 64 dB (A): 0.50 Km² increase in area.
 - 65 – 69 dB (A): 0.36 Km² increase in area.

Table 5.11 below summarises the estimated total number of people exposed in each 5 dB (A) L_{night} noise level band within County Kildare over an average 24 hour period in 2012.

L_{night} Noise Band	2012 Approximate Number of People	2012 Approximate Number of People as % of Total Population in Kildare
0-54	209600	99.70%
55-59	700	0.30%
60-64	0	0%
65-69	0	0%
70-74	0	0%
>=75	0	0%
Total	210200	100%

Table 5.11. Weighted 24 Hour Rail Traffic Flow (L_{night}) - Estimated Number of People in dB Bands and as Percentage of Overall Population in 2012.

1. In 2012 approximately 99.7% of the population were exposed to the noise band range below 55 dB (A) L_{night} . This represented 209,600 people who were exposed to noise levels below this plan's 57 dB (A) L_{night} threshold.
2. Approximately 0.3% of the population, or 700 people, were exposed to rail noise levels between 55 – 59 dB (A) L_{night} in 2012. There is no statistical breakdown to indicate the number of these 700 people who were exposed to noise levels above or below this plan's 57 dB (A) L_{night} noise threshold.
3. No people were exposed to noise levels above 59 dB (A) L_{night} in 2012.

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Table 5.12 below summarises the estimated total number of people exposed in each 5 dB(A) L_{night} noise level band within County Kildare over an average 24 hour period in 2017.

L_{night} Noise Band	2017 Approximate Number of People	2017 Approximate Number of People as % of Total Population in Kildare
0-54	222000	99.80%
55-59	500	0.20%
60-64	0	0.0%
65-69	0	0.0%
70-74	0	0.0%
>=75	0	0.0%
Total	222500	100%

Table 5.12: Weighted 24 Hour Rail Traffic Flow (L_{night}) - Estimated Number of People in dB (A) Bands and as Percentage of Overall Population in 2017.

1. In 2017 approximately 99.8% of the population were exposed to the noise band range below 55 dB (A) L_{night} . This represented 222,000 people who were exposed to noise levels below this plan's 57 dB (A) L_{night} threshold.
2. Approximately 0.2% of the population, or 500 people, were exposed were exposed to noise levels between 55 – 59 dB (A) L_{night} in 2017. This represents an approximate reduction of 29% in the numbers of people exposed to noise levels between 55 – 59 dB (A) L_{night} from 2012 (700 people) to 2017 (500 people). There is no statistical breakdown to indicate the number of these 500 people who were exposed to noise levels above or below the 57 dB (A) L_{night} noise threshold.
3. No people were exposed to noise levels above 59 dB (A) L_{night} in 2012.

5.3 Conclusion and Findings of the Strategic Noise Mapping 2017.

The percentage reductions in the numbers of people subjected to the various noise bands L_{den} and L_{night} in 2017 for “Major Roads” and L_{night} results for “Major Railways” can be attributed to an improvement in the strategic mapping and data calculation methods. It can be concluded there was an overestimation of population exposure in both Round 1 and Round 2 noise mapping and the more accurate Round 3 noise mapping is not directly comparable to Round 2 noise mapping 2012.

Accordingly, the percentage increase in the numbers of people and the increase in area of land exposed to noise levels greater than L_{den} 55 dB (A) by major railways can be again attributed to the more accurate noise mapping and data calculation methods in 2017 for the Round 3 Noise Action Plan.

It can be concluded from the 2017 strategic noise mapping for “Major Roads” that:

1. Approximately 99.7% of the population (221,385 people) were living in the county below this plan's set L_{den} threshold of 70 dB (A).
2. Approximately 745 people were exposed to noise levels greater than this plan's 70 dB (A) L_{den} threshold. This represents approximately 0.3% of the county's population.
3. Approximately 97.7% of the population (216,945 people) were living in the county below the 55 – 59 dB (A) L_{night} Contour in 2017 and therefore below this plan's set L_{night} threshold of 57 dB (A).
4. 907 people or approximately 0.4% of the population were exposed to noise levels greater than 60 dB (A) which is above this plan's 57 dB (A) L_{night} threshold. 4278 people or 1.9% of the population were exposed to noise levels within the 55 – 59 dB (A) L_{night} noise contour, a proportion of which were most likely exposed to noise levels greater than this plan's 57 dB (A) L_{night} threshold. Therefore, the number of people and percentage of population exposed to this noise levels above this plan's 57 dB (A) L_{night} threshold is, most likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.

It can be concluded from the 2017 strategic noise mapping for “Major Railways” that:

1. 100% of the population were living in the county below this plan's set L_{den} threshold of 70 dB (A).
2. Therefore, no people in the county were exposed to noise levels than this plan's set L_{den} threshold of 70 dB (A).
3. Approximately 99.8% of the population (222,000 people) were living in the county below the 55 – 59 dB (A) L_{night} noise contour which is below this plan's 57 dB (A) L_{night} threshold.
4. 500 people were exposed to noise levels within the 55 dB (A) – 59 dB (A) L_{night} noise contour from the “Major Railway” in the county. This represents 0.2% of the population. It is also noted this approximate number of people and percentage of population exposed to these noise levels above this plan's set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.
5. , Again, no people in the county were exposed to noise levels greater than 59 dB (A) L_{night} .

The results clearly indicate that noise from “Major Roads”, as opposed to “Major Railways”, is the dominant source of noise affecting people

In comparing the strategic noise mapping results of the 2012 Noise Action Plan, the general trend in the reduction in the numbers of people exposed to the various noise contour bands in this Noise Action Plan can be attributed to better noise modelling methods, both in improved data collection and calculation techniques.

It can be concluded that a very small number and percentage of the population is exposed to noise levels above the L_{den} and L_{night} thresholds of this Noise Action Plan from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. In total, approximately 0.3% of the population is exposed to noise levels in excess of this plan’s set L_{den} threshold of 70 dB (A) and 2.1% of the population is exposed to noise levels in excess of this plan’s set L_{night} threshold of 57 dB (A) from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. Again, this 2.1% of the population exposed to noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no statistical information indicating the approximate number of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics. (Please see Section 5 “Summary of Results of Strategic Noise Mapping 2017”).

From the analysis of the 2017 strategic noise mapping for Kildare it can be concluded only a very small percentage of the overall population of Kildare is actually affected by noise levels that exceed the L_{den} and L_{night} thresholds of this plan.

6. Identification of Areas to be subject to Noise Management Activities

The results of the Strategic Noise Maps help to provide an indication of the extent of environmental noise exposure from “Major Road” and “Major Rail” traffic within the area of the assessment. As for the previous round of action planning, the proposed approach is to identify locations where noise mitigation measures are necessary, feasible and cost effective.

The areas to be identified using a Priority Decision Support Matrix which takes into account factors such as the noise exposure level, the type of noise receptor, the type of noise source and the numbers of people affected. It enables a number of different factors to be examined and facilitates the assessment of the relative importance of each. The Priority Decision Support Matrix for identifying Priority Noise Areas and “Quiet Areas in Open Country” is contained in Appendix F of this Plan.

In order to understand the development of the Priority Decision Support Matrix, some of the underlying principles which have shaped the development of the decision support matrix are reviewed.

6.1 Estimation of Population above Assessment Thresholds

The beginning of this process required some form of noise level value, or values, for the onset of the process of assessment of need. The noise levels used do not constitute any form of design guideline for noise management, nor do they necessarily indicate that at, or above such levels the environmental noise should be considered undesirable. They are set out as a starting point in a process which seeks to identify locations exposed to existing levels of environmental noise for which it may be considered appropriate to address the exposure through mitigation measures.

The existing legislation, guidance, manuals, plans, frameworks, policies and objectives reviewed in Section 2, along with an understanding of current best practice, were used to inform the selection of threshold levels. In Kildare the proposed onset levels for assessment of noise mitigation measures due to exposure to “Major Roads” and “Major Railway” traffic noise are:

Day-Evening-Night: 70dB (A), L_{den}

Night: 57 dB (A), L_{night}

and these are consistent with those used by other Action Planning Authorities and with EPA guidance.

The chosen threshold levels of 70 dB (A) L_{den} and 57 dB (A) L_{night} are not necessarily in line with the reviewed guidance as they are to be used for the retrospective assessment of noise from existing “Major Roads” and “Major Railways” This is a different situation than, for example, the NRA / TII Guidelines, which are concerned with an assessment of a proposed road development within the context of planning for future situations. Until the introduction of the Regulations, there had not previously been any requirement to assess existing noise sources with a view to mitigation-

6.1.2 Estimation of Population above Assessment Thresholds due to “Major Roads”

Using these thresholds for L_{den} and the statistics provided in Tables 5.1 and 5.3 in Section 5.2 of this plan it is estimated that there is a population of 745 people who experience road traffic noise levels in excess of the assessment thresholds of 70 dB (A) L_{den} .

Using the above thresholds for L_{night} and the statistics provided in Tables 5.4 and 5.6, it is estimated that there is a population of 5185 people experiencing noise from “Major Roads” in excess of 55 dB (A) L_{night} . 4278 people are exposed to noise between the noise contour band 55 – 59 dB (A). There is no statistical break down as to what number of people are exposed to noise levels above this plan’s 57 dB (A) L_{night} threshold. It can therefore be assumed a proportion of these people are exposed to noise levels in excess of 57 dB (A) L_{night} . Furthermore, there are approximately 910 people experiencing noise levels above 60dB (A) in approximately 404 dwellings and this is above this plan’s 57 dB (A) L_{night} threshold.

6.1.3 Estimation of Population above Assessment Thresholds due to “Major Railways”

There are no people experiencing noise levels in excess of this plan’s L_{den} noise threshold of 70 dB (A) from “Major Railways” as indicated in Tables 5.8 and 5.10.

In the statistics provided in Table 5.12 of this plan, it is estimated that there is a population of 500 people experiencing noise from “Major Railways” between the noise contour band 55 – 59 dB (A) in the Strategic Noise Mapping 2017. There is no statistical break down as to what number of people are exposed to noise levels above this Plan’s 57 dB (A) L_{night} threshold. It can therefore be assumed a proportion of these people are exposed to noise levels in excess of 57 dB (A) L_{night} . As indicated in Table 5.12, there are no people experiencing night time noise equal or greater than 60 dB (A) L_{night} .

The chosen threshold levels of 70 dB (A) L_{den} and 57 dB (A) L_{night} are not necessarily in line with the reviewed guidance as they are to be used for the retrospective assessment of noise from existing “Major Roads” and “Major Railways”. This is a different situation than, for example, the NRA / TII Guidelines, which are concerned with an assessment of a proposed road development within the context of planning for future situations. Until the introduction of the Regulations, there had not previously been any requirement to assess existing noise sources with a view to mitigation.

6.2 Protection Thresholds for Quiet Areas

Under the Regulations it is required to delimit quiet areas within agglomerations. As there is no agglomeration within County Kildare, there is no statutory requirement to identify quiet areas within Kildare.

Within the coverage of the strategic noise mapping there may be public open space or recreational areas where it is deemed desirable to have relatively quiet noise levels. As the identification and delimiting of quiet areas is a means of ensuring that noise levels are preserved where they are good, it is considered appropriate to consider using the concept of quiet areas within the action plan.

To this end, initially it is considered appropriate to propose onset noise levels for the assessment of noise level preservation where they are good, at:

Day-Evening-Night: 55 dB, (A) L_{den}

Night: 45 dB, (A) L_{night}

During the implementation of the action plan it is hoped to identify locations in the vicinity of the “Major Roads” which have noise levels below these criteria and review their use. If appropriate or necessary, locations could be identified as quiet areas where the existing noise levels are to be preserved or reduced if possible.

The types of public open spaces which could be considered appropriate and necessary to include within the assessment include areas such as:

1. Recreation areas,
2. Playing fields,
3. Playgrounds,
4. Public parks and gardens,
5. Nature reserves,
6. Cemeteries,
7. River banks, and
8. Canals.

And possibly extend to locations such as:

1. Places of worship,
2. Hospitals, including nursing and convalescence homes,
3. Educational institutions,
4. Childcare/crèche facilities,
5. Offices; and
6. Some livestock farms.

It is also relevant to consider that some public open spaces may currently have low levels of predicted environmental noise as indicated by the strategic noise mapping, yet have much higher actual existing noise levels due to other noise sources not considered within the scope of the mapping, such as recreation, entertainment, neighbourhood noise, smaller roads, railways or industry. Similarly there may be other areas where it may be desirable to identify and designate, due to usage and utility, despite having a reasonably high level of environmental noise as indicated by the strategic noise mapping.

6.3 “Quiet Areas in Open Country”

The Environmental Noise Regulations define a quiet area in open country as “an area, delimited by an action planning authority following consultation with the Agency and approval by the Minister, that is undisturbed by noise from traffic, industry or recreational activities”.

As part of the Environmental Research Technological, Development and Innovation (RTDI) Programme 2000 – 2006 the EPA commissioned the “Environmental Quality Objectives Noise in Quiet Areas (2000-MS-14.M1)” Synthesis Report. The purpose of this report was to meet the requirements of the Environmental Noise Directive in order to establish baseline data for Quiet Areas in the Country. The report outlines the primary characteristics of Quiet Areas that would be largely unaffected or influenced by noise from human activity. The minimum distance criteria is indicated to be:

- At least 3 km from urban areas with a population greater than a 1,000 people,
- At least 10 km from any urban areas with a population greater than 5,000 people,
- At least 15 km from any urban areas with a population greater than 10,000 people,
- At least 3 km from any local industry,

- At least 10 km from any major industry centre,
- At least 5 km from any National Primary Route,
- At least 7.5 km from any Motorway or Dual Carriageway (as recommended in EU studies).

Furthermore, the report outlines the following environmental, ecological and socio-cultural factors shall also take into account site selection:

- Low population density,
- Low agricultural productivity (away from intensive farming),
- Good network of minor roads / tracks to facilitate accessibility and noise monitoring,
- Topography, elevation and land use, including flight paths, wind direction and rural activities,
- Inclusion of a selection of sensitive ecological habitats and land uses at various elevations,
- Proximity to and inclusion of areas designated for conservation and places of high amenity value with regard to their natural soundscape,
- Transport pressures, in particular traffic flow on National Primary and Regional Routes along the densely populated east coast compared with the low-density population of the country.

As appropriate, the Authority may then identify “Quiet Areas in Open Countryside” and undertake public consultation prior to any recommendation for approval by the Minister.

6.4 Application of the Criteria

With the definition of thresholds for onset of assessment for noise mitigation and onset of assessment for noise preservation, the Priority Decision Support Matrix will provide a rating scheme which will initially help to identify locations below the for preservation and beyond the assessment thresholds for both Quiet Areas and Priority Noise Areas respectively. It will also assist in the process of ranking the locations to help develop an initial prioritisation for further investigation.

The Priority Decision Support Matrix will then be used to draw up a short list of potential areas for action, both above the onset values, and below the level for preservation to help identify “Quiet Areas in Open Country”. The shortlists will then be mapped within a Geographic Information System (GIS) to look for any clusters which could be considered “hot spots”.

The decision support matrix is designed such that a score of approximately 17 or above indicates that the location in question should be included in a shortlist for further assessment.

The Priority Decision Support Matrix will also be used to prioritise all noise sensitive locations within the strategic noise mapping area during the implementation of the action plan.

6.5 Identification of Priority Noise Areas and “Quiet Areas in Open Country” from the Strategic Noise Maps 2017 and the Decision Support Matrix.

The identification of these designated areas is scheduled to be undertaken in the 1st and 2nd year of this plan in 2019 and 2020. (Please see Section 10 “Implementation of the Third Noise Action Plan”.)

7. Mitigation and Protection Measures

7.1 General Principle of Action Plan

Kildare Local Authority has drawn up a number of general principles which the Noise Action Plan will aim to support. The County Kildare Noise Action Plan aims to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise having consideration to:

1. Noise reduction at source,
2. Land use planning adapted to noise targets,
3. Procedures to reduce noise impact, and
4. Operating restrictions to reduce noise emission.

Kildare Local Authority Noise Action Plan 2019 - 2023 will have regard to the principles of sustainable development and integrate with other strategic policy objectives of the Local Authority. The Kildare Local Authority will seek to be a facilitator of change and will strive to be a model of best practice that in turn can influence other bodies.

7.2 Processing Areas above Onset of Assessment Criteria

Following the prioritisation exercise based upon the results of the strategic noise mapping, an ordered shortlist of areas can be drawn up which can proceed to the next stage in the process. The aim of this stage is to confirm that the noise levels assessed by the strategic noise mapping are experienced by the properties and population within the areas being addressed.

It must be pointed out that up to this stage the Noise Action Plan will be implemented using in-house resources. However, the next step - confirming noise levels on site - will involve outsourcing work. While some on site noise monitoring has been carried out under the first Noise Action Plan in 2011 and 2012, it has not led to mitigation measures in the noise environment taking place mainly due to a lack of financial resources. Furthermore, there is little point in confirming noise levels at multiple sites if there is then no funding to carry out remedial works. Therefore, before committing to carrying out any confirmation of noise levels on site, an assessment will be made about the likelihood of success in procuring funding for mitigation works. Unless there is a reasonable likelihood of funding, confirmation of noise levels will not proceed.

The confirmation of noise levels indicated by the strategic noise maps may be undertaken in two ways. The first is to undertake field survey work to measure noise levels prior to the commencement of any works. The second approach would be to undertake a review of the strategic noise models and then refining if appropriate. In a best practice situation the aim would be to undertake both approaches, with measurements repeated after any actions are carried out in order to confirm the delivered results.

The review and possible refinement of the strategic noise model may help to reduce the uncertainty in the calculated noise levels within the area under review, and will benefit any subsequent use of the model to assess the potential level of noise reduction benefit which may be delivered to the residents by potential mitigation measures. Field survey work would help with calibration of the strategic noise map, as well as provide information on whether the properties being assessed had noise sensitive rooms located on the most exposed facades, or whether noise mitigation measures were already present which may not be indicated within the calculation model. Once the extent of the existing noise impact has been confirmed for the locations under review, the potential noise mitigation measures could then be investigated, and a cost benefit analysis undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action. This staged approach helps to ensure that any work undertaken will be cost effective, will deliver genuine benefit to the residents, and will be undertaken in a prioritised manner which is objectively based.

7.3 Preservation of Areas below Protection Threshold

Where areas are identified as being below the onset of preservation threshold, they will be considered for review in the context of the review for quiet areas. In addition to this, if the locations identified have cultural or amenity value the planning process can then be used to help preserve the nature and level of the existing sound environment. More details on the proposed use of planning are set out below, (Section 7.7 Planning for Noise Management).

7.4 Management of Areas between the Thresholds

For sustainable development to be delivered over the long term, careful consideration of environmental noise pollution when planning for new developments will be a key factor in the management of the noise environment. Setting out clear planning policy relating to noise, and incorporating environmental noise strategies into the development, planning and zoning processes will help to ensure that the existing noise climate is preserved where appropriate.

With the twin focus on mitigation of noise for the most exposed residents, and preservation through designated "Quiet Areas in Open County" of the least exposed areas, there is a risk that the majority of households, which sit between these two categories, are not provided for within the action planning process. It is acknowledged that the action plan needs to provide a means of preventing and avoiding detrimental levels of long term noise exposure. The development of planning guidance plays a key role in support of this target. (Details of planning for noise management is set out in Section 7.7).

7.5 Overview of Possible Mitigation Measures

Where the priority decision support matrix analysis identifies locations for which noise mitigation measures may be considered appropriate, a review of available measures can then be undertaken.

As discussed previously it is the view of Kildare Local Authority that a balanced approach needs to be taken to help sustainably manage the interests of the residents, the aims of the noise action plan and the development plan.

There are a wide range of potential noise mitigation measures, some of which may act at a national or regional level, others which may be purely localised. Likewise, there are a number of levels of authority which may be capable of making actions. Some examples of measures which may be considered include:

At EU Level, vehicle noise emissions and tyre noise regulations could be set.

At National Level, national planning guidance and noise regulations could be set.

At Regional Level, transport policy objectives may be set in respect of:

1. Improved public transport,
2. Getting people out of cars, and,
3. Increasing bus, train and bicycle journeys.

At Local Authority Level, there are powers to:

1. Replace council owned diesel vehicles with electric powered / hybrid vehicles,
2. Designate truck routes,
3. Restrict night time delivery or limits,
4. The grant of planning permissions and, in particular, the use of Pro PG Professional Practice Guidance on Planning And Noise, New Residential Development (May 2017) in the assessment of planning applications,
5. Reduce speed limits including establishing 30kph zones,
6. Introduce road closures / traffic routing,
7. Where permissible, use low noise road surfaces on higher speed routes in both resurfacing works and in new road construction.
8. Define planning zones and locate noise sources and population with consideration to potential for noise impact.
9. Require façade insulation and passive acoustic ventilation having regard to BS 8233 (2014) Guidance on Sound

Insulation and Noise,

10. Require secondary or triple glazing as a mitigation measure having regard to BS 8233 (2014) Guidance on Sound Insulation and Noise,
11. Specify building construction details for new developments exposed to environmental noise from road and rail having regard to BS 8233 (2014) Guidance on Sound Insulation and Noise,
12. Specify noise barriers,
13. Liaise with public groups,
14. Promote cycling and pedestrian routes including those in new road construction and improved permeability in new and existing housing developments in order to reduce the number of private car journeys, and,
15. Set long term targets.

Roads Authorities could, inter alia, undertake the following:

1. Traffic management – routes and control movements of Heavy Good vehicles (HGVs),
2. The construction of by-passes in congested towns when it is concluded it will a reduction in noise levels and the use of low speed noise road surface and a reduced speed limit of 60km/h in order to minimise the impact of noise on existing and future residential development accessed by such a by-pass,
3. Re-surfacing of roads with low noise road surface finishes,
4. Vehicle speed management,
5. Noise screening measures, and,
6. Set long term targets.

Rail Authorities could, inter alia, undertake the following:

1. Reduce rolling noise by utilizing the principle of “smooth wheels on smooth rails” in matters of railway maintenance.
2. Reduce the use of cast iron brake shoes on freight wagon as this is the predominant railway noise in Europe often in urban area running at night time. Reference: “Impact Assessment Study on Rail Noise Abatement Measures addressing Existing Fleets, 2007”
3. In noise sensitive areas, promote the use of:
 - Undersleeper Pads,
 - Rail dampers,
 - Rail fastenings,
 - Continuous welded track,
 - Noise barriers and raised soil verges (when space allows in quite areas of high natural amenity),
 - Where railways such as light railways are set on concrete slabs instead of sleepers, promote the use of non reflective rubber matting to absorb noise in noise sensitive urban / residential areas and near schools and hospitals.

From the above list it is apparent that Kildare Local Authority only has powers to act within a number of the possible mitigation scenarios that would be subject to funding availability. For others, Kildare Local Authority will seek to engage with the relevant authority and encourage actions to be undertaken to benefit the citizens of Kildare.

Research has been undertaken within EC funded projects looking into the design of noise mitigation measures and estimates of the extent of costs and benefits. The conclusion is often that there is no single solution which provides the optimal solution, rather a range of measures, each of which may provide an incremental improvement in the situation. The management of noise is also to be considered within regional, county and local development plans, proposed new road schemes, road maintenance proposals and the planning process.

7.6 Assessment of Options

For the locations under review a list of potential noise mitigation actions will be drawn up. In order to undertake an assessment of feasibility and to develop a prioritised list of actions, a cost-benefit analysis will be undertaken in order to maximise value for money and deliver benefit from investment.

The cost-benefit analysis will address lifetime construction and maintenance cost against noise reduction benefit. The extent of noise reduction may be a reasonably simple assessment if global source related measures are being considered and possibly more detailed and complex measures at local level. Assessment of noise benefit may involve the use of the strategic noise models to undertake scenario testing to determine estimates of the noise reduction from identified design options. However, there are a number of potential noise reduction measures that can be difficult to assess within the current calculation models such as enhanced barrier design and quiet pavement surfaces for example.

The benefit of noise reduction may be viewed in terms of decibels / people / time and may be considered using an assessment of changes in estimated levels of annoyance or sleep disturbance, or could be monetised to fully process the analysis. Monetisation of noise is becoming increasingly common. The monetary assessments of noise levels tends to take two differing approaches, (i) impact upon property market value and (ii) willingness to pay by residents exposed to noise to produce a reduction. As may be expected these tend to lead to somewhat differing suggested levels of financial benefit. The appropriate metrics and valuations will be reviewed at the time of the analysis, using the best available research data.

The best information available at present comes from an EC working group position paper from 2003 "Working Group on Health and Socio-Economic Valuation of Noise" which proposes a median value in noise perceived by households of €25 per dB L_{den} , per household, per year based upon the noise level change compared to the initial situation. As an example, a noise barrier benefiting 25 houses, by 5 dB L_{den} , with a 20 year design would provide an estimated benefit of €25 x 25 houses x 5 dB x 20 years = €62,500. For example; the cost of a new noise barrier could be €200 per square metre, so a 100 m long, 3 m high noise barrier may cost €60,000.

7.7 Planning for Noise Management

The planning system has the potential to exercise a significant influence on the control of future exposure to environmental noise and may play a key role in the improvement of amenity. The appropriate use of the planning system can help avoid or minimise the adverse impacts of noise without placing unreasonable restrictions on development.

There are two main scenarios in development where noise could be viewed as a material consideration:

Bringing People to Noise:

1. New housing, hospitals, schools, nursing homes etc near to existing road, rail, industrial or airport noise,
2. Noise levels outside the façade of buildings in gardens and in public open spaces;
3. Noise levels inside the building.

Bringing Noise to People:

1. New or altered roads, railways, industrial sites, airports or commercial developments which would alter the noise environment in the vicinity of noise sensitive locations.

In order to successfully use the planning process to help avoid or minimise noise exposure in a consistent manner, it is considered appropriate for guidance on noise exposure levels to be considered within the proposal and design stage of planning applications.

In the scenario where new residential properties or other noise sensitive premises are introduced into an existing climate of environmental noise, there is currently no clear national planning guidance on noise from the Department of Housing, Planning And Local Government (DHPLG). Kildare Local Authority may develop and publish its own set of guidance on noise assessment and control which would be applicable throughout the county. In the interim, Kildare Local Authority shall require quantifiable noise assessments to be carried where any part of the residential developments is located within 150m of a rail corridor or adjacent to the "Major Roads" within the county. The quantifiable assessment of environmental noise shall include, inter alia, the situation internally with open windows and externally in the amenity areas of development. In the scenario where new, or altered, sources of noise are introduced to existing residential properties, or other noise sensitive locations, there are currently a number

of guidance documents which cover some of the situations which may arise, as discussed above. Where existing guidance does not cover the situation under consideration, Kildare Local Authority will determine the format of assessment that it would consider appropriate.

It is currently envisaged that the guidance is likely to formalise the approaches to noise impact assessment which already appear commonly within Ireland. These are frequently based upon assessment methods within the UK, such as National Planning Policy Framework (NPPF) July 2018 and Planning Advice Note (PAN 1/2011) and Technical Advice Note (TAN): Assessment of Noise in Scotland or BS 8233 (2014) Guidance on Sound Insulation and Noise.

Consideration may also be given during the lifetime of the Third Noise Action Plan to the Environmental Noise Guidance for Local Authority Planning & Enforcement Departments (June 2019) that was collectively developed by the Association of Acoustic Consultants of Ireland (AACI) and ICAN Acoustics And Vibration Consultants.

Whilst the control of external levels of environmental noise constitutes one aspect of noise management within planning and aims to provide benefit to amenity spaces, the control of noise levels within residential properties and other noise sensitive premises also plays an important role.

In the scenario where new noise sensitive premises are introduced to locations already exposed to significant levels of long term environmental noise as set out in the Environmental Noise Regulations, i.e. 70 dB (A) L_{den} and 57 dB (A) L_{night} , it is considered appropriate to consider aiming to achieve target internal noise levels within noise sensitive rooms, such as living rooms and bedrooms.

In the case of new development, or conversions, these targets could be introduced through the use of appropriate planning conditions, and possibly some form of pre-completion testing as used in a number of other EU countries. The choice of targets for internal noise levels can be informed by the:

1. WHO-Guidelines for Community Noise (1999),
2. WHO-Night Noise Guidelines for Europe (2009),
3. WHO-Environmental Noise Guidelines for the European Region (2018),
4. BS 8233 (2014) Guidance on Sound Insulation and Noise,
5. ProPG: Professional Practice guidance on Planning and Noise for new Residential Development (May 2017),
6. AACI: Environmental Noise Guidance for Local Authority Planning & Enforcement Departments (June 2019).

8. Implementation of Second Noise Action Plan

8.1 Report on Outcome of Actions

The Second Noise Action Plan 2014 – 2018 set out a number of actions to be implemented over the time span of the plan. The following tables report on their outcomes:

Year 1 (2013)

Action Description	Outcome
Review strategic noise maps to identify priorities.	Completed. Confirmed number and identified location of properties adversely affected by environmental noise.
Priority decision support matrix.	Not completed. No Priority Noise Areas or Quiet Areas identified for Noise Monitoring.
Confirmation of extent of impact.	The number of residences in various noise bands were identified.
Draw up list of areas for noise mitigation review.	Completed – Some residences were grouped into geographical areas.
Estimate extent of sources under 2012 strategic noise mapping.	Completed - Details were passed to the EPA for collation.

Year 2 (2014)

Action Description	Outcome
Noise mitigation review.	Not completed – as no budget was provided for the mitigation of environmental noise, this action was premature.
Assess all identified sites.	Not completed – as no budget was provided for the mitigation of environmental noise, this action was premature.
Feasibility study for possible mitigation measures.	Not completed – as no budget was provided for the mitigation of environmental noise, this action was premature.
Cost benefit analysis for feasible measures.	Not completed – as no budget was provided for the mitigation of environmental noise, this action was premature.
Draw up list of cost effective interventions.	Not completed – as no budget was provided for the mitigation of environmental noise, this action was premature.

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Set out data requirements for 2017 strategic noise mapping.	Completed.
Publish County planning guidance on noise assessment and control.	Not Completed

Year 3 - 4 (2016 - 2017)

Action Description	Outcome
Collate, capture and consolidate data required for 2017 strategic noise mapping.	Completed – “Major Railways” and “Major Roads” identified. Traffic data was collated which included road traffic count surveys at various locations in the county conducted in 2016.
Produce new strategic noise maps for 2017 assessment year	Completed - Noise mapping was produced and forwarded to the EU by the end of the year.

Year 5 (2018)

Action Description	Outcome
Review the impact of Action Plan and amend where appropriate.	Completed - Undertaken as part of review of the Second Noise Action Plan in drafting the 3 rd Noise Action Plan 2019 - 2023.
Ongoing requirements.	Oversaw the completion of the contract to carry out the noise mapping of non-national roads and reporting to the EPA.
Public consultation and finalisation of 2019 to 2023 Noise Action Plan.	To be completed in the third Quarter of 2019.
Assess implementation and use of guidance on planning and noise.	AACI: Environmental Noise Guidance for Local Authority Planning And Enforcement Departments (June 2019) and ProPG: Planning & Noise Professional Practice Guidance on Planning And Noise for Residential Development (May 2017) incorporated in the assessment of planning applications for residential development adjacent to Major Roads in conjunction with the EPA's on-line Strategic Noise Mapping.

8.2 Reduction in the Numbers of People affected by Environmental Noise from “Major Roads” and “Major Railways”.

No mitigation measures were put in place to alleviate the effects of noise in Priority Noise Areas or in the identification of “Quiet Areas in Open Country” during life time of the Second Noise Action Plan 2013 – 2018 as there was no budget in place to complete such tasks and actions. While an explicit list of Priority Noise Areas was not drawn up, some noise abatement measures were implemented by third parties such as the M7 Naas to Newbridge By-pass road widening upgrade scheme.

In the 2012 Strategic Noise Mapping it was indicated that:

1. Approximately 969 people were exposed to noise levels equal or greater than the Plan's threshold of 70 dB (A) L_{den} due to “Major Roads”.
2. Approximately 7480 people were exposed to noise levels equal or greater than the 55 dB (A) L_{night} noise level due to “Major Roads”.
(Note: There is no statistical break down to the exact number of people exposed to noise levels equal or greater than Plan's threshold of 57 dB (A) L_{night} due to “Major Roads”).
3. No people were exposed to noise levels equal or greater than the Plan's threshold of 70 dB (A) L_{den} due to “Major Railways”.
4. Approximately 700 people were exposed to noise levels equal or greater than the 55 dB (A) L_{night} due to “Major Railways”.
(Note: There is no statistical break down to the exact number of people exposed to noise levels equal or greater than Plan's threshold of 57 dB (A) L_{night} due to “Major Railways”).

In the 2017 Strategic Noise Mapping it was indicated that:

1. Approximately 745 people were exposed to noise levels equal or greater than the Plan's threshold of 70 dB (A) L_{den} due to “Major Roads”.
2. Approximately 5185 people were exposed to noise levels equal or greater than the 55 dB (A) L_{night} noise level due to “Major Roads”.
(Note: There is no statistical break down to the exact number of people exposed to noise levels equal or greater than Plan's threshold of 57 dB (A) L_{night} due to “Major Roads”).
3. No people were exposed to noise levels equal or greater than the Plan's threshold of 70 dB (A) L_{den} due to “Major Railways”.
4. Approximately 500 people were exposed to noise levels equal or greater than the 55 dB (A) L_{night} noise level due to “Major Railways”.
(Note: There is no statistical break down to the exact number of people exposed to noise levels equal or greater than Plan's threshold of 57 dB (A) L_{night} due to “Major Railways”).

It can be concluded that the reduction in the number of people affected by environmental noise from “Major Roads” and “Major Railways” in the 2017 Strategic Noise Mapping was as a result of improvements in noise mapping and data collection methods.

9. Public Participation

9.1 Public Consultation

Kildare Local Authority published this Draft Noise Action Plan and sought responses and feedback from statutory bodies and the general public inviting submissions in 2019.

In addition, a number of stakeholder organisations were approached directly and asked to provide review and feedback on the proposals set out within the Draft Noise Action Plan. Appendix G gives a full list of specified organisations and stakeholders approached in this way.

As part of the wider public consultation, Kildare Local Authority made copies of the Draft Third Noise Action Plan 2019 - 2023 available to access by the public within all Public Libraries in County Kildare, the public counter of the Roads, Transportation and Public Safety Department of Kildare County Council, and by placing an electronic version on the County Council website. The draft plan went on public display from the 25th July 2019 to the 16th August 2019 for submissions from members of the public to be submitted by 4.00 pm on the 30th August 2019.

9.2 Response to the public consultation

Appendix H details the results and outcomes of public consultation to date.

9.3 Making a submission

Submissions were made in writing having consideration to Council's Privacy Statement for the management of such submissions made during the public consultation process in the making of the County Kildare Third Noise Action Plan 2019 – 2023. This privacy statement is available on the Kildare County Council website at <http://kildare.ie/CountyCouncil/DataProtection/>. A hard copy of the privacy statement can be viewed at the public counter of the Roads, Transportation and Public Safety Department of Kildare County Council. All respondents were made aware that the Kildare Local Authority is subject to the provisions of the General Data Protection Regulation (GDPR) 2018 having regard to the processing of personal data and rules relating to the free movement of personal data.

For the assessment of responses from the public consultation process all respondents were made aware that the Kildare Local Authority is subject to the provisions of the Freedom of Information Act 1997 - 2014 and if asked the Council may have no option but to release the information in accordance with the requirements of the said legislation.

Submissions were also made via the following email address: noise@kildarecoco.ie.

9.4 Next step in the process

After the Noise Action Plan has been finalised, the final plan will go to the Chief Executive for approval. At that stage, copies of the Noise Action Plan will be made available to the public within all Public Libraries across County Kildare, and by placing an electronic version on the County Council website. Copies will also be made available at a reasonable cost from the Senior Executive Officer (See Section 4.1 for contact details).

10. Implementation of the Third Noise Action Plan

The Third Noise Action Plan 2019 - 2023 proposes a staged approach to the assessment of any requirement for the mitigation of existing levels of environmental noise due to "Major Roads" and "Major Rail" within the County.

10.1 Roles and Responsibilities

Kildare Local Authority is the designated Action Planning Authority as set out within the Environmental Noise Regulations 2018 S.I. No. 549 / 2018. The Local Authority is responsible for developing the action plan and ensuring that the implementation timetable set out below is progressed and reviewed.

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Transport Infrastructure Ireland (TII) remains the primary external stakeholder to the Council during the implementation of the action plan, as they are the body responsible for the planning and supervision of works for the construction and maintenance of national roads. Approximately 50% of the “Major Roads” within Kildare are motorways and national roads, a total of 117 km out of a total of 235 km of “Major Roads” in the county.

Iarnród Éireann (Irish Rail) owns, operates and maintains the country's rail infrastructure pursuant to the European Union (Regulation of Railways) Regulations (2015) SI 248 of 2015. **Source:** Iarnród Éireann Irish Rail Network Statement 2018. Iarnród Éireann (Irish Rail) is the secondary external stakeholder of this plan.

10.2 Objectives

It is the Authority's goal to adopt a strategic approach to the management of environmental noise with a view to preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health. The Authority aims to promote a high level of protection within the context of sustainable development.

The strategy of the Local Authority is to influence the location of noise sensitive receptors in the planning and development process and deter their location in areas of existing high noise levels in the lifetime of this Noise Action Plan and subsequent plans.

The objective of constructing relief roads, amongst other things, is to redirect traffic from areas of high noise and therefore to mitigate against noise. Furthermore, by promoting public transport, sustainable modes of transport and the development of traffic management plans is to reduce noise and congestion in town centres. It is also in the interests of road safety to remove traffic, and in particular, heavy goods vehicles from passing through town centres, several of which are historic and are not designed for such vehicles.

10.3 Programme of Works

The Third Noise Action Plan is to be implemented through a staged process over 5 years, such that the works undertaken within the Action Plan will feed into the Fourth round of strategic noise mapping in 2022. The implementation of the Action Plan will be reviewed and reported within the Fourth Round Noise Action Plan (required to be completed in 2023).

Year 1 and 2 (2019 and 2020)

1.	Develop guidance for the needs of planners and engineers within Kildare County Council to mitigate for noise within the county. This guidance document will also involve the development of a set of standard conditions to be attached to the grant of planning permission pertaining to noise mitigation measures.
2.	Identify Priority Noise Areas and potential “Quiet Areas in Open Country” using the Strategic Noise Mapping 2017, the population numbers exposed to the various noise levels as indicated in the maps and the Decision Support Matrix process.
3.	Carry out a “Validation Step” by carrying out noise monitoring along some of the identified Priority Noise Areas and “Quiet Areas in Open Country”. Having regard to tasks numbered 2 and 3, resources will initially be utilized to address noise sensitive receptors in areas where high noise levels exist emanating from “Major Roads” and “Major Railways”. <u>This is wholly dependent on the availability of appropriate funding.</u>
4.	Review existing noise mitigation measure (if in place) at the identified Priority Noise Areas as part of a noise mitigation review having regard to Transport Infrastructure Ireland's (TII) separate Noise Mitigation Programmes along National Roads in the county.
5.	Seek funding to carry out a feasibility study / cost benefit analysis for possible mitigation measures.
6.	Seek funding to carry out design and implementation of mitigation measures proposed.

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7.	Set out data requirements for 2022 strategic noise mapping.
8.	Review county planning development and put forward policy proposals relating to noise for inclusion in the County Development Plan and Local Area Plans.
9.	Review the Local Authority's Geographic Information System (GIS) having regard to Strategic Noise Mapping 2017 being incorporated into the system.
10.	Annual report of progress in 2019 and 2020 against milestones to Transportation Strategic Policy Committee.

Year 3 (2021)

1.	If engineering resources and funding are made available, commence the implementation of the relevant actions.
2.	Collate, capture and consolidate data required for 2022 Strategic Noise Mapping.
3.	Annual reports of progress against milestones to Transportation Strategic Policy Committee.

Year 4 (2022)

1.	Assess the implementation and use of guidance on planning and noise.
2.	Produce new strategic noise maps for 2022 assessment year.
3.	Annual report of progress against milestones to Transportation Strategic Policy Committee.

Year 5 (2023)

1.	Review the impact of the Third Action Plan and amend where appropriate.
2.	Public consultation and finalisation of the Fourth Noise Action Plan 2024 – 2028.
3.	Annual report of progress against milestones to Transportation Strategic Policy Committee.

10.4 Evaluation, Review and Corrective Action Programmes

The Council will review the effectiveness of planned noise action activities and the budgetary position on an ongoing basis. This will be done by performing an annual review of the progress made in relation to planned activities and reporting on same to the Strategic Policy Committee for Transportation. The effectiveness of these measures at combating local environmental noise exposure will also be considered. If necessary, adjustments may be made to the schedule and nature of planned activities in order to better meet the goals of the action plan.

In 2023 the Council will carry out a review of the program of works implemented under this Noise Action Plan. Progress and results will be evaluated using information gathered through local assessment of environmental noise exposure. This will include “before and after” evaluations of any noise mitigation measures where appropriate. A review of new noise maps will also be carried out, giving an indication of the change in environmental noise levels and the numbers of people exposed.

11. Summary & Conclusions

This Noise Action Plan has been prepared pursuant to the European Communities Environmental Noise Regulations 2018, S.I. No. 549 / 2018 in place of the revoked Environmental Noise Regulations 2006, S.I. No. 140 / 2006. These Regulations give effect to the EU Directive 2002/49/EC relating to the assessment and management of environmental noise.

It aims to provide an overview of the requirements of the Regulations, a review of the results of the strategic noise mapping within County Kildare, and set out an approach to the strategic management and control of environmental noise from “Major Roads” and “Major Railways” over the next five years.

The objectives of the Kildare Local Authority’s noise action plan are to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise from “Major Roads” and “Major Railways”. This will be achieved by taking a strategic approach to managing environmental noise and following a balanced approach in the context of sustainable development. This approach promotes action on environmental noise through five avenues:

1. Develop guidance for the needs of planners and engineers within Kildare County Council to mitigate for noise within the county. This guidance document will also involve the development of a set of standard conditions to be attached to the grant of planning permission pertaining to noise mitigation measures,
2. Noise reduction at source,
3. Land use planning and guidance adapted to noise goals,
4. Procedures to reduce noise impact, and
5. Operating restrictions to reduce noise emissions.

“Major Roads”

It can be concluded from the 2017 strategic noise mapping for “Major Roads” that:

1. Approximately 99.7% of the population (221,385 people) were living in the county below this plan’s set L_{den} threshold of 70 dB (A) in 2017.
2. The 2017 strategic noise mapping for “Major Roads” indicated approximately 745 people were currently exposed to noise levels in excess of this plan’s set L_{den} threshold of 70 dB (A). This represents approximately 0.3% of the county’s population.
3. Approximately 97.7% of the population (216,945 people) were estimated to be living in the county below the 55 – 59 dB (A) L_{night} noise contour in 2017 and therefore below this plan’s set L_{night} threshold of 57 dB (A).
4. The 2017 strategic noise mapping for “Major Roads” indicated approximately 907 people were currently exposed to L_{night} noise levels greater than 60dB (A), in excess of this plan’s set L_{night} threshold of 57 dB (A). This represents 0.40% of the county’s population. It is further noted the 2017 strategic noise mapping indicated approximately 4278 people were exposed to noise levels within the 55 – 59 dB (A) L_{night} noise contour. This is approximately 1.9% of the county’s population. It is also noted the approximate number of people and percentage of population exposed to noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.

“Major Railways”

It can be concluded from the 2017 strategic noise mapping for “Major Railways” that:

1. 100% of the population were living in the county below this plan’s set L_{den} threshold of 70 dB (A) in 2017.
2. Therefore, no people in the county were exposed to noise levels greater than this plan’s set L_{den} threshold of 70 dB (A) in 2017.
3. Approximately 99.8% of the population (222,000 people) were living in the county below 55 – 59 dB (A) L_{night} noise contour and therefore below this plan’s 57 dB (A) L_{night} threshold.
4. The 2017 strategic noise mapping for “Major Railways” indicated approximately 500 people were currently exposed to L_{night} noise levels in the 55 – 59 dB (A) noise contour. This represents 0.2% of the population. It is also noted this approximate number of people and percentage of population exposed to these noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no breakdown of the statistical information indicating the numbers of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics.
5. Again, no people in the county were exposed to noise levels greater than 59 dB (A) L_{night} .

Conclusions

The results clearly indicate that noise from “Major Roads”, as opposed to “Major Railways”, is the dominant source of noise affecting people. (Please Section 5.2 “Presentation of Results” of the Strategic Noise Mapping 2017).

In comparing the strategic noise mapping results of the 2012 Noise Action Plan, the general trend in the reduction in the numbers of people exposed to the various noise contour bands in this Noise Action Plan can be attributed to better noise modelling methods, both in improved data collection and calculation techniques.

It can be concluded that a very small number and percentage of the population is exposed to noise levels above the L_{den} and L_{night} thresholds of this Noise Action Plan from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. In total, approximately 0.3% of the population is exposed to noise levels in excess of this plan’s set L_{den} threshold of 70 dB (A) and 2.1% of the population is exposed to noise levels in excess of this plan’s set L_{night} threshold of 57 dB (A) from the combined noise levels generated from “Major Roads” and “Major Railways” in the county. Again, this 2.1% of the population exposed to noise levels above this plan’s set L_{night} threshold of 57 dB (A) is, mostly likely, lower. The reason is there is no statistical information indicating the approximate number of people exposed to noise levels above or below 57 dB (A) in the 55 – 59 dB (A) L_{night} noise contour exposure statistics. (Please see Section 5 “Summary of Results of Strategic Noise Mapping 2017”).

From the analysis of the 2017 strategic noise mapping for Kildare it can be concluded only a very small percentage of the overall population of Kildare is actually affected by noise levels that exceed the L_{den} and L_{night} thresholds of this plan.

This Noise Action Plan primarily considers the long term environmental noise impact from major road traffic and rail noise sources and sets out an approach to review noise impact levels near to these major sources assessed during the strategic noise mapping in 2017. In the interests of equality and promotion of best practice the action plan also sets out a number of proposals for the prevention and avoidance of environmental noise levels detrimental to human health to be implemented through the planning process, these being applicable throughout County Kildare.

11.1 Summary of Actions

11.1.1 Planning & Development

Increased levels of environmental noise will be prevented and avoided, where possible, within the requirements of the County Development Plan, Local Area Plans and sustainable development through the whole of County Kildare. This can be completed by the integration of noise management into the planning process for the development of new noise sensitive premises, or sources of long term environmental noise, such as roads, railways and industrial sites by the following processes:

1.	Review and develop guidance for the needs of planners and engineers within Kildare County Council to mitigate for noise within the county This guidance document will also involve the development of a set of standard conditions to be attached to the grant of planning permission pertaining to noise mitigation measures.
2.	Having regard to planning applications for proposed developments containing noise sensitive receptors (which may be below the scale associated with full EIA requirements), promote the process of good acoustic design in development. In doing so promote the use of AACI: Environmental Noise Guidance for Local Authority Planning And Enforcement Departments (June 2019) and ProPG Professional Guidance on Planning & Noise, New Residential Development (May 2017).
3.	Propose rezoning of lands such that noise sensitive receptors are located away from areas of existing high noise levels including areas where "Major Roads" and "Major Railways" are situate.
4.	Aim to have noise control measures incorporated into proposals for new developments of noise sensitive premises which attain appropriate internal noise targets.

11.1.2 Noise Reduction at Existing Sources

In an ideal world, noise sensitive receptors would not be permitted in areas where there are potentially high noise levels. Sufficient funding would be provided to mitigate the effects of adverse environmental noise across the county. In practice, the absence of funding means that any noise reduction from existing sources will be limited and would be a by-product of the maintenance function of the Roads Authority. It is therefore unlikely that a significant number of people will have an improved noise environment.

Noise reduction of existing sources of long term environmental noise, where necessary, will be considered within the area covered by the strategic noise mapping undertaken by the noise mapping bodies in 2017. The assessment of relevant actions will use the following approach:

1.	Review Priority Noise Areas and potential “Quiet Areas in Open Country” identified through the Strategic Noise Mapping 2017, the population numbers exposed to the various noise levels as indicated in the maps and the Priority Decision Support Matrix process.
2.	Carry out a “Validation Step” by carrying out noise monitoring along some of the identified Priority Noise Areas. This is wholly dependent on the availability of appropriate funding and technical resources to carry out these tasks.
3.	Review existing noise mitigation measure (if in place) at the identified priority areas as part of a noise mitigation review.
4.	Feasibility study for possible mitigation measures.
5.	Cost benefit analysis for feasible mitigation measures.
6.	Endeavour to put appropriate funding in place to proceed with (1) the design and (2) the implementation of mitigation.
7.	Set out data requirements for 2022 strategic noise mapping.
8.	Review county planning and development and planning guidance on noise assessment and control.

11.1.3 Preservation of Quiet Areas

The preservation of relatively quiet areas in the vicinity of major noise sources, and “Quiet Areas in the Open Country” will be considered and reviewed as part of the implementation of this Noise Action Plan. Any possible designations which may be recommended by such a process would go to public consultation prior to submission to the Minister for adoption.

11.1.4 Planning for the Fourth Noise Action Plan 2024 – 2028

1.	Prepare relevant information for 2022 strategic noise mapping.
2.	Estimate extent of sources of noise under 2022 strategic noise mapping.
3.	Set out data requirements for 2022 strategic noise mapping.
4.	Collate, capture and consolidate data required for 2022 strategic noise mapping by using the Common Noise Assessment Methods in Europe (Cnossos – EU) in assessing and managing environmental noise in Europe consisting of road, railway, aircraft and industrial noise whilst having further consideration to building heights.
5.	Refine the assessment of “Major Roads” which has more than 3 million vehicle passages per year to include, inter alia, road surface type and vehicle types using the road including, inter alia, mopeds, motorcycles, cars, light vehicles <3.5 tonnes, medium vehicles >3.5 tonnes and heavy vehicles.
6.	Refine the assessment of “Major Railways” which has more than 30,000 train passages per year to include, inter alia, rail track roughness and wheel roughness.
7.	Undertake an annual review of progress on the implementation of the Third Noise Action Plan 2019 - 2023.

Appendix A: Summary of the construction and upgrade of roads within the County

Progress on the schemes listed below is dependent on the availability of funding or alternatively private developers taking the lead role in the provision of same:

Naas:

- Dublin Road Corridor - Naas Traffic Management / Cycling Upgrade Scheme
- R445 Ladytown Junction Upgrade Scheme
- Craddockstown / Ballycane Junction Improvement Scheme and the Craddockstown Road Pedestrian / Cycle Upgrade Scheme

Athy:

- Athy Distributor Road Scheme

Maynooth:

- Maynooth Eastern Ring Road LIHAF Scheme
- Maynooth Outer and Inner Relief Roads
- Moyglare Road Improvement Scheme

Kildare Town:

- Northern Link Street and South Green Road Improvement Scheme

Ballymore Eustace:

- Remediation of the L6048 local road scheme due to slope failure Scheme

Celbridge:

- New Liffey Bridge Crossing Scheme
- Upgrade Of the Existing Liffey Bridge Scheme

Clane:

- Clane Inner Relief Road Scheme

Sallins and Osberstown:

- The M7 Osberstown Interchange and R407 Sallins By-Pass Scheme. This scheme contains noise mitigation measures consisting of a combination of road side noise barriers and a low noise road surface. Please see the Scheme's Environmental Impact Statement (EIS) containing such details at:

<http://www.kildare.ie/CountyCouncil/NationalRoadsOffice/M7OsberstownInterchangeR407SallinsBypassScheme2013/>

Monasterevin:

- Junction Improvement Works at the R417 / L7055 and the R445 / R417 Scheme

Newbridge:

- Newbridge Link Road Scheme
- Newbridge Inner Relief Roads Scheme

M7 Road Widening Scheme

- The M7 Naas to Newbridge By-Pass Upgrade Scheme, consisting of the widening of the motorway to three lanes in each direction, will have noise mitigation measures in place so that residual noise levels at the majority of the residential properties effected by the upgrade are reduced below this plan's L_{den} threshold of 70dB (A) and L_{night} threshold of 57dB (A). This is achieved by the use of noise barriers at specified locations and the use of a low noise road surface over the

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length of the road widening upgrade works. It is indicated in the Scheme's Environmental Impact Statement (EIS) that the implementation of the proposed mitigation measures along the scheme, noise levels are predicted to reduce by the order of 2 to 8 dB (A) when compared to the Do Nothing scenario for the same future years. Note: "The Do Nothing scenario" is to not carry out the upgrade scheme. Please see the Scheme's Environmental Impact Statement (EIS) containing such details at:

<http://www.kildare.ie/CountyCouncil/NationalRoadsOffice/M7NaastoNewbridgeBy-PassUpgradeScheme2013/>

As the schemes listed in the foregoing either having been advanced or are proposed to be advanced through the design process, the relevant environmental impact assessments would be undertaken and this would include an assessment pertaining to noise. The noise management guidelines within the noise action plan would be followed to help minimise potential noise impact.

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Recreational Craft – Directive 2003/44/EC

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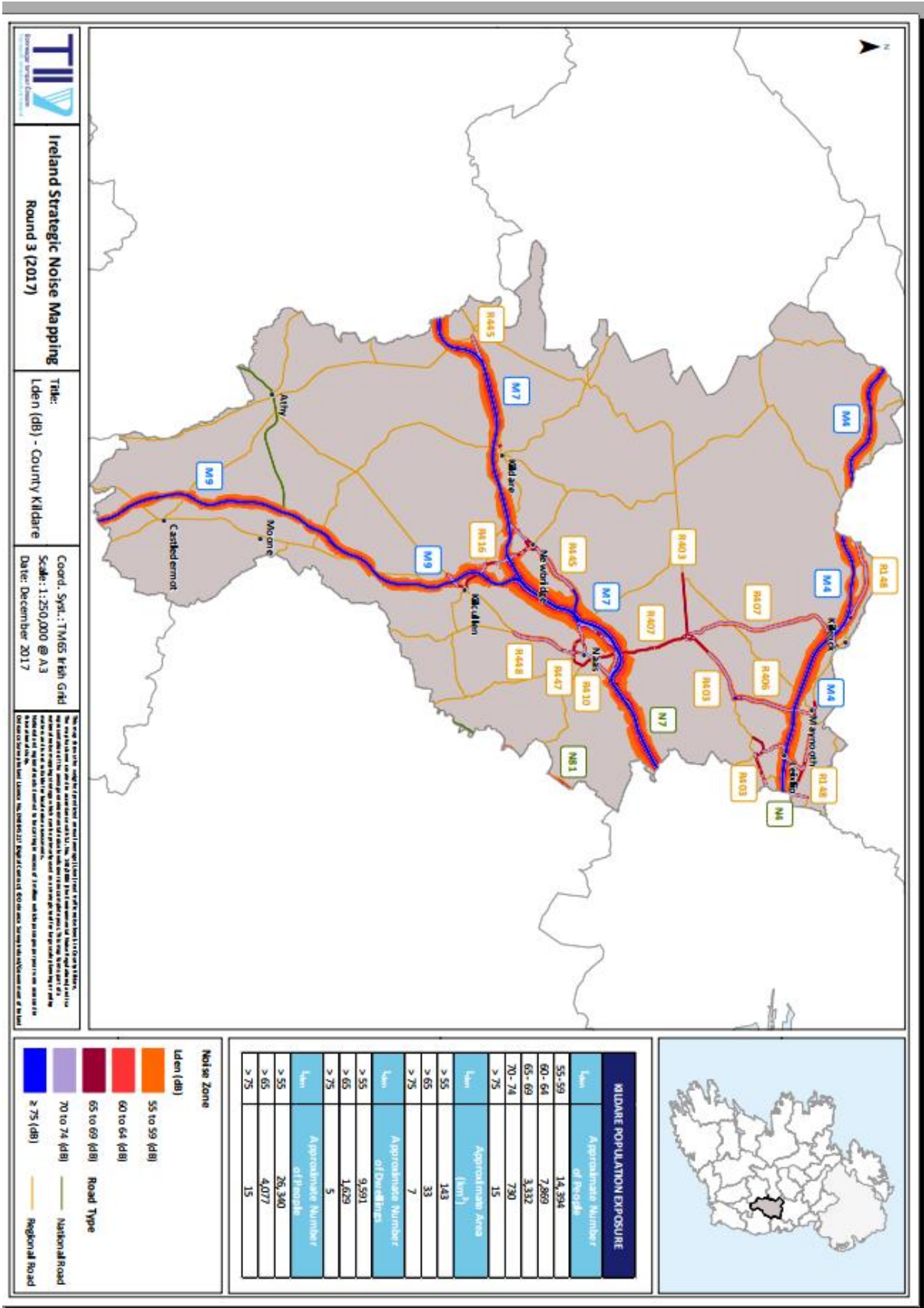
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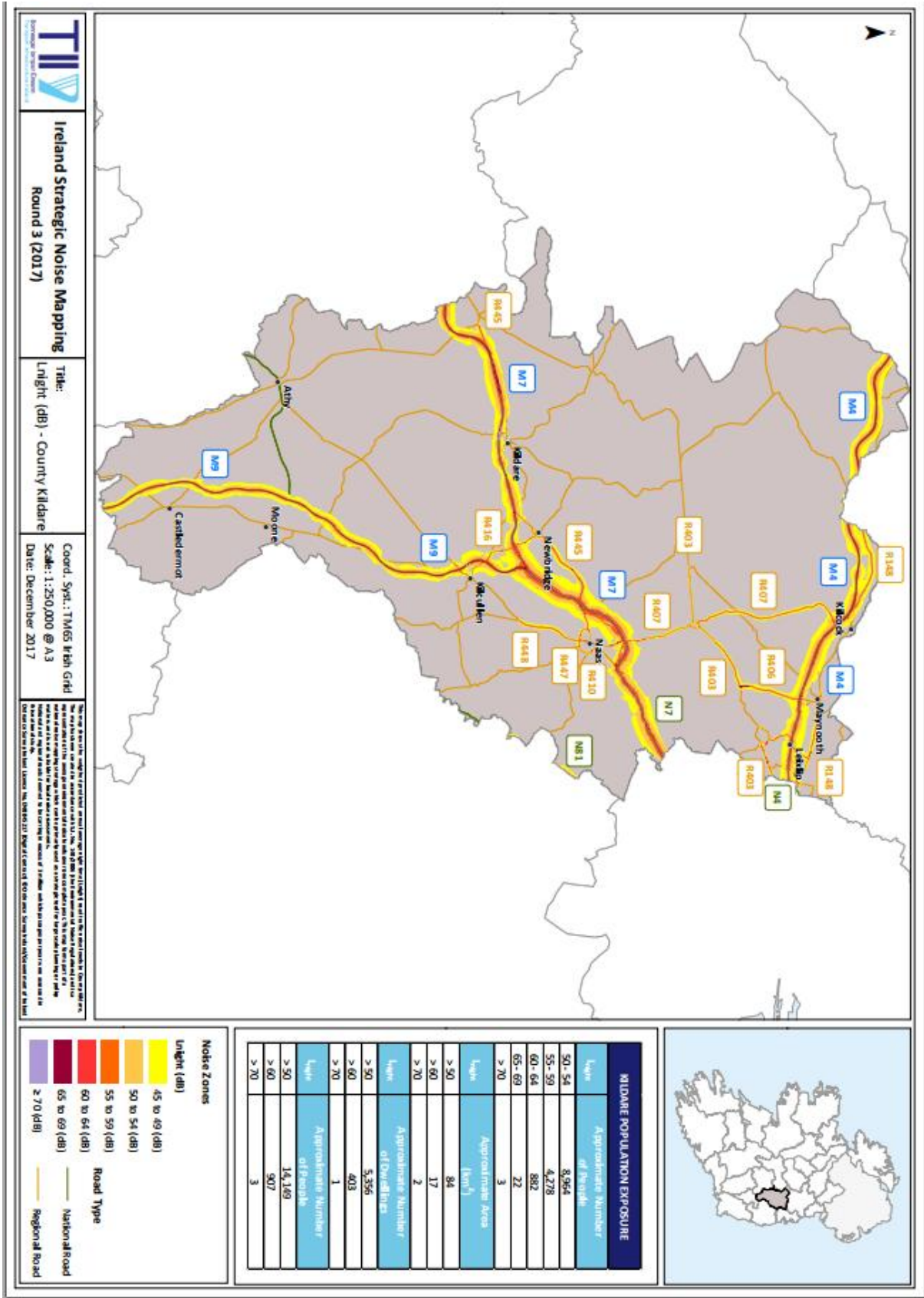
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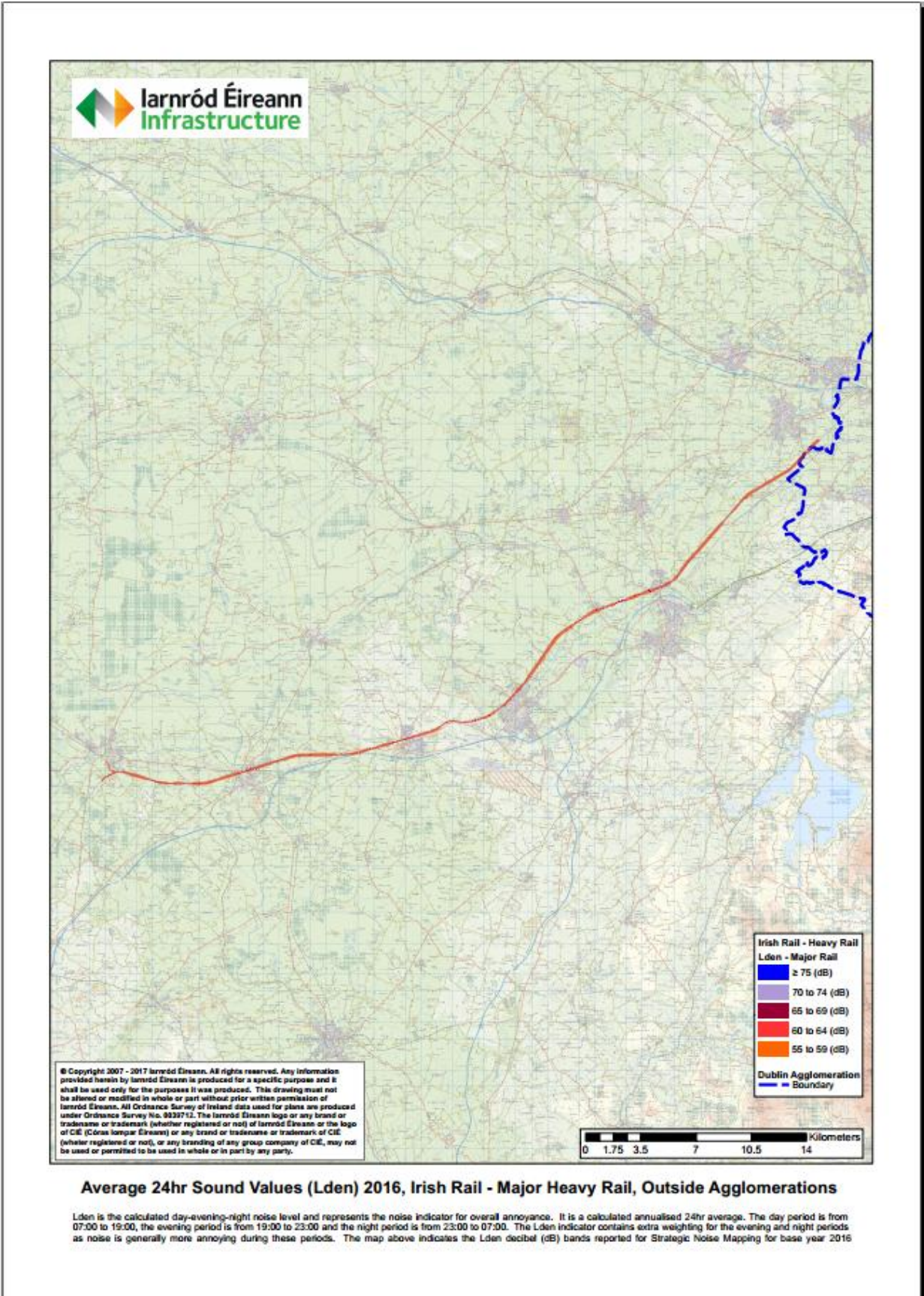
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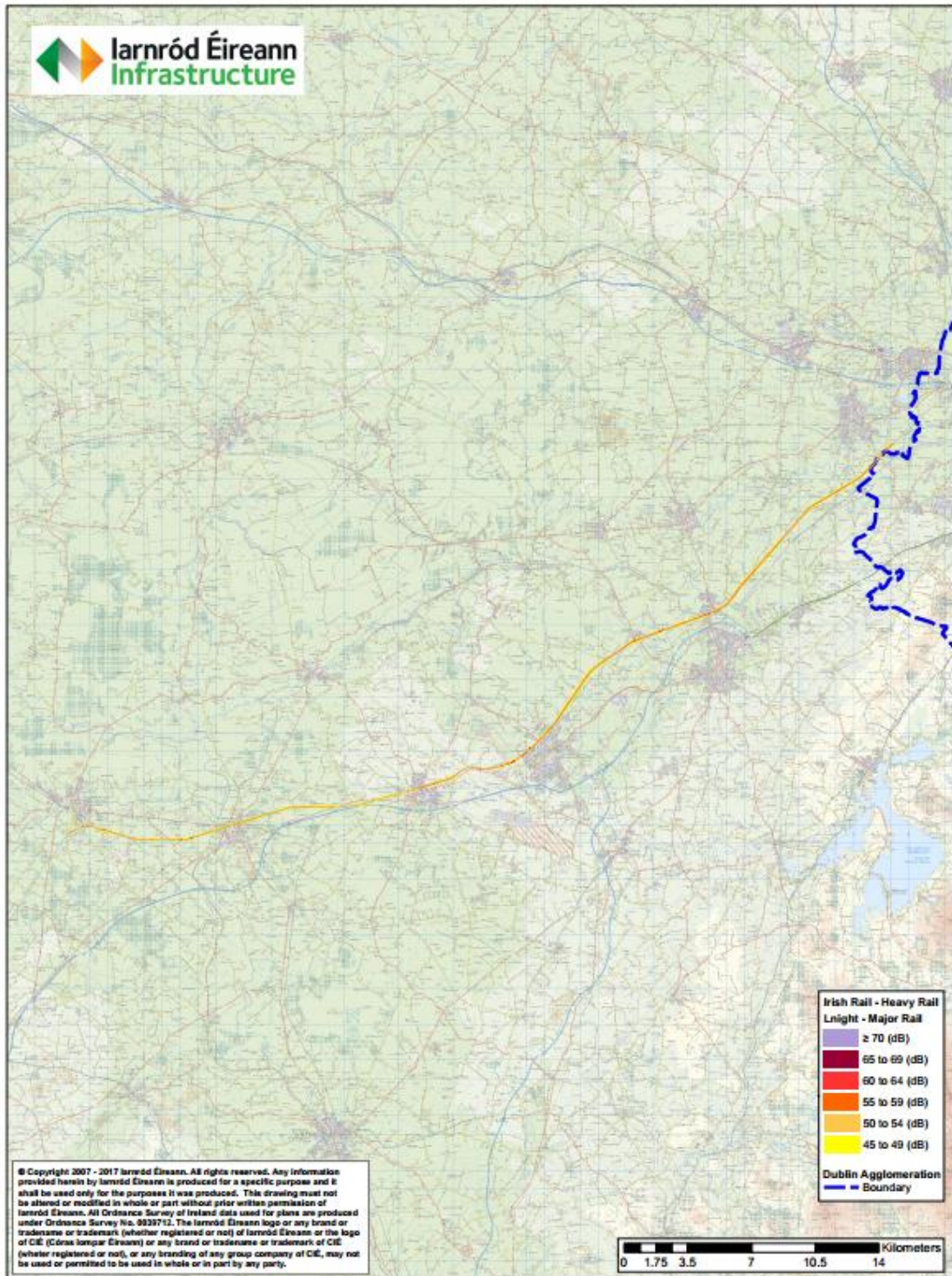
Appendix C: 2017 Strategic Noise Mapping for “Major Roads”





Appendix D: 2017 Strategic Noise Mapping for “Major Railways”

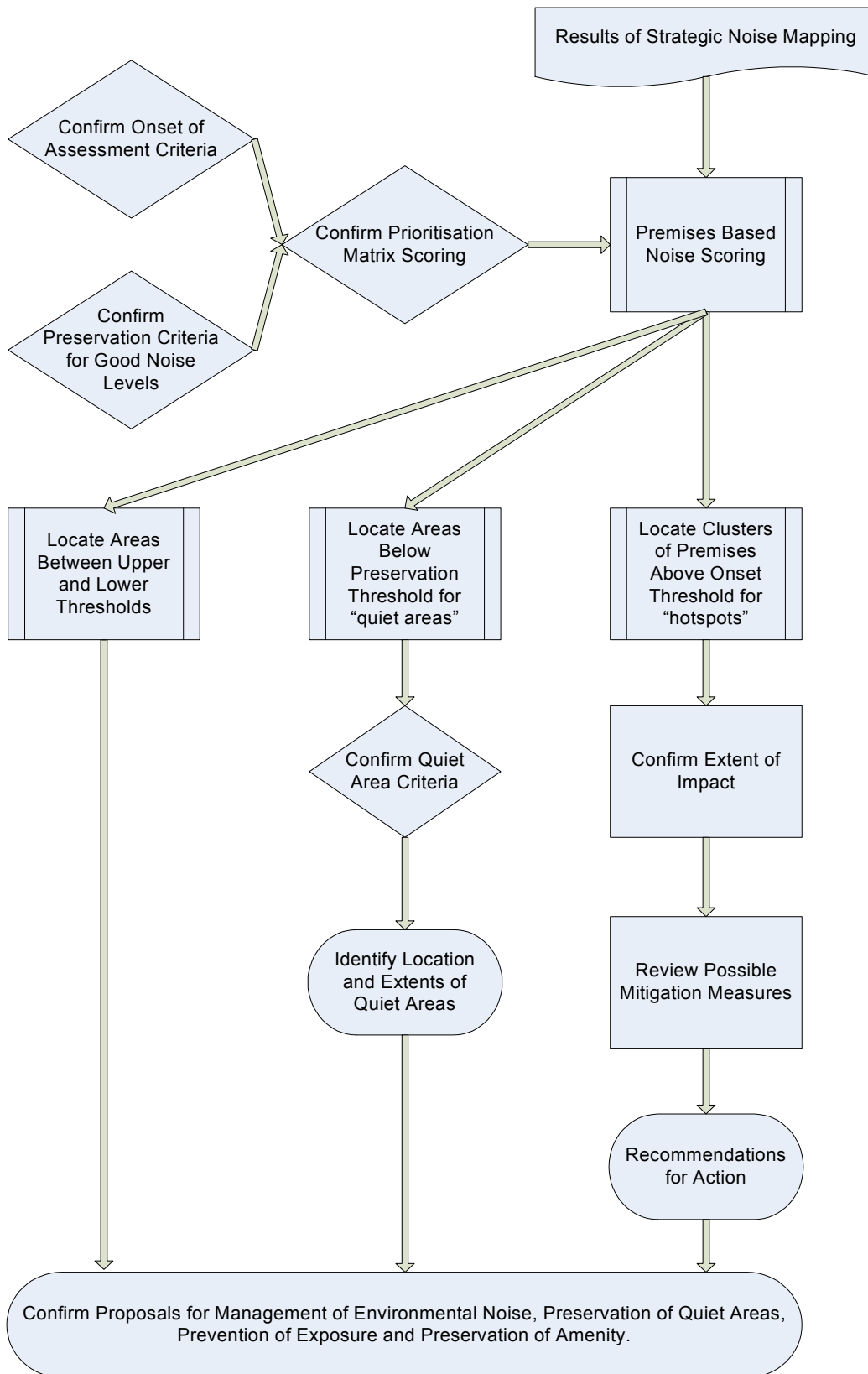




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Lnight is a calculated annualised 8hr average; for the period 23:00 to 07:00. The map above indicates the Lnight decibel (dB) bands reported for Strategic Noise Mapping for base year 2016

Appendix E: Overview / flow diagram of the process for action planning decision making



Appendix F: Priority Decision Support Matrix for identifying Priority Noise Areas and “Quiet Areas in Open Country”

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

Table F1 presents the prioritisation decision support matrix to be used to support the action planning decision making process.

PRIORITY DECISION SUPPORT MATRIX				
Location				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band	50-54	3	4	
(dB(A))	55-59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	
	Road	3	4	
			Total Score	

Table F1: Example decision support matrix

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

An example of the use of the matrix for a residential property exposed to road traffic noise levels of 71 dB L_{den} and 63 dB L_{night} is shown in Table E2.

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Table F2: Example of use of decision support matrix

PRIORITY DECISION SUPPORT MATRIX				
Location: 99 Green Road				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band (dB(A))	50-54	3	4	
	55-59	2	2	
	60-64	1	3	3
	65-69	2	4	
	70-74	3	5	3
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
Type of Location	Noise Sensitive Location	3	3	
	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of Noise Source	Industry	2	3	
	Rail	2	3	
	Road	3	4	7
			Total Score	18

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

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

Appendix G: Consultations with Specified Organisations and Stakeholders

As part of the consultation process, Kildare Local Authorities forwarded a copy of the Draft Noise Action Plan to the following statutory bodies and stakeholder organisations and asked for their comments on the draft plan.

1. Departments

Department of the Housing, Planning and Local Government
Department of Transport, Tourism and Sport
Department of Education and Skills
Environmental Protection Agency

2. Adjacent Action Planning Authorities

Carlow County Council
Laois County Council
Meath County Council
Offaly County Council
South Dublin County Council
Wicklow County Council

3. Regional Authorities

Dublin Regional Authority
Dublin Transportation Authority
Mid-East Regional Authority

4. Non-Governmental Organisations (NGO's and State & Professional Bodies)

Iarnród Éireann
Transport Infrastructure Ireland
Institute of Acoustics
Institute of Public Health
National Roads Design Office – Kildare
Waterways Ireland (Dublin)
An Taisce

There were three submissions received from Specified Organisations and Stakeholders and they were as follows:

1. Submission by Diarmuid Kearney of the Association of Acoustic Consultants of Ireland AACI dated the 1st August 2019.

In this submission a request is made to amend page 47 of the Draft Noise Action Plan pertaining to the referred planning guidance document. It is requested that the draft plan indicates the planning guidance document was collectively developed by the Association of Acoustic Consultants of Ireland (AACI) and ICAN Acoustics Noise And Vibration Consultants.

Assessment: The Noise Action Plan has been accordingly amended indicating that consideration may also be given during the lifetime of the Third Noise Action Plan to the “*Environmental Noise Guidance for Local Authority Planning And Enforcement Departments June 2019*” that was collectively developed by the Association of Acoustic Consultants of Ireland (AACI) and ICAN Acoustics Noise And Vibration Consultants.

2. Submission by Dan McInerney of Carlow County Council dated the 1st August 2019.

This submission indicates that Carlow County Council has reviewed and noted the contents of the plan. It further requests a copy of the plan once it is adopted.

Assessment: A copy of the adopted plan will be sent to Carlow County Council in compliance with the request.

3. Submission by Mr. Stephen Byrne of Transport Infrastructure Ireland TII dated the 26th August 2019.

This submission requests two amendments to the Draft Noise Action Plan which are as follows:

- i. Clarification is made having regard to the noise thresholds of the Noise Action Plan in that TII had no involvement in the setting of noise thresholds in the Draft County Kildare Third Noise Action Plan,
- ii. A request is made to remove Section 2.2.2 from the plan as the Public Transportation Regulation Act 2009 repealed Section 77 of the Roads Act 1993 which the draft plan had reference to.

Assessment: The contents of the submission is noted and the County Kildare Third Noise Action Plan has been amended accordingly.

Appendix H: Consultations with the General Public

The Public Consultation Process was carried out in accordance with the Department of Public Expenditure and Reform "Consultation Principles & Guidance" Document dated November 2016. Kildare County Council advertised in the local press that the Kildare County Council Third Noise Action Plan 2019 -2023 was going to public consultation and invited members of the public to make submissions and observations pertaining to the plan. Copies of the plan were made available in libraries throughout the County, at the Offices of Kildare County Council, Devoy Park, Naas and on the Kildare County Council website. The following are the ten submissions made by / on behalf of members of the public.

1. Submission by Councillor. Vincent P. Martin dated the 18th July 2019.

This submission is in relation to the Elsmore Residential Development on the south ring road in Naas, Co. Kildare. This is a designated "Major Road" in accordance with the Environmental Noise Regulations 2018. The residential development is authorised by the planning permissions register references: 09/500050 and 17/853 and is currently being carried out. The main points of the submission are as follows:

- i. The noise from the ring road is having a detrimental effect on the Elsmore Residential Development,
- ii. Suggestions are made to reducing noise levels including the provision of a low noise road surface, reduction in the width of the ring road and traffic calming measures to reduce speed on the road.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the front facade of the houses facing onto the ring road at a distance of approximately 25 to 30 metres in the Elsmore Development to be within the of 60 – 64 dB (A) L_{den} Noise Contour Band and within the 50 – 54 dB (A) L_{night} Noise Contour Band. These modelled noise levels are below the thresholds of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan.
- ii. In conjunction with the strategic noise maps 2017, a Decision Support Matrix analysis was conducted for the subject site on the ring road. This resulted in a score of '17' indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment. It should be noted that the assessment process used "Residential" to describe the "Type of Location". However, it is further noted the subject site is located near the centre of Naas and is predominantly an urban environment. In assessing the "Type of Location" as being "City Centre" this would result in a score of '14'.

On review of the planning permission register references: 17/853, it appears no consideration was made in the design of the development having regard to noise generated from the ring road. As the residential development is currently being carried out (including further residential duplex development in a similar proximity to the ring road to the south of "The Walk"), consideration may be given by the developer to carry out a remedial acoustic design statement and determine whether noise mitigation measures are required (if any) for the development. It should be further noted such noise mitigation measures (as deemed required by the developer) may require the benefit of planning permission.

- iii. The suggestions for noise reduction measures are noted.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

2. Submission by Deputy. Fiona O'Loughlin TD dated the 1st June 2019.

This submission is in relation to noise from the M7 and M9 Motorways which are designated "Major Roads" and its purported detrimental effect to a property on Green Avenue, Herbertstown, Naas, Co. Kildare.

- i. It is indicated in the submission that the noise barrier is not being extended past Lewinstown at the bridge crossing the M7 Motorway as part of the M7 Naas To Newbridge By-Pass Upgrade Scheme. The submission is on behalf of a constituent and purportedly residents in the area who live north of the bridge and who are of the opinion the noise barrier should have been extended past the bridge,
- ii. Noise from the M9 and M7 Motorways has reached levels of health concern.

Assessment:

- i. Having consideration to Chapter 20 of the M7 Naas to Newbridge By-Pass Upgrade Scheme's Environmental Impact Statement (EIS), it is indicated that a 910m long noise barrier will be erected between Chainage 2770m to Chainage 3680m to the embankment of the bridge crossing over the M7 Motorway at Chainage 3700m along with the incorporation of a low noise road surface. This noise barrier will be erected as a noise mitigation measure for housing directly adjacent to the M7 Motorway. The subject site on Green Avenue is situated 600m from the motorway at approximately Chainage 3500m. There is no barrier proposed to be erected north of the bridge beyond Chainage 3680m. This is because there is no housing directly adjacent to the M7 Motorway Chainage 3700m to Chainage 4700m to use as an example. However,

noise mitigation is being provided in this location of the scheme with the provision of a low noise road surface which would appear to be sufficient having consideration to the two residential properties designated "R16" and "R17" that appear to have been considered noise sensitive locations and were accordingly subject to noise monitoring as part of the EIS. The assessment of the EIS indicates there is no need to extend the noise barrier beyond Chainage 3680m.

- ii. The L_{den} threshold of 70 dB (A) and L_{night} threshold of 57 dB (A) for "Major Roads" of the Noise Action Plan are set in accordance with the Section 3.5.1.5 "Roads" of the EPA "Guidance Note for Noise Action Planning, July 2009" and are those used by other Action Planning Authorities nationwide. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the subject site on Green Avenue is not affected by noise from the M9 Motorway as the mapping indicates the noise contour bands from the M7 Motorway primarily applies to Green Avenue. The strategic noise maps 2017 indicates noise from the M9 Motorway is not dominant in this instance as it is located approximately 2 kms away from the subject site and this section of the motorway is in cut. The strategic noise maps 2017 indicates the subject site on Green Avenue as being situated in the 55 – 59 dB (A) L_{den} Noise Contour Band and below to the 45 – 49 dB (A) L_{night} Noise Contour Band. These modelled noise levels are below the thresholds of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan. A Decision Support Matrix analysis was conducted for the subject site on Green Avenue. This resulted in a score of '21' indicating the subject site is in an area where environmental noise levels are not detrimentally affected by noise from the M7 Motorway.

In accordance with the County Kildare Noise Action Plan, no further action is warranted pertaining to this submission.

3. Submission by Mr. Joe Carroll dated the 26th July 2019.

This submission is in relation to noise from the M7 and M9 Motorways which are designated "Major Roads" and its purported detrimental effect to a property on Green Avenue, Herbertstown, Nass, Co. Kildare. The main points of the submission are as follows:

- i. The removal of trees and hedgerow on third party lands adjacent to the observer's property has worsened the noise levels from the M7 / M9 at the subject property,
- ii. An explanation is requested to "where these so-called acceptable noise levels have come from?",
- iii. A request for action is made having regard to the installation of noise barriers in his area, consideration given to a reduced speed limit on the M7 / M9 and a commitment to properly maintain in the long term these noise barriers and road surface.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates this area of Green Avenue is not affected by noise from the M9 Motorway as the mapping indicates the noise contour bands from the M7 Motorway primarily applies to Green Avenue. The strategic noise maps 2017 indicates noise from the M9 Motorway is not dominant in this instance as it is located approximately 2 kms away from the subject site and this section of the motorway is in cut. The strategic noise maps 2017 indicates the subject site on Green Avenue as being situated in the 55 – 59 dB (A) L_{den} Noise Contour Band and below to the 45 – 49 dB (A) L_{night} Noise Contour Band. These modelled noise levels are below the thresholds of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan.
- ii. On review of historical Google Earth Aerial Photography, the referred to trees and hedgerow were previously located on the opposite side of Green Avenue at the location of the subject site as referred to in the submission. These trees and hedgerow would not have had a significant effect in reducing noise at the subject site on Green Avenue due to:
 1. The approximate distance of 600 metres of the trees and hedgerow from the M7 Motorway,
 2. The narrow hedgerow and tree width of approximately 7 metres,
 3. The location of the vehicular entrance directly opposite the subject site.
- iii. The L_{den} threshold of 70 dB (A) and L_{night} threshold of 57 dB (A) for "Major Roads" of the Noise Action Plan are set in accordance with the Section 3.5.1.5 "Roads" of the EPA "Guidance Note for Noise Action Planning, July 2009" and are those used by other Action Planning Authorities.
- iii. Having regard to the submission's request of a commitment from Kildare County Council to properly maintain in the long term these noise barriers and road surface and for a reduction in speed limits, the Motorway Network is in the charge of Transport Infrastructure Ireland (TII) and is therefore outside the remit of Kildare County Council.
- iv. Having consideration to Chapter 20 of the M7 Naas to Newbridge By-Pass Upgrade Scheme's Environmental Impact Statement (EIS), it is indicated that a 910m long noise barrier will be erected between Chainage 2770m to Chainage 3680m to the embankment of the bridge crossing over the M7 Motorway at Chainage 3700m along with the incorporation of a low noise road surface. This noise barrier will be erected as a noise mitigation measure for housing directly adjacent

to the M7 Motorway. The subject site on Green Avenue is situated 600m from the motorway at approximately Chainage 3500m. There is no barrier proposed to be erected north of the bridge beyond Chainage 3680m. This is because there is no housing directly adjacent to the M7 Motorway from Chainage 3700m to Chainage 4700m to use as an example. However, noise mitigation is being provided in this location of the scheme with the provision of a low noise road surface which would appear to be sufficient having consideration to the two residential properties designated "R16" and "R17" that appear to have been considered noise sensitive locations and were accordingly subject to noise monitoring as part of the EIS. The assessment of the EIS indicates there is no need to extend the noise barrier beyond Chainage 3680m.

- v. A Decision Support Matrix analysis was conducted for the subject site on Green Avenue. On analysis of strategic noise maps 2017, it would appear the subject site is located within the 55 – 59 dB (A) L_{den} Noise Contour Band and below the 45 – 49 L_{night} Noise Contour Band. This resulted in a score of '21' indicating the subject site is in an area where environmental noise levels are not detrimentally affected by noise from the M7 Motorway.

In accordance with the County Kildare Noise Action Plan, no further action is warranted pertaining to this submission.

4. Submission by Mr. Neil Cash, Chairperson of the Walshestown Abbey Resident's Association dated the 26th July 2019.

This submission is in relation to noise from the M7 Motorway affecting the Walshestown Abbey residential development, Athgarvan Road, Newbridge, Co. Kildare. The submission contains the following:

- i. The volume of traffic has increased substantially over the last number of years,
- ii. If planning permission was granted now for the estate, the Planning Authority would insist on appropriate noise reduction measures for the development,
- iii. A request is made for any possible remedial works to reduce noise from the M7 Motorway.

Assessment:

- i. On analysis of strategic noise maps 2017 it would appear to the subject site and the houses located closest to the M7 Motorway are in an area within the L_{den} Noise Contour Bands of 65 – 69 dB (A) and 70 – 74 dB (A) and L_{night} Noise Contour Band of 55 – 59 dB (A).
- ii. A Decision Support Matrix analysis was conducted for the subject site adjacent to the M7 Motorway. This resulted in a score of '17' indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

5. Submission by Ms. Rebecca Healy / Grogan dated the 13th August 2019.

This submission is in relation to the Elsmore Residential Development on the south ring road in Naas, Co. Kildare. This is a designated "Major Road" in accordance with the Environmental Noise Regulations 2018. The residential development is authorised by the planning permissions register references: 09/500050 and 17/853 and is currently being carried out. The main points of the submission are as follows:

- i. It is noted the noise level thresholds of the Noise Action Plan are set at 70 dB (A) L_{den} and 57 dB (A) L_{night} for both "Major Roads" and "Major Railways" and these are arbitrary figures,
- ii. The WHO "Environmental Noise Guidelines for the European Region 2018" indicates anything above 53 decibels (dB) L_{den} and 45 decibels dB (A) L_{night} contributes adversely to human health,
- iii. This road has a 65-69 (dB) L_{den} and 55 - 59 dB (A) L_{night} which are above the WHO Guidelines,
- iv. It is indicated that Ms. Healy / Grogan was not sure whether noise was considered as part of planning having consideration to the 2017 planning permission after the second Kildare Noise Action was published in 2013,
- v. Noise is a continuing nuisance during the day when windows are left open and contributes to sleep disturbance at night,
- vi. Action is requested having consideration of the close proximity of the development to the "Major Road" and the WHO Guidelines 2018 through the resurfacing of the ring road with a low noise road surface and management of the 50km/h speed limit which is rarely adhered to.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the front facade of the houses facing onto the ring road in the Elsmore Development to be within the 60 – 64 dB (A) L_{den} Noise Contour Band and within the 50 – 54 dB (A) L_{night} Noise Contour Band. These modelled noise levels are below the thresholds of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan.
- ii. The Environmental Noise Regulations 2018 does not provide for statutory L_{den} and L_{night} threshold Limits. These thresholds for “Major Roads” are set in accordance with the *Section 3.5.1.5 “Roads”* of the EPA “*Guidance Note For Noise Action Planning, July 2009*” and are those used by other Action Planning Authorities nationwide.
- iii. In conjunction with the strategic noise maps 2017, a Decision Support Matrix analysis was conducted for the subject site on the ring road. This resulted in a score of ‘17’ indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment. It should be noted that the assessment process used “Residential” to describe the “*Type of Location*”. However, it is further noted the site is located near the centre of Naas and is an urban environment. In assessing the “*Type of Location*” as being “*City Centre*” this would result in a score of ‘14’.
- iv. On review of the planning permission register reference: 17/853, it appears no consideration was made in the design of the development having regard to noise generated from the ring road. As the residential development is currently being carried out (including further residential duplex development in a similar proximity to the ring road to the south of “The Walk”), consideration may be given by the developer to carry out a remedial acoustic design statement and determine whether noise mitigation measures are required (if any) for the development. It should be further noted such noise mitigation measures (as deemed required by the developer) may require the benefit of planning permission.
- v. Having regard to the issue of the enforcement of the speed limit on the ring road, this would be a matter for An Garda Síochána.
- vi. The suggestions for noise reduction measures are noted.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

6. Submission by Mr. Joe Carroll dated the 10th August 2019.

This submission is in relation to noise from the M7 and M9 Motorways and the purported detrimental effect to a property on Green Avenue, Herbertstown, Nass, Co. Kildare. The main points of the submission are as follows:

- i. It was indicated to him in a letter from Amy O’Shaughnessy (Senior Regulatory and Administration Executive), (TII) that road traffic noise matters in the M7 area is the direct responsibility of Kildare County Council,
- ii. Contact was made with a Mr. Marco Paviotti who is the EU commissioner, Director General for the Environment who indicated the national competent authorities have two obligations:
 1. *According to Art 8(7), they 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.” (sic).*
 2. *According to Art 9(2), they shall provide “clear, comprehensible and accessible” information on the action plans. (sic).*
- iii. Reference was also made in response from the EU Commissioner to the WHO “*Environmental Noise Guidelines for the European Region 2018*” and the “*European Commission Handbook on the External Costs of Transport Version 2019*”.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the subject site on Green Avenue is not affected by noise from the M9 Motorway as the mapping indicates the noise contour bands from the M7 Motorway primarily applies to Green Avenue. The strategic noise maps 2017 indicates noise from the M9 Motorway is not dominant in this instance as it is located approximately 2 kms away from the subject site and this section of the motorway is in cut. The strategic noise maps 2017 indicates the subject site on Green Avenue as being situated in the 55 – 59 dB (A) L_{den} Noise Contour Band and below to the 45 – 49 dB (A) L_{night} Noise Contour Band. These modelled noise levels are below the threshold of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan.
- ii. A Decision Support Matrix analysis was carried out and this resulted in a score of ‘21’ indicating the subject site is in an area where environmental noise levels are not detrimentally affected by noise from the M7 Motorway.
- iii. The responsibilities of Kildare County Council as an Action Planning Authority are outlined in detail in Section 1.7.2.1 of the Noise Action Plan.

In accordance with the County Kildare Noise Action Plan, no further action is warranted pertaining to this submission.

7. Submission by Ms. Lorraine Scanlon dated the 16th August 2019.

This submission is in relation to noise emanating from the "Major Railway" passing by Rosconnell Avenue, Newbridge, Co. Kildare in which the following was indicated:

- i. The submission was having regard to late night works on the rail tracks being carried out in July 2019,
- ii. Due to these nightworks, it was impossible to leave windows open which resulted in sleepless nights.

Assessment:

- i. On analysis of strategic noise maps 2017 it would appear Rosconnell Avenue is in an area below the 55 – 59 dB (A) L_{den} Noise Contour Band and below the 50 – 54 dB (A) L_{night} Noise Contour Band and is possibly below the 45 dB (A) L_{night} threshold pertaining to noise levels emanating from the nearby "Major Railway".
- ii. In conjunction with the strategic noise maps 2017, a Decision Support Matrix analysis was conducted for Rosconnell Avenue. This resulted in a score of 18. This score is above '17' indicating the subject site appears to be in an area where environmental noise levels would appear to be good.
- iii. The submission regarding to a complaint of noise would appear to be having consideration to short term maintenance works on the "Major Railway" which is a temporary short-term source of noise and is not directly applicable to this Plan.

In accordance with the County Kildare Noise Action Plan, no further action is warranted pertaining to this submission.

8. Submission by Mr. Niall Kerrigan of Petra Property Management as managing agent on behalf of Elsmore OMCLG dated the 26th August 2019.

This submission is in relation to the Elsmore Residential Development on the south ring road in Naas, Co. Kildare. This is a designated "Major Road" in accordance with the Environmental Noise Regulations 2018. The residential development is authorised by the planning permissions register references: 09/500050 and 17/853 and is currently being carried out. The main points of the submission are as follows:

- i. The ring road is a "Major Road" and members at a recent AGM for the Owner's Management Company raised issues of noise emanating from the road,
- ii. Research by property owners has found that noise levels exceed the World Health Organization (WHO) guidelines of 53 decibels (dB) L_{den} and 45 decibels (dB) L_{night} ,
- iii. Noise is having a significant negative impact on the enjoyment and health of the residents of The Walk, Elsmore,
- iv. Due to the houses referred to in the foregoing having been built so close to the "Major Road", the submission requests the ring road be resurfaced with a low noise road surface and for effective speed management be employed on the ring road.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the front facade of the houses facing onto the ring road in the Elsmore Development to be within the 60 – 64 dB (A) L_{den} Noise Contour Band and within the 50 – 54 L_{night} dB (A) Noise Contour Band. These modelled noise levels are below the thresholds of 70 dB (A) L_{den} and 57 dB (A) L_{night} as set out in the County Kildare Noise Action Plan.
- ii. In conjunction with the strategic noise maps 2017, a Decision Support Matrix analysis was conducted for the subject site on the ring road. This resulted in a score of '17' indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment. It should be noted that the assessment process used "Residential" to describe the "Type of Location". However, it is further noted the site is located near the centre of Naas and is an urban environment. In assessing the "Type of Location" as being "City Centre" this would result in a score of '14'.
- iii. On review of the planning permission register reference: 17/853, it appears no consideration was made in the design of the development having regard to noise generated from the ring road. As the residential development is currently being carried out (including further residential duplex development in a similar proximity to the ring road to the south of "The Walk"), consideration may be given by the developer, who is responsible for the design of the residential units, to carry out a remedial acoustic design statement and determine whether noise mitigation measures are required (if any) for the development. It should be further noted such noise mitigation measures (as deemed required by the developer) may require the benefit of planning permission.

- iv. The suggestions for noise reduction measures are noted.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

9. Submission by Ms. Ann Nolan dated the 28th August 2019.

The subject site is located at Walshestown, Newbridge, Co. Kildare north of the underpass of the M7 Motorway on the Athgarvan Road. The main points of the submission are as follows:

- i. The heavy volumes of traffic on the M7 Motorway has been a constant cause of considerable and intrusive noise levels in the use and enjoyment of the property and its gardens,
- ii. A request is made for the erection of noise barriers along the section of motorway on which the subject site fronts onto.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the subject site is located approximately 70m from the edge of the M7 Motorway. The subject site is located within the L_{den} Noise Contour Bands of 65 – 69 dB (A) and 70 – 74 dB (A) and within the L_{night} Noise Contour Bands of 55 – 59 dB (A) and 60 – 64 dB (A).
- ii. In conjunction with the Strategic Noise Mapping 2017, a Decision Support Matrix analysis was conducted for the subject site. This resulted in a score of '18' indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

10. Submission by Ms. Emer Barry dated the 30th August 2019.

This submission is in relation to a residential property at an address at Crinnstown, Maynooth, Co. Kildare situated near the M4 Motorway. The submission is accompanied by a supporting report from Resonate Consultants. The main points of the submission are as follows:

- i. The noise levels from the M4 Motorway are intolerable at present and has raised family health related concerns,
- ii. There is a disparity between the Transport Infrastructure Ireland (TII) Guidelines on the upper limit of noise of 60dB L_{den} and the Kildare Noise Action Plan Limit of 70 dB L_{den} . This vast difference represents a considerable deterioration of both amenity and general wellbeing. It is further indicated that it is essential for the Council to recognise the recommendations of TII and the WHO. This is reference to the World Health Organization "*Environmental Guidelines for the European Region 2018*",
- iii. A request is made for the erection of noise barriers in order to mitigate for the long-term effects of noise from the motorway whether or not it is resurfaced in the future.

Assessment:

- i. The strategic noise maps 2017 as indicated on the Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/> indicates the front facade of the house facing onto the M4 Motorway to be within the 70 – 74 dB (A) L_{den} Noise Contour Band and within the 60 – 64 dB (A) L_{night} Noise Contour Band.
- ii. The referred to "TII Guidelines" is the NRA document "*Guidelines for the Treatment of Noise and vibration in National Road Schemes 2004*". The Guidelines specifies that it is considered appropriate to set the design goal of 60 dB L_{den} (free field residential facade criterion). This criterion applies to new national road schemes. It is therefore acknowledged the 60 dB L_{den} design goal for new road schemes is not applicable to the existing M4 Motorway. Therefore, the 70 dB (A) L_{den} and 57 dB (A) L_{night} thresholds of this Noise Action Plan applies in assessing this submission in accordance with the EPA "*Guidance Note for Noise Action Planning, July 2009*". These threshold values are also used by other Action Planning Authorities nationwide.
- iii. A Decision Support Matrix analysis was conducted by using the Strategic Noise Maps 2017 for the subject site adjacent to the M4 Motorway. This resulted in a score of '18' indicating noise thresholds of the plan may have been exceeded and the location should be included in the shortlist for further assessment.

This submission will be further assessed in accordance with the procedures set out in Appendix E of the County Kildare Third Noise Action Plan 2019 – 2023. This will be wholly dependent on the availability of technical resources and appropriate funding.

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

Table F1 presents the prioritisation decision support matrix to be used to support the action planning decision making process.

PRIORITY DECISION SUPPORT MATRIX					
Location					
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal	
	<45	5	6		
	45-49	4	5		
Noise Band	50-54	3	4		
(dB(A))	55-59	2	2		
	60-64	1	3		
	65-69	2	4		
	70-74	3	5		
	75-79	4	6		
	>=80	5	7		
	City Centre	1	1		
	Commercial	1	2		
	Residential	2	3		
Type of	Noise Sensitive Location	3	3		
Location	School	3	1		
	Quiet Area	3	3		
	Recreational Open Space	2	2		
	Air	3	4		
Type of	Industry	2	3		
Noise Source	Rail	2	3		
	Road	3	4		
			Total Score		

Table F1: Example decision support matrix

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

An example of the use of the matrix for a residential property exposed to road traffic noise levels of 71 dB L_{den} and 63 dB L_{night} is shown in Table E2.

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PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSIONS NUMBERED 1, 5 AND 8.				
ELSMORE RESIDENTIAL DEVELOPMENT, NAAS, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band (dB(A))	50-54	3	4	4 4
	55-59	2	2	
	60-64	1	3	1 1
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	2
	Commercial	1	2	
	Residential	2	3	5
Type of Location	Noise Sensitive Location	3	3	
	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of Noise Source	Industry	2	3	
	Rail	2	3	
	Road	3	4	7 7
			Total Score	17 14

Text in red assesses the subject site as being “Residential” and text in blue assesses the subject site as being “City Centre”.

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

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

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PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSIONS NUMBERED 2, 3 AND 6.				
GREEN AVENUE, HERBERTSTOWN, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	6
	45-49	4	5	
Noise Band	50-54	3	4	
(dB(A))	55-59	2	2	2
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	6
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	
	Road	3	4	7
			Total Score	21

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

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

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PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSION NUMBERED 4.				
WALSHESTOWN ABBEY, ATHGARVAN ROAD, NEWBRIDGE, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band	50-54	3	4	
(dB(A))	55-59	2	2	2
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	3
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	
	Road	3	4	7
			Total Score	17

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

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

County Kildare Third Noise Action Plan 2019 - 2023

PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSION NUMBERED 7.				
ROSCONNELL AVENUE, NEWBRIDGE, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	5
Noise Band	50-54	3	4	3
(dB(A))	55-59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	5
	Road	3	4	
			Total Score	18

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

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

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PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSION NUMBERED 9.				
WALSHESTOWN, NEWBRIDGE, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band	50-54	3	4	
(dB(A))	55-59	2	2	
	60-64	1	3	3
	65-69	2	4	
	70-74	3	5	3
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	
	Road	3	4	7
			Total Score	18

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

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

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PRIORITY DECISION SUPPORT MATRIX FOR THE SUBMISSION NUMBERED 10.				
CRINNSTOWN, MAYNOOTH, CO. KILDARE.				
Decision Selection Criteria		Score Range Lden	Score Range Lnight	Subtotal
	<45	5	6	
	45-49	4	5	
Noise Band	50-54	3	4	
(dB(A))	55-59	2	2	
	60-64	1	3	3
	65-69	2	4	
	70-74	3	5	3
	75-79	4	6	
	>=80	5	7	
	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	5
Type of	Noise Sensitive Location	3	3	
Location	School	3	1	
	Quiet Area	3	3	
	Recreational Open Space	2	2	
	Air	3	4	
Type of	Industry	2	3	
Noise Source	Rail	2	3	
	Road	3	4	7
			Total Score	18

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

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