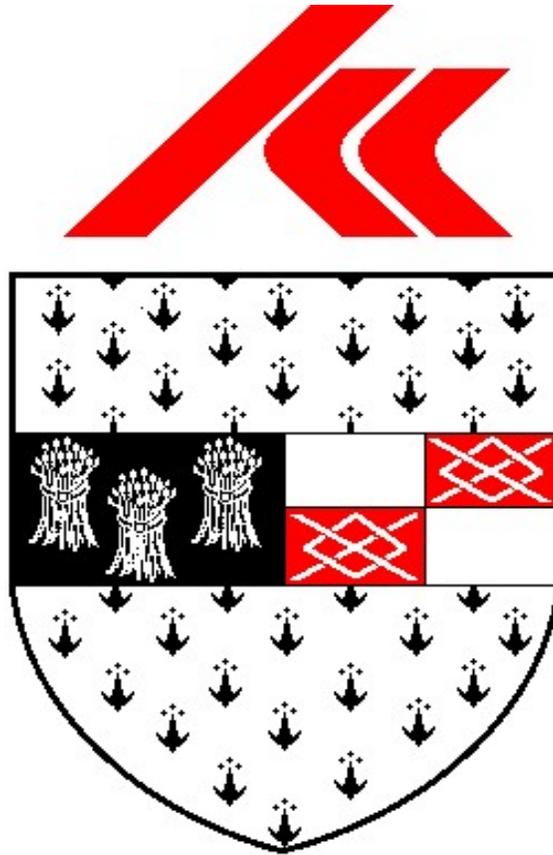


# KILKENNY COUNTY COUNCIL



## Noise Action Plan

**2019-2023**

Issue: January 2019

KILKENNY COUNTY COUNCIL,  
COUNTY HALL,  
JOHN STREET,  
KILKENNY.

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# 1 BACKGROUND

The Environmental Noise Directive (END), issued by the European Community relates to the assessment and management of environmental noise and was adopted in 2004. Statutory Instrument No. 140 of 2006, also known as the Environmental Noise Regulations 2006, was brought into effect by the Minister for the Environment, Heritage and Local Government and gives effect to European Council Directive 2002/49/EC.

The aims and objectives of the Directive state that the adoption of action plans should be concerned with:

“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” (END Article 1)

The Regulations set out to:

“Provide an implementation in Ireland of a common approach within the European Community intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.” - Article 4(1)

This document has been prepared in accordance with the requirements of SI 140 of 2006 and sets out the Noise Action Plan for County Kilkenny.

## 1.1 Noise & Health

The World Health Organisation stated in 2011 that ‘Environmental noise leads to disease burden that is second in magnitude only to that from air pollution, among environmental factors in Europe’. A 2014 study for DG Environment on the Health implication of road, railway and aircraft noise in the European Union (EU) found that exposure to noise in Europe contributes to:

about 910,000 additional prevalent cases of hypertension,

43,000 hospital admissions per year, and

At least 10,000 premature deaths per year related to heart disease & stroke

Since this study was based on partial data on noise exposure, the overall health effects in the entire EU are likely to be even higher than currently estimated.

WHO-Europe is currently in the process of finalising the WHO Environmental Noise Guidelines which will include a review of evidence on the health effects of environmental noise such as: sleep disturbance, annoyance, cognitive impairment, mental health and wellbeing, cardiovascular diseases, etc. The guidelines will assess several environmental noise sources such as aircraft, rail, road and wind turbines, and will review the evidence on health benefits from noise mitigation and interventions to decrease noise levels.

The EPA are currently carrying out a research project which will provide a state of knowledge review of the relationship between environmental noise and health/wellbeing, and provide a national estimate of

the burden of disease from environmental noise in disability-adjusted-life-years (DALYs). The plan is to combine noise modelling and health microdata to examine causal relationships between noise exposure and health and wellbeing outcomes at the city-wide scale for Dublin and Cork, and to develop recommendations and guidelines for the integration of noise considerations into relevant policy streams.

Kilkenny County Council proposes to carry out a noise and health impact assessment, subject to funding being made available, once the WHO & EPA guidance documents are published.

## **2 Introduction**

### **2.1 Purpose and Scope of the Environmental Noise Directive (END)**

The Environmental Noise Directive (END) was issued by the European Community and relates to the assessment and management of environmental noise. This Directive (2002/49/EC) was subsequently adopted in 2004.

#### **2.1.1 The Aim of the Directive is:**

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

The objective of the Directive is to establish an EU wide approach to avoid, prevent or reduce environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health, and to preserve existing good quality environmental noise levels.

The Directive requires that Member States develop strategic noise maps identifying the environmental noise distribution for that State arising from the primary sources of noise such as major roads, railways airports, major industrial sites and all sources within population agglomerations in excess of 250,000 persons in 2007, and those with a population in excess of 100,000 in 2012 and subsequent rounds. Exclusions to types of noise referred to in the directive include noise caused by the exposed person, noise from domestic activities, noise generated by neighbours, noise at workplaces or noise inside a means of transport or due to military activities.

The primary requirements of the Directive are as follows:

Undertake strategic noise mapping to determine exposure to environmental noise.

Ensure information on environmental noise and its effects are made available to the public.

Adopt action plans, based upon the noise-mapping results, with the objective of reducing, preventing and reducing environmental noise where necessary and preserving environmental noise quality where it is good.

### **2.2 Purpose and Scope of the Regulations**

Statutory Instrument No. 140 of 2006, also known as the Environmental Noise Regulations 2006, was brought into effect by the Minister for the Environment, Heritage and Local Government and gives effect to European Council Directive 2002/49/EC.

The Regulations set out to:

“Provide an implementation in Ireland of a common approach within the European Community intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise.” - Article 4(1)

The Regulations are to apply to environmental noise to which people are exposed, in particular in built up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, near hospitals, and near other noise sensitive buildings and areas. – Article 4(2)

In the context of the Regulations, environmental noise is defined as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity. – Article 3(1)

The Regulations shall not apply to noise caused by an exposed person, noise from domestic activities, noise created by neighbours, noise at work places, noise inside means of transport, or noise due to military activities in military areas. – Article 4(3)

## **2.3 Roles and Responsibilities of Designated Bodies**

The Regulations identify and assign responsibilities to the particular organisations required to produce strategic noise mapping, and to those organisations responsible for the development of action plans. The Environmental Protection Agency has been designated under the Regulations as the National Authority responsible for the overseeing and implementation of the Regulations. The EPA is required to submit summary Noise action Plans every 5 years to the EC, or as the need arises following a major development impacting on the existing environmental noise conditions. The EPA is also required to provide advice and guidance to the relevant Noise Mapping Bodies and Action Planning Authorities.

The following outlines the Timetable for the preparation and completion of this the 3<sup>rd</sup> round of Noise Action Plans:

End December 2017. Noise Mapping Bodies to Complete Noise Maps

March 2018: Draft Noise Action Plans to be submitted to the EPA for review;

April to June 2018: Public consultation

(6 – 8 weeks) on Draft Noise Action Plan;

18 July 2018: Draft Action Plans (including comments) are to be "drawn up" prior to this date;

September 2018: Action Plans to be submitted to the EPA for final review;

18 January 2019: Details of noise control programs and measures to be reported to the EC by the EPA for 3<sup>rd</sup> round – ENDRM DF9; and

18 January 2019: Summary Noise Action Plans to be reported to the EC by the EPA for 3<sup>rd</sup> round – ENDRM DF10.

### **2.3.1 Noise Mapping Bodies**

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

For major national roads, Transport Infrastructure Ireland, TII (formerly NRA) is the noise mapping authority on behalf of the action planning authority;

For major non-national roads, the relevant local authority is the noise mapping authority concerned;

For major railways, Iarnród Éireann or Transport Infrastructure Ireland (TII), as appropriate is the noise mapping authority on behalf of the action planning authority; (Note: The former Railway Procurement Agency merged with the National Roads Authority (NRA) in 2015 to form Transport Infrastructure Ireland. (TII)

For major airports, the relevant airport authority is the noise mapping authority on behalf of the action planning authority;

For the agglomeration of Dublin, the four Dublin local authorities are the noise mapping authorities;

For the agglomeration of Cork, Cork City and Cork County Councils are the noise mapping authorities.

Initially during round one, the relevant noise mapping bodies were required to produce strategic noise maps for the main sources of environmental noise by June 2007, in respect of the calendar year 2006, for:

Any agglomeration with a population greater than 250,000

Any major road with more than 6 million vehicle passages per year

Any major railway with more than 60,000 train passages per year

Any major airport

In respect of the second round and this the 3<sup>rd</sup> round (2018) of action plans the Regulations state that the designated noise mapping bodies are required to make strategic noise maps or revised maps, as appropriate, for:

Any agglomeration with a population greater than 100,000

Any major road with more than 3 million vehicle passages per year

Any major railway with more than 30,000 train passages per year

Any major airport with 50,000 or more movements per year

### **2.3.2 Action Planning Authorities**

Action Planning Authorities are responsible for making Action Plans following consultation with the EPA and the relevant noise mapping bodies. Action Plans must satisfy the minimum requirements as set out in the Fourth Schedule of the Regulations.

The Action Planning Authorities are the Local Authorities within whose functional area the major population agglomerations and major road, rail and airport networks are located, and under the Regulations are designated as follows:

For major roads, the local authority or local authorities within whose functional area or areas the road is located.

For major railways, the local authority or local authorities within whose functional area or areas the railway is located.

For major airports, the local authority or local authorities within whose functional area or areas the airport is located.

For the agglomeration of Cork, Cork City and Cork County Councils.

For the agglomeration of Dublin, the four Dublin Local Authorities.

Action Planning Authorities were required to produce Action Plans for the first round during 2008, the second round in 2013, this the third round in 2018 and every five years thereafter. Action Plans must be produced based on the results of the noise mapping. It is also required to review and revise the noise maps if necessary from time to time and whenever a major development occurs affecting the existing noise situation.

The Regulations require the Action Planning Authorities to consult the public when drawing up and revising Action Plans. – Article 11(6)

## **2.4 Key Phases**

The Directive and Regulations set out the requirements for the management of environmental noise, comprising the identification of Areas required to be noise mapped, the preparation of Strategic Noise Maps, and the development and subsequent implementation of Noise Action Plans.

### **2.4.1 Identification of Areas required to be mapped**

The Action Plan must refer to places near the major roads, major railways and major airports, and within any relevant agglomeration, – Article 11(1) (a) to (d), which means those places affected by noise from the major sources, as shown by the results of the noise mapping, and all locations within any relevant agglomeration. The EPA Guidance Note states that noise from major sources is regarded as affecting an area if it causes either an  $L_{den}$  value of 55dB or greater or an  $L_{night}$  of 50dB or greater anywhere within an area. These are the reporting threshold values for the assessment of noise level preservation and which reflect an annual average 24 hour period. (Ref. Environmental Protection Agency: Guidance Note for Noise Action Planning, July 2009 – Apr. 2018)

In the case of Kilkenny County Council the following areas are within the subject criteria of the Regulations:

The M8 and M9 Motorways within County Kilkenny.

The N10, N24 and N25 National Primary Routes within County Kilkenny.

The Section of the N76 National Secondary Route from the Waterford Road Roundabout on the Kilkenny Ring Road to its junction with the R692 Kilbride Junction south of Callan.

The Section of the N77 National Secondary Route from its junction with the N78 at Hennebry's Cross to the Hebron Road Roundabout on the N77 Kilkenny Ring Road.

The following Sections of Regional Roads located within and in the vicinity of Kilkenny City:

The R693 Regional Route (Freshford Road to Vicar St to Parliament St) from its junction with the L6600 local road at Thornback to its junction with St. Kieran's Street;

The R695 Regional Route (Dean St to Kennyswell Road) from its junction with the R693 at Irishtown to its junction with the Kennyswell Road;

The R712 Regional Route (Castlecomer Road to Old Dublin (Carlow) Road) from its junction with the N77 Castlecomer Road Roundabout on the N77 Kilkenny Ring Road to its junction with the R702 Regional Road (Gowran);

The R886 Regional Route from its junction with the R693 at Green Street to its junction with the R712 Castlecomer Road (Green Street and New Road);

The R887 Regional Route (John St and Rose Inn Street) from its junction with the R712 at the old Dublin Road to its junction with the R693 at The Parade;

The R909 Regional Route from its junction with the N76 Callan Road Roundabout on the N76 Kilkenny Ring Road to its junction with the R950 at the Old Callan Road (Callan Road);

The R910 Regional Route (Patrick Street to Waterford Road) from its junction with the R693 at The Parade to its junction with the Bohernatounish Road (L2610);

The R950 Regional Route (Old Callan Road) from its junction with the R909 at College Road to its junction with Walkin Street

The following Sections of Regional Roads located within County Kilkenny in the environs of Waterford City:

The R448 Regional Route from the County Boundary near Newrath to its junction with the R861 at the Newrath Roundabout;

The R711 Regional Route from the County Boundary at Ferrybank to its roundabout junction with the N29 National Route;

The R861 Regional Route from the N25 Grannagh Junction Roundabout to its junction with the R448 at the Newrath Roundabout.

For the third round of strategic noise mapping, which was scheduled for completion by the end of December 2017, a "major road" is defined as a road with an annual total bi-directional flow during 2016 above 3,000,000 vehicle passages per year, approximately 8,220 vehicle passages per average 24 hours. The definition of "major roads" has been further clarified to include those roads classified as "National" roads or "Regional" roads with a total flow above 3,000,000 vehicle passages per year. The 2016 assessment period is deemed to be typical of normal traffic activity in that there was no unusual events held during the year. In light of this the noise mapping results can be considered to be typical of normal traffic operations.

The major noise source meeting the criteria set out in the Regulations for the 2019 -2023 third round are those associated with roads with more than 3 million vehicle passages per year on major roads. Areas which were required to be mapped are in the vicinity of these roads.

#### **2.4.2 Preparation of Strategic Noise Maps**

Article 6 of Statutory Instrument No. 140 of 2006 outlines the relevant noise mapping bodies and for major roads these are:-

Where such roads are classified as national roads in accordance with Section 10 of the Roads Act 1993 (No. 14 of 1993), the TII, on behalf of the action planning authority or authorities concerned, and

Other than those provided for in sub-paragraph (i), the relevant road authority or authorities, as appropriate.

Strategic noise mapping was undertaken during 2017 by TII in respect of all designated roads in County Kilkenny. Data from the latest TII traffic counting system and traffic count information on non National major routes (Regional roads) provided by Kilkenny County Council was used to identify those roads which met the 3 million vehicle passages per year criterion. The mapping was procured through a centralised contract co-ordinated by Kildare County Council.

Noise mapping uses software that estimates the noise level in an area from a particular noise source. The objective is to identify locations where action may be needed to reduce high noise levels and to protect areas where the noise levels are low.

The strategic noise maps generated by TII give predictions for two noise indicators,  $L_{den}$  and  $L_{night}$ . The  $L_{den}$  maps are presented in 5dB contour bands beginning at 55dB  $L_{den}$  and ranging up to 75dB  $L_{den}$ . These maps also give an indication of noise levels that are predicted greater than 75dB  $L_{den}$ .  $L_{night}$  maps range from 50dB to 70dB  $L_{night}$ . The noise levels indicated are attributed only to the specific source of noise being considered, namely the traffic on the roadway and therefore do not consider any other noise source.

#### **2.4.3 Development of the Noise Action Plans**

Within the framework of the END and the context of sustainable development, the overall aim of managing environmental noise is to avoid, prevent and reduce the harmful effects due to long term exposure to environmental noise, which would in turn promote good health and a good quality of life.

The emphasis of the END and the Regulations is on “important” areas as established by the strategic maps. The Action Plan is therefore designed with the twin aims of;

Avoiding significant adverse health impacts from noise, and

Preserving environmental noise quality where it is good.

Within Kilkenny County Council the Environment Section took overall responsibility to develop the noise action plans in consultation and regular dialogue with both the Planning and Roads Sections. This to reflect the collaborative process necessary if the noise action plans are to prove most effective.

The Regulations require the Action Planning Authority to consult the public when drawing up and revising Action Plans – Article 11(6). To comply with this requirement a formal public consultation exercise on the Draft Action Plan will be undertaken. The public consultation process will have regard to the Department of Public Expenditure and Reform’s publication *Consultation Principles & Guidance, 2016*.

Relevant bodies will also be proactively consulted in parallel to the wider public consultation.

The methodology for the public participation will ensure that the public is consulted about proposals and is given early and effective opportunities to participate in the preparation of the Action Plans. The results of the public participation will be taken into account and the public informed of the decisions taken. Sufficient time will be allowed for each stage of public participation process.

#### **2.4.4 Implementation of the Plans**

Plans are to be implemented within a five year time scale. The Regulations require planning authorities to review (and revise, if necessary) the Noise Action Plan every five years, or sooner where a material change in environmental noise in the area occurs. (Article 11 (7))

## 3 Existing Noise Management Legislation and Guidance

### 3.1 National Legislation or Guidance

Project Ireland 2040 - National Planning Framework

The National Planning Framework sets out the following in relation to noise:

Noise is unwanted sound but is an inevitable consequence of everyday life, stemming from environmental noise (created by human activity outdoors such as transport, construction and industry), with different tolerance levels varying from person to person. It becomes a problem when it occurs in the incorrect place or at the incorrect time or on a frequent or recurring basis. As we seek to promote more compact and efficient approaches to development within our settlements, as outlined in earlier chapters 2 and 3, it is important that we are proactive in managing noise. In addressing these issues Project Ireland 2040 will support:

**Noise Management and Action Planning:** Measures to avoid, mitigate and minimise or promote the pro-active management of noise are relevant where it would have significant adverse impacts on health and quality of life through strategic noise mapping, Noise Action Plans and suitable planning conditions.

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

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

National Noise is also recognised as affecting health and wellbeing. Exposure to noise is recognised as being both an environmental pressure to wildlife as well as human beings, and can affect human health and general well-being by causing stress, anxiety and disruption of activities such as sleep. The degree to which noise exposure impacts disease incidence is less well understood compared to air pollutant exposure. Exposure to excessive noise has also been linked to an increased risk of heart attack, stroke and premature death.<sup>27</sup> People are generally exposed to the most noise from transport-related sources, particularly road traffic. Railways, airports and industrial activities are also sources of noise. Urban areas can exacerbate the impacts of noise to human health, in particular because air pollution levels are often higher, creating in-combination effects. Regulation of noise comes under the remit of the Environmental Noise Directive (2002/49/EC), with the requirement for Member States to produce noise maps and noise action plans based on those maps; each local authority in Ireland is required to produce a Noise Action Plan for their administrative area. (<sup>27</sup> EEA (2015) The European Environment State and Outlook Synthesis Report.)

National Policy Objective NP065 of the Environmental Report is to promote the pro-active management of noise where it would 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.

NPO65 will have a positive direct contribution to PHH, BFF and MA. Unwanted noise has the potential to have harmful effects on humans and species and as such needs to be monitored and planning needs to recognise such sources when developing plans. Directive 2002/49/EC on the assessment and management of environmental noise outlines its aim “to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise”. As part of the directive there is a requirement for noise action plans and agglomerations and counties within Ireland have engaged in the preparation of such plans but continual forward planning in relation to noise is required to ensure that citizens and species are not affected. (PHH – Population and Human Health; BFF – Biodiversity, Flora and Fauna; S – Soils; W – Water; AQ – Air Quality; CF – Climatic Factors; MA – Material Assets; CH – Cultural Heritage; L – Landscape.

The EPA view is there is a need for planning guidance which could outline some of the main noise elements that would need to be considered by planners such as:

- demonstrating a good acoustic design process;
- observing internal noise level guidelines;
- undertaking an external amenity area noise assessment.

A UK practical ProPG planning and noise guidance note was developed in 2017 by the UK Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). The guidance was produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England. It provides opportunities to incorporate effective design interventions for noise that will enable residential development to proceed in areas that might otherwise have been considered unsuitable. For those situations where it is not appropriate to build new dwellings, the guidance will assist as it encourages early identification of the risk of refusal and supports early decision making – thereby avoiding unnecessary development and design costs.

The various ProPG documents represent a very good source of guidance and a best practice approach to the assessment and management of noise in a planning context. The ProPG documents could offer some degree of standardisation if was to be considered by Irish planners and developers. (See Appendix G)

### **3.1.1 Environmental Protection Agency Act 1992**

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

Section 106 gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property.

Section 107 gives powers to local authorities and the EPA to serve notice to take steps to control noise.

Section 108 sets out a process whereby noise issues may be taken to the District Court, which may make an order requiring that the person or body responsible for the noise takes steps to eliminate or ameliorate the noise in question.

Kilkenny County Council Enforcement Policy on breaches of Environmental Law sets out the Council's policy in relation to enforcement of noise issues and use of the EPA Act.

### **3.1.2 Building Regulations**

The current Irish Building Regulations call for certain constructions to offer "reasonable resistance" to both airborne and impact sound. Guidance values are put forward in the "Similar Construction" method described in Technical Guidance Document E of the Building Regulations 1997 to 2014.

The main requirements are set out in S.I. No.497 of 1997. There were amendments to the regulations in 2014, SI 606 of 2014. The amendments in 2014 to Part E of the Building Regulations and the associated technical guidance were included to ensure that separating constructions between dwellings offer reasonable resistance to sound.

### **3.1.3 Department of Housing, Planning and Local Government**

The DHPLG has published the following documents relating to sustainable development in the urban environment:

Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), September 2015.

Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities, 2009.

Best Practice Urban Design Manual: Part1 & Part 2, 2009

The document dealing with Design Standards for New Apartments calls for compliance with the requirements of the Building Regulations and 'particular attention must be paid to meeting requirements in relation to Sound Insulation (Part E)

The Guidelines for Sustainable Residential Development highlight the need to " Deliver a quality of life which residents and visitors are entitled to expect, in terms of amenity, safety and convenience" and states that "Privacy is an important element of residential amenity".

The Best Practice Urban Design Manual lists Privacy and Amenity as one of twelve key criteria, with specific reference to the need to prevent sound transmission in homes by way of appropriate acoustic insulation or layout.

### **3.1.4 Transport Infrastructure Ireland.**

TII has published the documents "Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004 & Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, 2014", which sets out the procedure to be followed in respect of the planning and design of national road schemes. These guidelines set out limits for noise related to both the construction and traffic flow on new road schemes.

The Guidelines set out a “design goal” for noise to ensure that the current roads programme proceeds on a path of sustainable development. The current design goal is that all national road schemes should be designed, where feasible, to meet a day-evening-night sound level of 60dB Lden (free-field residential façade criterion), to be met both in the year of opening and in the design year. The Authority accepts that it may not always be sustainable to provide adequate mitigation in order to achieve the design goal. Therefore, a structured approach should be taken in order to ameliorate, as far as is practicable within the particular circumstances of a given scheme, road traffic noise through the consideration of measures such as horizontal and vertical alignment, barriers, low noise road surfaces, etc.

### **3.1.5 The Roads Act 1993**

Under Section 77 of the Roads Act 1993, the Minister is empowered to make regulations requiring road authorities to take measures to mitigate the effects of road traffic noise. The Minister may also specify limits for road traffic noise which, if exceeded, would require mitigating action from the road authorities. To date, no such regulations have been enacted.

### **3.1.6 IPPC Licensing**

Certain activities that are required to be licensed may be subject to noise conditions. The relevant guidance is set out in the EPA publication "Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)". This document contains suggested noise limits of 55dB(A)  $L_{\text{eq}}$  for daytime and 45dB(A)  $L_{\text{eq}}$  for night time, with said limits to be applied to sensitive locations and recommends a ‘Best Available Technique’ (BAT) approach to the assessment and mitigation of noise pollution.

### **3.1.7 Wind Energy Planning Guidelines**

This is a DEHLG document dealing specifically with wind energy developments. Noise levels from wind farms are generally expressed in terms of the  $L_{90}$  indicator. The document suggests a *“lower fixed limit of 45dB(A) or a maximum increase of 5dB(A) above background noise at nearby noise sensitive locations”*.

The latter requirement may be relaxed in areas with low background levels. A fixed limit of 43dB(A) at night time is deemed appropriate as there is no requirement to protect external amenity. (DEHLG Wind Energy Guidelines 2006). To note these guidelines are under review at present.

### **3.1.8 Quarry and Ancillary Activities**

This publication contains a discussion of the primary sources of noise associated with quarrying and offers guidance in relation to the correct approach to be followed in respect of assessment and mitigation.

Suggested noise limit values are 55dB  $L_{\text{Aeq},1\text{hr}}$  and 45dB  $L_{\text{Aeq},15\text{min}}$  for daytime and night time respectively, although more onerous values may be appropriate in areas with low levels of pre-existing background noise. In respect of blasting, reference is made to EPA guidance to the effect that *“blasting should not give rise to air overpressure values at the nearest occupied*

*dwelling in excess of 125dB (L<sub>in</sub>) max. peak with a 95% confidence limit".(Ref EPA Environmental Management in Extractive Industry 2006)*

The guidance or limits which do exist only cover a restricted number of the possible situations where community or environmental noise is an issue to be addressed. Consequently there are many situations for which there are currently no direct guidelines or legislation. This can lead to inconsistencies in carrying out noise assessments and to existing measures being quoted out of context.

### **3.2 Regional or Local Legislation or Guidance**

There is currently no local guidance on noise; local guidance will be considered when national guidance becomes available.

#### **3.2.1 Kilkenny County Development Plan 2014 – 2020 & Kilkenny City & Environs Development Plan 2014 - 2020**

National planning policy sets out to promote sustainable development through the integration of transportation and land use policies in order to reduce the need to travel and to promote modal shift away from the private car. Kilkenny's Development Plans emphasise the need for sustainable transport.

Specifically on noise and dust both Plans have a policy to minimise noise by ensuring that the design of future developments incorporate measures to prevent or mitigate the transmission of dust, noise and vibration, where appropriate. In the Kilkenny County Development Plan (KCDP) refer to Section 9.2.5, and in the Kilkenny City & Environs Development Plan (KCEDP) refer to Section 8.2.1.2.

The Development Plans takes cognisance of the Regulations and the provisions of Noise Action Plans.

To date, Kilkenny County Council has not established overall local specific limit values for environmental noise generated in the context of the Directive. The Local Authority continues to take into consideration the existing guidance outlined above and may set noise limits as appropriate on a case by case basis in the assessment of developments for the establishment of planning conditions or other agreements that set a constraint that could affect the level of noise for any particular development. The Council will require (where necessary) that planning applications for future developments within the zone of influence of existing national roads include noise mitigation measures and/or a sound impact assessment to guard against an unacceptable increase in noise levels affecting noise sensitive properties. The Council will ensure, where appropriate, traffic noise levels are considered as part of all new developments along the N77 and N10, or other roads as identified in the Noise Action Plan.

The following sections of the Development Plans 2014-2020 make specific reference to Noise.

Section 7.7.2 KCDP & Section 6.5.2 KCEDP - Noise Generating Sports The impact of noise is an important issue in assessing proposals for activities such as motorsports. Appropriate sites for the regular use of these sports are not easy to identify and will depend on the type of activity, the tone, level and duration of any noise generated, local topography and the amount of existing and proposed screening. Proposals for noisy sports will only be acceptable where the

likely impact can be contained and minimised by landform or woodland. Other suitable sites may include degraded land, former mineral workings or land adjacent to an existing source of noise. In certain cases it may be considered appropriate to only grant a temporary permission to allow the impact of noise levels and any potential disturbance or nuisance to be more fully assessed.

The Council will not normally permit development proposals for sport or recreational uses generating high levels of noise unless the following criteria are met.

There will be no unacceptable disturbance to local residents.

There will be no unacceptable disturbance to farm livestock and wildlife.

There will be no conflict with the enjoyment of areas used for informal recreation.

The ambient noise level in the area is already high and the noise likely to be produced by the new activity will not be dominant.

#### Section 9.2.2 KCDP & Section 8.2.1.2 KCEDP - Noise Mapping

#### Section 9.2.2.1 KCDP & Section 8.2.1.3 KCEDP - Noise Control

Excessive noise and dust levels can have an adverse impact on the county's environment. The Council will seek to minimise noise through the planning process by ensuring that the design of future developments incorporate measures to prevent or mitigate the transmission of noise and vibration, where appropriate.

#### Section 12.4.6 KCDP & Section 11.4.6 KCEDP - Housing Developments and Noise

In 2006, the Government made regulations relating to Environmental noise (S.I. 140 of 2006). Environmental noise is defined in the Regulations as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity.

The Council will require (where necessary) that planning applications for future developments within the zone of influence of existing national roads include noise mitigation measures and/or a sound impact assessment to guard against an unacceptable increase in noise levels affecting noise sensitive properties. Developers should adhere to the Environmental Noise Regulations referred to above.

It should be noted that the formulation of the next County Development Plan shall commence in 2018 and will be formally adopted during this third action plan period.

### **3.2.2 Local Area Plans**

Local Area Plans are prepared for different areas of the County. They seek to promote sustainable development through integration of transportation and land use policies in order to reduce the need to travel and to promote modal shift away from the private car.

## **4 Description of the Action Planning Area**

### **4.1 Extent of the Area**

The Action Planning Area is confined to the extent of the County of Kilkenny. Based on the criteria set out in the Regulations, the only noise source requiring assessment relates to noise generated by major roads. The affected areas are located within the Environs of Kilkenny City and Waterford City and the town environs of New Ross and on sections of the Motorway, National and Regional road network. The areas have been taken into consideration by TII in the preparation of strategic noise mapping for those sections of major road infrastructure carrying in excess of 3 million vehicle passages per annum.

### **4.2 General Geographical Description**

The Councils of the County and City of Kilkenny are the designated local authorities for County Kilkenny. The county, which covers an area of 1,963 km<sup>2</sup>, is located in the south east of the Country and borders the Counties of Waterford, Tipperary (North & South), Laois, Carlow and Wexford.

### **4.3 Description of the general population**

The 2016 Population Census identified the population for Kilkenny City and Environs as 26,512 and as 99,232 persons for the County. The County has experienced an overall 4% population growth in the inter-census period. The 2016 Census indicates that as the population grows, the proportion of people living in urban areas continues to increase. Urban areas saw a proportional increase of 2% in the previous period. The major focus for expansion in population has been in the Environs of Kilkenny City and in Ferrybank within the environs of Waterford City within County Kilkenny. Waterford is classified as a City with Kilkenny and New Ross Environs designated as Large Towns under the Kilkenny County Development Plan (KCDP). Callan, Castlecomer, Graiguenamanagh and Thomastown are designated as District Towns.

### **4.4 Description of Noise Sensitive Premises**

The Action Planning Authority shall determine the number of noise sensitive premises that lie within the various noise contour bands generated by strategic noise mapping. Housing, hospitals and schools are generally regarded as noise sensitive premises. The APA may further opt to include other premises or specific land types for inclusion as noise sensitive premises depending on local circumstances. These areas could include public open spaces, places of worship, nursing homes, childcare facilities, offices and some livestock farms.

The identification of individual premises shall be carried out during the first phase of the implementation of this the third Noise Action Plan. This would entail developing a list of such premises.

### **4.5 Description of the Main Infrastructure and Services**

The road network comprises 68km of Motorway, 129km of National Roads, 424 km of Regional Roads and 2,602 km of local roads within the County boundary. The County is crossed by four

railway lines with a spur from Kilkenny City to connect to the Dublin-Waterford line at Lavistown. Belview Port is serviced by rail which supports the movement of freight. The ports of Waterford/Belview and New Ross service the county and the South-East region.

## **5 Responsible Authority for Action Planning**

In County Kilkenny, the only noise source to be considered by the Action Planning Authority relates to major roads with in excess of 3 million vehicle passages per year, as defined in the Regulations. Kilkenny County Council is deemed to be the designated Action Planning Authority for the County.

### **5.1 Name and contact details for the responsible Authorities**

The following are the contact details for the responsible authorities:

Kilkenny County Council  
Environment Section  
County Hall  
John Street  
Kilkenny  
Telephone (056)7794470  
Fax: (056)7794004  
Email: [environment@kilkennycoco.ie](mailto:environment@kilkennycoco.ie)

### **5.2 Description of Other Bodies of Relevance**

The Environmental Protection Agency (EPA) is the designated national authority responsible for overseeing the implementation of the Regulations. The EPA is required to provide advice and guidance to the relevant noise mapping bodies and action planning authorities and is responsible for reporting information to the European Commission.

The TII is the designated noise mapping body acting on behalf of the action planning authorities for major roads where such roads are classified as national roads or motorways. In the case of County Kilkenny, the only noise sources for this third round action plan are major roads. TII also undertook to prepare the Noise Mapping for non-national major roads on behalf of Kilkenny County Council under a centralised approach for the provision of Noise Mapping nationally.

Both the EPA and TII have been consulted during the Public Consultation Phase in relation to the Noise Action Plan.

### **5.3 Description of any Noise- Reduction Measures Already in Force within the Action Planning Area, or Projects in Preparation**

Transport 21 identified significant levels of investment to be made in the national road network in County Kilkenny and included the development by 2010 and 2015 of the following routes in their entirety to motorway/high quality dual carriageway standard;

Cork to Dublin (M8) (Now Complete)

Waterford to Dublin (M9) (Now Complete)

Waterford City Bypass (N25) (Now Complete)

Rosslare to Waterford (N25)

The National Development Plan 2018—2027 includes further major improvements on national primary routes 21 within the county include the N24 and N25 routes, which are an integral part of the western corridor from Sligo through Limerick to Rosslare.

The following sections of the national road network will be progressed through pre-appraisal and early planning during 2018 to prioritise projects which are proceeding to construction in the National Development Plan.

N24 Waterford to Cahir

N25 Waterford to Glenmore

The N25 New Ross Bypass is currently under construction and is anticipated to be completed in 2019.

The South-East Regional Planning Guidelines 2010-2022 were adopted by the South-East Regional Authority in July 2010 to cover the counties of Carlow, Kilkenny, the southern part of County Tipperary, Waterford (City and County) and Wexford. The South-East Regional Authority was subsequently dissolved in 2014 and its functions and responsibilities have been transferred to the Southern Regional Assembly. These Guidelines set out a series of recommendations to local authorities, which are clearly linked to and support national investment priorities and are designed to strengthen integrated approaches to policy making and planning at a local level, in line with regional and national planning frameworks. The South-East Regional Planning Guidelines 2010-2022 shall continue to have effect until a Regional Spatial and Economic Strategy is prepared and adopted by the Southern Regional Assembly.

The Regional Planning Guidelines identified other National and Regional Roads which provide critical intra-regional and inter-regional linkages. Improvements to this road network will enhance connectivity between the Hubs, County Towns and neighbouring regions. The priorities as identified by the RPGs in Kilkenny are:

N76 Kilkenny to Clonmel

N77 Kilkenny to Durrow

R700 Kilkenny to New Ross

R693 (Kilkenny-Urlingford)

During the last plan period the following major road improvement works were underway or completed:

Improvement of the existing R712 (Old N10) from the Carlow Road Roundabout to the Leggetsrath Roundabout.

Pavement improvements at N24(Mooncoin), Kilkenny Ring Rd, N77 (Dunmore Village)

The realignment of the N76 Callan to Kilkenny road at Tennypark (commenced 2017)

The realignment of the N77 to the Laois border at Ballinaslee (Ballyragget).

Specifically, it is an objective to complete the following major road improvement projects over the plan period:

#### National Primary Routes:

The upgrading of the N25 route between Waterford and New Ross with a bypass for New Ross. The New Ross By-Pass is under construction and scheduled for completion in 2019. This scheme will reduce the volume of traffic through New Ross, thereby taking traffic volumes in the currently affected area in County Kilkenny below the minimum threshold whereby mitigation measures are required. This will affect approximately 6km of the existing N25 in County Kilkenny which will be declassified from National route on completion of the scheme. The EIS for the Scheme did not require any specific noise mitigation measures for the portion of the scheme with County Kilkenny.

The N25 Glenmore to Waterford Scheme is to be progressed through pre-appraisal and early planning during 2018 to prioritise projects which are proceeding to construction in the National Development Plan.

The N24 Waterford to Cahir Scheme is to be progressed through pre-appraisal and early planning during 2018 to prioritise projects which are proceeding to construction in the National Development Plan. This may include consideration of a by-pass of Mooncoin Village

The realignment of the N24 (Carrick Road) between Mooncoin and the N24 2+1 Scheme commencing with project appraisal and project planning.

#### National Secondary Routes:

Pavement improvement works on the N76 Callan to Kilkenny road. The N76 Callan Road Realignment Scheme from Kilkenny to Brownstown is under construction and scheduled for completion in 2018 and will incorporate a lower noise surface course into the carriageway.

The realignment of the N77 between Ballyragget Village and Ballynaslee commencing with project appraisal and project planning. The section from Ballynaslee to the County Boundary is now complete.

Structural pavement improvements to the N78 from Castlecomer Village to the County Boundary at Crettyard are scheduled for 2018

It is noted that the schemes on the N77 and N78 do not meet the threshold for noise mapping based on current traffic volumes.

#### Other Road Projects:

The Central Access Scheme Phase 1 was completed in mid-2017. This comprises an urban link between the R712 and R693 in the City of Kilkenny with a river crossing. This third bridge has allowed for the re-distribution of traffic in the City and has directly reduced traffic volumes on the R886 (Green's Bridge) and the R887 through John Street and Rose Inn Street. Due to the timing of the completion of the scheme, this traffic data was not available at the time the third round mapping was being prepared and will be incorporated into the fourth round.

The Kilkenny Northern Ring Road Extension will connect the N77 from the Castlecomer Road Roundabout at Junction 10 on the Kilkenny Ring Road to the R693 Freshford Road, just north of Aut Even Hospital and approximately 2.5km north of Kilkenny City Centre. The length of the proposed scheme is approximately 1.5km and includes for a bridge crossing over the River Nore. This scheme is currently under judicial review and pending a decision. AS part of the EIS a noise assessment was undertaken, and the use of a low noise road surface was been assumed along the length of the extended scheme as an initial mitigation measure. On analysis of this scenario, the use of noise barriers are also required to further reduce noise levels to within the adopted noise design goal for the scheme. It is anticipated that the scheme will impact the existing traffic volumes between Thornback Rood and the City Centre and may bring sections of the R693 below the traffic volume threshold for noise mapping.

The above projects will directly affect areas currently exposed to traffic generated noise by reducing the levels of traffic in these areas or through the introduction of noise mitigation measures where feasible.

Major projects for which an EIS is appropriate will incorporate noise assessment on mitigation where appropriate.

The Noise Action Plan 2014-2018 in the interests of future planning and development was considered in the development of the County Development Plan 2014-2020 and is referenced under Section 9.22 of the Plan.

## **6 Summary of the Results of the Noise Mapping**

### **6.1 Overview of the Preparation of the Noise Maps**

The Environmental Noise Regulations require TII to develop noise maps for every major road classified as a national road while the responsibility of mapping non-national roads rests with the relevant Local Authority within whose functional area the road lies.

The definition of “major roads” has been clarified for the 2<sup>nd</sup> and similarly for the 3<sup>rd</sup> round to include those roads classified as “National” roads or “Regional” roads with a total flow above 3,000,000 vehicle passages per year.

In the case of County Kilkenny, the only noise sources for the first round action plan (2007) were major “National” roads, and the strategic noise mapping was generated by TII in respect of these major roads carrying in excess of 6 million vehicles per annum. The location of these roads was identified using data obtained from the National Road Authority traffic counters located within the County. This data is available to view on the TII website under Traffic Count Data and has data up to an including 2018.

In January 2012, and again during 2017 a centralised approach to the noise mapping of major roads outside agglomerations was adopted. Through this centralised approach, one central body, TII, developed strategic noise maps for all major roads outside agglomerations, encompassing both national and non-national roads. Non-national roads were mapped by TII on the behalf of the relevant Local Authority provided that authority participated in the centralised approach and provided ‘model-ready’ data to the central body for calculations.

Kilkenny County Council which has major roads within its jurisdiction participated in this centralised approach.

#### **6.1.1 Data Sources Used to Compute the Various Noise Levels**

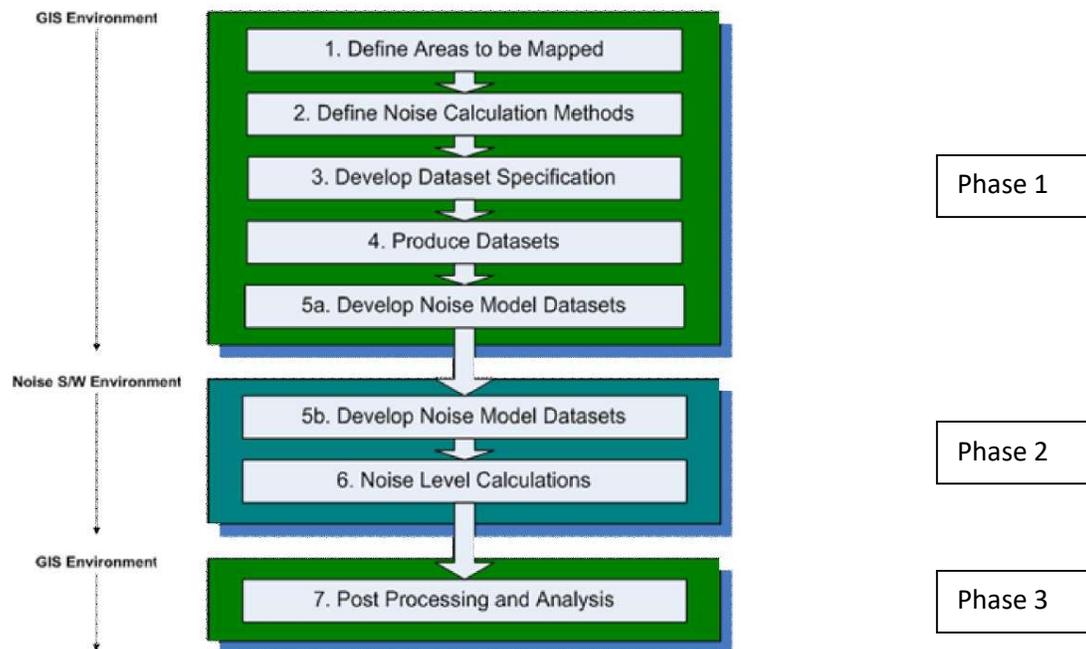
##### **6.1.1.1 Noise Mapping Process**

Figure 1 displays the overview of the noise mapping process as presented in the EPA’s Guidance Note for Strategic Noise mapping. There are three main phases to the process:

- 1) Preparation of datasets in the GIS Environment;
- 2) Noise calculations; and
- 3) Post Processing and Analysis.

Phase 1 was conducted separately for national and non-national roads while Phase 2 and Phase 3 merged datasets from national and non-national roads to form one complete model.

Population exposure assessments were then performed on a County by County basis.



**Figure 1:** Overview of the noise mapping process

#### 6.1.1.2 Review of Second Round (2013) Noise Maps

The EPA Guidance Note for Strategic Noise Mapping (2009, Feb 2018 & Mar 2018) notes: The Regulations introduce a continuing obligation on noise mapping bodies to review and, where necessary, revise each strategic noise map every 5 years, or sooner, as requested by the EPA, or when a material change in environmental noise in the area concerned triggers a revision of the relevant noise action plan.

The EPA “Guidance Note for Noise Action Planning”, July 2009, suggested that a noise action plan should be revised due to a material change if “it is known, or thought likely, that greater than 10% of the exposed population within the area of an action plan have experienced a change in the prevailing noise situation of greater than 3dB  $L_{den}$  or  $L_{night}$ ”.

Therefore, Noise Mapping Bodies who undertook strategic noise mapping for the second phase in 2013 have an obligation to undertake a further review of the strategic noise maps and, where necessary, revise them.

It was recommended for the basis of this review of Round 2 strategic noise maps ahead of Round 3, the NMBs should consider that a revision of the strategic noise maps is required if it is known, or thought likely, that greater than 10% of the exposed population within the area of an action plan have experienced a change in the prevailing noise situation of greater than 1dB  $L_{den}$  or  $L_{night}$ .

Under the requirements of the third round (2017) of the Directive, the flow thresholds for major roads remain reduced in comparison to the first round (2007), i.e. for the first round all roads with an AADT in excess of approximately 16,000 vehicles had to be mapped, for the second phase this threshold was reduced to approximately 8,000 vehicles and similarly for this the third round. This resulted in a requirement to undertake strategic noise mapping for sections of roads which were not included within the first round in 2007. These remain valid for this the third round.

For the third phase the Regulations continue to designate the Local Authorities as the Noise Mapping Bodies for non-national major roads. Similar to the second round noise mapping Kilkenny County Council for the third round engaged with TII to develop noise mapping for non-national roads within its area to be undertaken. Traffic Counts were undertaken by Kilkenny County Council to establish the extent of non national major roads (Regional Roads) which are required to be assessed. The data was assembled and issued to TII who carried out the noise mapping on behalf of Kilkenny County Council.

There were no significant works or events undertaken on the major road network during this period and the traffic count data was representative of the traffic flows within the County.

In comparing the extent of noise mapping between the second round and the third round no substantive variations was found. Some minor extensions in areas under the regulations were noted in the environs of Kilkenny City on the R693 and R712 regional roads. These areas have been updated in section 1.4.1. The lengths of roads added are in the region of 7km.

### **6.1.1.3 Calculation Methodology**

The second schedule of the Regulations sets out the recommended interim computation methods which may be used for the assessment of noise. The methods are referred to as interim methods as they are to be used until such time as a common method of noise assessment is adopted across Europe. The recommended interim methods of assessment set out in the second schedule of the Regulations contain the four EC Recommended Interim Methods set out in Annex II of the Directive. The Directive also provides for Member States to use either the EC Recommended Interim Methods or methods based upon those laid down in their own legislation. As it is common practice for environmental impact assessments to be undertaken in Ireland for roads and railways using the UK national calculation methods, the second schedule of the Regulations also sets out the UK methods CRTN and CRN.

The UK national computation method 'Calculation of Road Traffic Noise' (CRTN) adapted for use under the Regulations is described within the following documents:

Department of Transport publication, 'Calculation of Road Traffic Noise', HMSO, 1988  
Converting the UK Traffic Noise Index  $L_{10,18h}$  to EU Noise Indices for Noise Mapping, TRL Project report PR/SE/451/02, 2002; and  
Defra, Method for Converting the UK Road Traffic Noise Index  $L_{A10,18h}$  to the EU Noise Indices for Road Noise Mapping, st/05/91/AGG04442, 24<sup>th</sup> January 2006.

In their Guidance Note for Strategic Noise Mapping the EPA recommended that the UK CRTN methodology be used for the assessment of road traffic noise levels for the second round of

strategic noise mapping. It notes that the method should be used with particular reference to the following:

The NANR 93 project report;  
DMRB Volume 11 Section 3 Part 7 HD 213/11 Annex 4,  
Additional advice to CRTN procedures;  
TRL Project report PR/SE/451/02, Converting the UK Traffic Noise Index  $L_{10,18h}$  to EU Noise Indices for Noise Mapping, 2002; using traffic count information, particularly for the night period, wherever practicable.

Thus CRTN, taking cognisance of the supplemental reports identified above, was used for all noise mapping calculations.

#### **6.1.1.4 Data Sources**

In order to develop strategic noise maps the following data sources were utilised.

##### TII Traffic Model

TII maintains a National Transport Model to support transport investment decisions, and facilitate good forecasts of traffic volumes on the road network for different future years, and economic conditions. The National Transport Model provides a comprehensive representation of base demand on the transport network, in addition to a series of future year transport forecasts. The Traffic Model was used to determine traffic quantities and composition.

##### Aerial LiDAR

In 2009, the NRA published a notice for tender for an aerial LiDAR survey of approximately 3,019km of the Irish national road network. The survey corridor was 1,200m in width. The survey was completed in early 2011 and outputs included 1 metre contours for the entire survey area, building height information for buildings within the survey corridor and a digital terrain model (Figure 2).



**Figure 2:** Sample Point Cloud from Aerial LiDAR Survey

#### 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 GeoDirectory dataset provides the definitive address database for the country and is an essential component in calculating the population exposed to the various noise bands, information that is required to be submitted to the EU as part of this work.

#### Corine Database

The European Environment Agency's (EEA) CORINE 2012 dataset is a European-wide vector land parcel product derived from satellite imagery R2V processing. The CORINE dataset was developed in the framework of the CORINE programme to establish a computerised inventory on land cover. The dataset was used for making environmental policy as well as for others such as regional development and agriculture policies. For noise calculation, the dataset can be used to provide information on the land cover distribution.

#### Ordnance Survey of Ireland (OSI)

OSI maintain a wide range of mapping products that are available for use within strategic noise mapping. Some datasets required additional licensing to be taken out. Some datasets included for analysis

OSI Large Scale vector mapping:

1:1,000 scale in urban areas;

1:2,500 in suburban areas; and

1:5,000 in rural areas.

OSI Boundaries:

County, ED and Townlands boundaries.

OSI High Resolution Ortho Photography.

OSI Prime2 (Buildings)

## Central Statistics Office (CSO)

The CSO publish statistical information on population based upon Census returns. The most recent Census was held on 24<sup>th</sup> April 2016, and some of this information is now publically available. The information available on population is issued according to various political boundaries, namely Province or County, Province County or City, Regional Authority, Constituency or Electoral Division.

## Roads Database

The TII Roads Database is a GIS repository that contains much of the data required to successfully undertake this noise modelling project. The Roads Database contains information on carriageway types, road widths, noise barriers (TII Barrier Asset Register), surface types, texture depths and signposted speed limits. These datasets where relevant were used in developing noise models along with any supplementary data available.

## As-Built Drawings

When new roads or road upgrades are complete the Contractor is required to submit as-built documentation including as-built drawings to TII. These drawings indicate the position, type and height of noise barriers along the road scheme.

### **6.1.1.5 Software**

All datasets were prepared and collated in a GIS Environment (ArcGIS) prior to importing them to the noise mapping programme. All attributes were consistent through the datasets thus ensuring an efficient export.

#### Noise Software Environment:

- Predictor v11.21
- Calculation of Road Traffic Noise-TRL Method 3.
- Grid Calculations & Facade Point Calculations.
- Predictor Analyst used to 'stitch' results together.

#### Calculation Settings:

- Fetching Radius 1500m
- Standard Tile Size 10km X 10km
- Tile Buffer 1: Up to 500m (detailed LiDAR data)
- Tile Buffer 2: 500m to 1000m (flat earth)

#### **6.1.1.6 Population Exposure Estimates**

Annex VI of the END requires that the estimated number of people living in dwellings exposed to various noise levels on the most exposed façade. In order to derive these results the following datasets were used:

Population data from the CSO

Address data from the geo-directory

Façade points output by the noise model (describing the noise level at the facade of every building),

Building polygons, used by the noise model

The population data used was from Census 2016 and is using the '*small areas*' geographies which are areas of between 50 and 200 dwellings, downloaded from the CSO website, as well as ED's, and Administrative counties. The address data used was the most recent Geo-Directory data available for use in the model. Façade points were the outputs of noise modelling. For the noise mapping 2017 project a noise model was created with a 2km buffer on each county. By analysing all these datasets together it was possible to estimate the average number of people for each residence in the test area (the small area) and assign a noise level to that building. These estimates were collated to derive an overall exposure level for the County.

By cross referencing the Geo-directory (residential) locations in each noise contour band with population data, the population exposure for each band was estimated for the relevant section of road. The statistics were subsequently broken down on a county by county basis and issued to the Local Authorities with responsibility for the generation of Action Plans.

## **6.2 Presentation of Results**

### **6.2.1 Noise Maps**

Noise maps for major roads in County Kilkenny are presented in Appendix E. The maps are prepared for  $L_{den}$  and  $L_{night}$  and are presented in 5dB contour bands.

### **6.2.2 Summary Exposure Statistics for Action Planning Area**

The following Table 5.2 gives estimated population exposed to traffic noise in each noise band for  $L_{den}$  and  $L_{night}$  within County Kilkenny based on the data generated in the preparation of the noise mapping

L <sub>den</sub>	Approximate Number of People		L <sub>night</sub>	Approximate Number of People
55-59	3,388		50-54	2,575
60-64	2,470		55-59	2,268
65-69	1,974		60-64	401
70-74	279		65-69	6
>75	3		>70	0
L <sub>den</sub>	Approximate Area (Km <sup>2</sup> )		L <sub>night</sub>	Approximate Area (Km <sup>2</sup> )
>55	76		>50	40
>65	15		>60	8
>75	2		>70	0
L <sub>den</sub>	Approximate Number of Dwellings		L <sub>night</sub>	Approximate Number of Dwellings
>55	3,277		>50	2,193
>65	987		>60	178
>75	1		>70	0
L <sub>den</sub>	Approximate Number of People		L <sub>night</sub>	Approximate Number of People
>55	8,114		>50	5,250
>65	2,256		>60	407
>75	3		>70	0

Table 5.2 L<sub>den</sub> and L<sub>night</sub> exposure limits

### **6.3 Limitations of the Maps / Results**

The strategic noise maps for County Kilkenny have been generated using data contained in the TII Roads Database. As the maps are generated by predictive computer modelling, and actual field noise data is not incorporated into the model, the maps are considered only to be an estimate of the likely noise levels.

The effects of any noise mitigation measures currently in force or implemented since the preparation of the noise mapping, or noise generated by sources other than major roads within the study criteria have not been considered within the computer modelling.

Under the Regulations it is required to delimit quiet areas in open country. The requirement for such an area is that it is "*undisturbed by noise from traffic, industry or recreational activities*". In the context of the regulations it can be seen that the strategic noise mapping undertaken will not provide a resource which may be extensively used to help identify quiet areas in open country. This is particularly due to the nature of assessed noise sources, which do not include recreational activities, and partially due to the area of coverage of the strategic noise mapping, which is near to major sources, and therefore not locations which will be undisturbed by them.

## 7 Identification of Areas to be subject to Noise Management Activities

The results of the strategic noise mapping provide information on the assessed noise levels at properties within the assessment area, along with an estimate of the number of inhabitants. These resultant datasets may then be used in combination with the recommended onset of assessment noise levels to develop a noise scoring decision matrix. This decision matrix is used to draw up a shortlist of potential areas for action, both above the onset values, and below the level for preservation to help identify Quiet Areas.

The decision matrix takes into account factors including the noise exposure level, type of noise receptor, the type of noise source and the number of people affected. Appendix D provides an example of a prioritisation decision matrix based on work by Dublin City Council.

With regard to major roads, which are the primary noise source for County Kilkenny, the onset levels, for assessment of noise mitigation measures and for assessment of noise preservation where they are good, for roads, are set out in Section 6.1.1. As there are no defined limits in relation to environmental noise exposure, the onset levels have been selected on the basis of current best practice as outlined in the EPA guidance Note for Noise Action Planning (2009 & 2018).

### 7.1 Description of the Decision Matrix

#### 7.1.1 Onset of Assessment Levels

Under the regulations, the noise due to road traffic sources is required to be assessed for all roads within agglomerations as defined in the regulations, and for major roads outside agglomerations above a traffic flow level threshold. As the definition of a major road only considers the volume of traffic flow, the roads included within the assessment may be Motorways, National Roads or Regional Roads and will not necessarily be all examples of any one class.

The TII Guidelines for the design of new national roads indicate that mitigation measures should be considered above a level of 60dB  $L_{den}$  free-field. (The UK Noise Insulation Regulations set out a level of 68 dB  $L_{A10, 18hr}$ , above which a noise insulation package must be offered to property owners.)

Having due regard to the above, and in accordance with the guidance issued by the EPA the following onset of assessment noise levels apply in relation to roads:

For assessment of noise mitigation measures

70 dB  $L_{den}$

57 dB  $L_{night}$

For assessment of noise level preservation where the existing levels are good

55 dB  $L_{den}$

45 dB  $L_{night}$

These levels reflect an annual average 24 hour period.

## **7.1.2 Protection Thresholds for Quiet Areas**

### **7.1.2.1 Quiet Areas within Agglomerations**

Under Article 3(1) of the Regulations it is required to delimit quiet areas within agglomerations. The strategic noise maps generated by TII provide an assessment of the environmental noise levels across the whole of the agglomeration for roads, railways, industrial and air traffic sources. This assessment can be of assistance in the identification of quiet areas.

It is noted that under the terms of reference in the regulations and particularly in relation to population size, there is no designated agglomeration in County Kilkenny, and accordingly there is no requirement to identify quiet areas within the County.

There is no universally accepted definition of what constitutes a Quiet Area within an agglomeration. The EPA Guidelines suggest that these areas could be defined based purely on noise related criteria or in terms of related aspects such as land use, local amenity value, accessibility and historic usage. It is further suggested the Quiet Areas could be considered as those areas of the noise maps below 55 dB  $L_{day}$ . These Areas could be cross referenced to a dataset of public open spaces to produce a schedule of quiet areas. The following could be considered to be included as public open spaces in this context:

- Recreational areas
- Playing fields
- Playgrounds
- Public parks and gardens
- Beaches
- Nature reserves
- Cemeteries
- River banks
- Canals

The Action Planning Authority may also wish to consider a second category of location such as the grounds around potentially noise sensitive premises such as:

- Places of worship
- Hospitals, including nursing and convalescence homes
- Educational institutions
- Childcare/crèche facilities
- Offices
- Some livestock farms

The EPA Guidelines suggest that it may be relevant for the Action Planning Authority to protect by designation some public open spaces, which may currently have low levels of environmental noise as indicated by strategic noise mapping, but have much higher existing noise levels due to other noise sources not considered within the scope of the mapping such as recreation, entertainment or neighbourhood noise. Similarly, there may be other areas which may be protected through designation, due to usage or utility, despite having a reasonably high level of environmental noise as indicated by the strategic noise mapping. A selection criteria or decision matrix should be developed to identify and propose such areas for delimitation and that a reasoned case for designation is developed for each area which may not initially be obviously quiet. Following a consultation process with the public, the EPA and other relevant stakeholders a list of Candidate Quiet Areas could be drawn up for submission to the EPA and the Minister for designation. On designation a policy statement would be required in the Action Plan setting out the extent of protections required and proposed mitigation measures.

#### **7.1.2.2 Quiet Areas in open country**

Under Article 3(1) of the Regulations it is required to delimit quiet areas in the open country. The requirement for such an area is that it is *“undisturbed by noise from traffic, industry or recreational activities”*.

The strategic noise maps generated by TII provide an assessment of the environmental noise levels across agglomerations for roads, railways, industrial and air traffic sources. However, this does not provide an adequate resource which may be extensively used to help identify quiet areas in open country. This is partially due to the nature of the assessed noise sources which do not include industrial or recreational activities, and because the area of coverage of the strategic noise mapping relating to major noise sources does not cover locations unaffected by these noise sources.

Consideration can be given by the Action Planning Authority to widening the scope of the Action Plan to include Quiet Area in open country away from the major noise sources and to delimit such areas for approval. It is further considered that the assessment of Quiet Areas in open country need not be limited solely to acoustic criteria but could take cognisance of the landscape characteristics, heritage, ecology and cultural aspects of the area under consideration.

In the context of the Regulations, it is envisaged that any areas put forward for designation as Quiet Areas in Open Country would have low levels of environmental noise, and be predominantly free of long term noise effects from human activity.

The provisions of the Kilkenny County Development Plan 2014-2020 outline current environmental policies and the Action Plan should take cognisance of these policies and be used to further develop these policies to incorporate the requirements of the Environmental Noise Regulations. Further guidance in relation to the assessment of Quiet Areas can be obtained in research carried out by Waugh and Durucan, and Symond Group and Campaign to Protect Rural England.

### **7.1.3 Application of the Criteria / Matrix**

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

The following Table is an example of a prioritisation decision support matrix based on work by Dublin City Council. A score of 17 or above was used to indicate that threshold levels have been exceeded and the location should be included in the shortlist for further assessment.

This type of matrix will be used in the assessment of noise sensitive locations within the strategic noise mapping area for consideration in the implementation of mitigation measures.

PRIORITY MATRIX	LOCATION:			
	Decision Selection Criteria	Score Range L <sub>den</sub>	Score Range L <sub>night</sub>	Subtotal
Noise Band(dB(A))	<45	5	6	
	45-49	4	5	
	50-54	3	4	
	55 - 59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
>/=80	5	7		
Type of Location	Urban Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	
	Quiet Area	3	1	
	Recreational open space	2	2	
Type of Noise Source	Air	3	4	
	Industry	2	3	
	Rail	2	3	
	Road	3	4	
			TOTAL	

Table 6.1: Priority Matrix (Sample)

#### **7.1.4 Results of the Analyses**

With the exception of the road traffic data collection for the development of the Round 3 mapping a detailed assessment of the second round noise mapping was not carried out during the lifetime of the 2014-2018 Noise Action Plan.

Subject to necessary resources and available funding it is proposed to carry out an overall assessment of the updated noise mapping within the lifetime of this the third Action Plan. Furthermore, subject to funding it is proposed to conduct a more detailed analysis of the strategic noise mapping to determine the individual areas requiring mitigation measures using the decision support matrix as shown in Table 6.1. This analysis would make use of the decision matrix described previously, with the goal of identifying potential “hot spots” or clusters requiring future mitigation measures.

## **8 Mitigation and Protection Measures**

### **8.1 Consideration of local and national plans, policies and strategies**

Any new noise management measure in the Action Plan must reflect the wider context of local and national sustainable development plans, policies and strategies, including but not necessarily limited to, the following:

- Local Area Plans;
- Transport 21;
- Sustainable transport and sustainable urban mobility strategies;
- Strategic environmental assessment regulations;
- Environmental impact assessment regulations;
- Air quality regulations and Action Plans;
- Renewable Energy Action Plan;
- Local Authority Open Spaces policies;
- Planning policy statements and design guides;
- Airport master plans;
- Emerging climate change initiatives;
- Spatial data strategy;
- Urban regeneration strategies; and
- Noise abatement policy.

Where possible the synergies and conflicts presented will be reviewed and considered.

### **8.2 Management of Areas above Onset of Assessment Criteria**

The initial stage of the management of areas, which are indicated to be above the threshold where noise mitigation measures may be deemed necessary, is to conduct a review of existing noise mapping. The review shall identify the order of priority of potential areas for any subsequent treatment.

On completion of the initial assessment, a field survey of actual noise levels shall be carried out to verify the initial finding and confirm the order of priority for treatment. As part of the establishment of the order of priority, the most appropriate and cost effective mitigation measures shall be identified to optimise the return from the mitigation process. A similar decision support matrix to that shown in Table 6.1 can be generated to facilitate this process.

On implementation of the noise mitigation measures, the areas in question shall be resurveyed to establish the effectiveness and extent of the mitigation measures.

A review of this process should be conducted during the various phases of the Action Plan to refine and develop the long term strategy for noise management for Kilkenny County.

### **8.3 Preservation of Areas below Protection Threshold**

Preservation of areas below the protection threshold shall be achieved by the development of strategies for the management of noise within the scope of the Planning and Development policies for the County and City Environs of Kilkenny. Through the County Development Plan, the City Environs Plan, Local Area Plans, the planning process and relevant environmental legislation, a policy shall be established in relation to environmental noise, such that in order to control development, any development that may have significant adverse impacts on areas below the protection threshold will include mitigation measures to preserve or reduce existing noise conditions. Where, this is not achievable, consideration shall be given to curtailing or not permitting such development.

The Action Plan shall be reviewed at 5 year intervals in accordance with the Regulations or as necessary where a material change in an area's noise profile occurs. These reviews shall take cognisance of noise monitoring conducted in the intervening periods.

### **8.4 Management of Areas between the Thresholds**

The policies developed for the preservation of Areas below the Protection Threshold can be adopted for control and management of noise for areas of future development. Areas which lie between those areas requiring noise mitigation and Quiet areas will benefit from the mitigation measures introduced for area of high levels of noises and the maintenance of the low levels in the quiet areas.

### **8.5 Future and Current Developments- Impact and Management**

Since the Round 2 strategic noise mapping was carried out by TII in 2013 a number of major road construction projects scheduled for County Kilkenny have been completed or are under construction.

The following motorway/high grade dual carriageway projects have been constructed:

N25 Waterford By-Pass  
M9 Dublin to Waterford High Grade Dual-Way/ Motorway  
M8 Cashel to Cullahill Motorway (Cork-Dublin Road)

These projects have been the subject of environmental impacts assessments, and also included construction requirements in relation to the mitigation of noise generation.

The New Ross By-Pass is under construction and scheduled for completion in 2019. This scheme will reduce the volume of traffic through New Ross, thereby taking traffic volumes in the currently affected area in County Kilkenny below the minimum threshold whereby mitigation

measures are required. This will affect approximately 6km of the existing N25 in County Kilkenny which will be declassified from National route on completion of the scheme. The EIS for the Scheme did not require any specific noise mitigation measures for the portion of the scheme with County Kilkenny.

The R712 Old Dublin Road Improvement Scheme was completed in 2015. Thin surfacing course material with generated lower noise than Hot rolled asphalt was used as the final surfacing treatment for the project.

The N76 Realignment Scheme project is under construction and will incorporate a lower noise surface course into the carriageway. This is due for completion in Q2 2018.

The Central Access Scheme Phase 1 was completed in mid-2017. This comprises an urban link between the R712 and R693 in the City of Kilkenny with a river crossing. This third bridge has allowed for the re-distribution of traffic in the City and has directly reduced traffic volumes on the R886 (Green's Bridge) and the R887 through John Street and Rose Inn Street. Due to the timing of the completion of the scheme, this traffic data was not available at the time the third round mapping was being prepared and will be incorporated into the fourth round.

The Kilkenny Northern Ring Road Extension will connect the N77 from the Castlecomer Road Roundabout at Junction 10 on the Kilkenny Ring Road to the R693 Freshford Road, just north of Aut Even Hospital and approximately 2.5km north of Kilkenny City Centre. The length of the proposed scheme is approximately 1.5km and includes for a bridge crossing over the River Nore. This scheme is currently under judicial review and pending a decision. AS part of the EIS a noise assessment was undertaken, and the use of a low noise road surface was been assumed along the length of the extended scheme as an initial mitigation measure. On analysis of this scenario, the use of noise barriers are also required to further reduce noise levels to within the adopted noise design goal for the scheme. It is anticipated that the scheme will impact the existing traffic volumes between Thornback Road and the City Centre and may bring sections of the R693 below the traffic volume threshold for noise mapping.

A village renewal scheme was undertaken in Mooncoin Village in 2014 over a 2km section within the 50kph speed limits. Again, in order to minimise traffic generated noise, a low noise thin surface course was installed as part of the scheme.

Major projects for which an EIS is appropriate will incorporate noise assessment on mitigation where appropriate.

The Noise Action Plan 2014-2018 in the interests of future planning and development was considered in the formulation of the County Development Plans 2014-2020 (Section 9.2.2 KCDP & Section 8.2.1.2 KCEDP).

## **8.6 Confirming the Extent of Noise Impact**

The strategic noise mapping prepared by TII has identified the primary areas affected by environmental noise under the revised thresholds established under this the third phase. A significant portion of key infrastructural road projects in County Kilkenny have been completed during the 1<sup>st</sup> and 2<sup>nd</sup> rounds. Whilst, this has impacted on the areas already identified as requiring noise mitigation measures, the introduction of the revised lower thresholds during the

2<sup>nd</sup> round included a larger area and numbers of persons potentially affected by road generated environmental noise.

It should be noted that the third round noise mapping model generally indicates that the overall number of persons affected has reduced in comparison to the second round mapping. This is very encouraging but further assessment of the model may be considered to determine the specific reason(s) for this positive change.

To identify areas that may be significantly adversely affected, field surveys and noise monitoring may be required to accurately determine the level, extent and impact of the generated noise. It will then be possible to refine the current noise mapping models to re-assess the support decision matrix with regard to noise mitigation measures.

## **8.7 Review of Possible Mitigation Measures**

### **8.7.1 The Planning System**

The appropriate use of the planning system can be used to 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 considered as being a material issue:

Introducing people into potentially noisy areas through the provision new residential housing, hospital, schools nursing homes etc in the vicinity of existing road rail industrial or airport noise, or where there are potential high levels of noise with buildings or in adjoining gardens or public open spaces.

Introducing potentially noisy developments such as new or altered roads, railways, industrial sites, and airports, commercial or large sporting recreational developments into the vicinity of noise sensitive locations.

In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA Guidelines suggest that in the interim that Action Planning Authorities take under consideration the planning policy guidance notes issued by The Scottish Office (*The Scottish Office, Planning Advice Note PAN 1/2011: Planning and Noise & Technical Advice Note: Assessment of Noise*).

Another key update to the planning aspects is the UK ProPG Planning & Noise Guidance.

In the second scenario, where new, or altered, sources of noise are introduced to existing residential or other noise sensitive locations; there is currently a number of guidance documents, which cover some of those situations as previously outlined. Where existing guidance does not cover the situation under consideration, it is recommended that the planning advice notes from The Scottish Office (*The Scottish Office, Planning Advice Note PAN 1/2011: Planning and Noise & Technical Advice Note: Assessment of Noise*) and BS 4142 (*BS 4142:2014 Method for rating industrial and commercial sound, British Standards Institution (BSI), London 2014*) are taken into consideration.

The EPA Guidelines recommend that the Noise Action Plans contain a review of the use of the planning system to help manage the effects of environmental noise within the area covered. Any evaluation criteria to be used shall be specified, or relevant documents are to be referenced.

It is within the remit of the Action Planning Authority to determine that any approach to controlling environmental noise through the use of planning policy set out within the Action Plan, may be made relevant to the whole area under the control of the APA, if considered appropriate, and not restricted solely to the area covered by the strategic noise mapping.

### **8.7.2 Abatement Measures**

There are a variety of potential noise mitigation measures, some of which may be instigated at a national or regional level, others which may be more localised. Likewise there are a number of different authorities who are in a position to put into place policies and mitigation measures.

A non-exhaustive list of potential actions could include the following:

EU regulated vehicle noise emissions and tyre noise regulation.

National planning guidance or noise regulation to be established at national level.

- Transport policy objectives may be set at regional level
- Improved public transport
- Getting people out of cars; and
- Promote use of electric cars to reduce engine noise
- Increasing bus, train, bicycle journeys

At local authority levels there are powers to introduce policies for:

- Replacement of fleet vehicles with compressed gas/electric vehicles
- Establishment of truck routing
- Night time delivery restrictions or limits
- Road closures / traffic routing
- Road re-surfacing
- Planning zones
- Façade insulation requirements
- Noise barriers
- Public liaison groups; and
- Long term targets

Airport operators could implement:

- Noise surcharges
- Fines for off track aircraft
- Aircraft restrictions
- Noise level limits
- Operating restrictions

- Defined periods of respite
- Purchase of most affected properties
- Land use planning process; and
- Noise insulation packages.

Road Authorities could implement the following:

- Traffic management –route and HGVs
- New infrastructure – bypass and relief roads
- Resurfacing of roads with low noise surfacing systems
- Vehicle speed management
- Noise screening measures; and
- Façade insulation measures

Railway operators may implement the following:

- Railway head grinding
- Fleet renewal
- Electrification of lines
- Replacement of tread brakes with disk brakes
- Vehicle speed management
- Noise screening measures; and
- Façade insulation measures

Where Kilkenny County Council identify potentially beneficial actions for which they are not the direct overseeing or funding authority, it is intended that they would liaise with the relevant authority to discuss the viability of actions or support any move by other authorities to undertake the desired action.

## **8.8 Assessment of the Effectiveness of Noise Reduction Measures**

On establishment of a schedule of the areas requiring noise mitigation measures, corresponding actions to achieve the appropriate noise reductions shall be determined. Each area to be treated may require one or more measures to achieve the intended result. These actions shall be prioritised by undertaking a cost benefit analysis on the potential actions under consideration in order to maximise value for money and deliver benefit from investment.

## **8.9 Budget and Cost Benefit Analysis**

Kilkenny County Council directly funds and provides resources for the preparation of the Noise Action Plan. Specific funding in relation to the implementation of the END has not been made available at national level to Kilkenny County Council. Accordingly until such time as specific funding is made available limited progress on implementation of the Noise Action Plan can be made by Kilkenny County Council.

Subject to the availability of funding, cost-benefit analysis of potential actions shall be undertaken for noise mitigation measures which should address the lifetime construction and maintenance costs against noise reduction benefit.

The cost benefit analysis would be dependent on the assessment approach adopted to determine the extent of noise reduction. A simplified approach would be to consider global source related measures or alternatively if specific local measures are being considered the approach becomes more complex. Strategic noise models could be used to conduct scenario testing for a range of noise reduction design options, although it is noted that certain measures, such as enhanced barrier design and quiet pavement surfaces, may be difficult to incorporate into the current calculation models.

The benefit of noise reduction may be viewed in terms of decibels, people or time or could be monetised to fully process the analysis. Monetisation of noise is becoming increasingly common and various approaches and valuations may be found within reports such as HEATCO, Developing Harmonised European Approaches for Transport Costing and Project Assessment, Final Technical Report, December 2006, Department of Transport, Transport Analysis Guidance, Noise TAG Unit 3.3.2, November 2006, Transport Scotland, Scottish Transport Appraisal Guidance, 6.11 Noise and Vibration, September 2006. However, it is important to note that monetary assessments of noise levels studies tend to take two different approaches, either based on impact upon property market value or the willingness of affected residents to contribute to pay for noise reductions. As may be expected these tend to result in somewhat differing levels of financial benefit.

The Action Planning Authority may take into consideration the guidance contained within the Central Expenditure Evaluation Unit, *D-03 Guide to Economic Appraisal CBA, 2012* when undertaking the cost benefit analysis of the mitigation options.

Prior to establishing the appropriate Cost Benefit Analysis to be adopted, consultation should be carried out with the primary authorities with a direct input in relation to the particular noise source. In the case of County Kilkenny, where the primary noise source is generated from roads, the appropriate authorities are Kilkenny County Council, the EPA and TII.

Following the cost-benefit analysis, the locations being reviewed will be prioritised to give a list of beneficial, achievable actions for noise mitigation.

## **8.10 Outcome**

Following on from the completion of the strategic noise mapping generated by TII in relation to major roads under this the third round; it would be desirable for Kilkenny County Council, subject to resources and specific budget provision, to conduct a sample review of the supplied data to verify the extent and quality of the data. This may include field noise surveys to establish baseline field data and to assess the changes to the noise distributions on completion the various infrastructural projects which directly impact on the areas initially identified. Furthermore, these projects may generate additional noise, and assessment of the levels generated shall be conducted to assess the effectiveness of the noise abatement measures incorporated with the schemes. Following on from this Kilkenny County Council could develop and further refine policies in relation to noise quality, noise mitigation measures and protocols for the preservation of existing noise levels.

## 9 Public Participation

Pursuant to Article 11 (6) of the Regulations Kilkenny County Council is required as the relevant Action Planning Authority to consult the public when drawing up and revising Action Plans.

The consultation process was planned and undertaken having regard to the Department of the Department of Public Expenditure and Reform's "Consultation Principles & Guidelines" 2016. The guidelines adopt a principles-based approach to public consultation, and aim is to improve transparency, responsiveness and accessibility of consultations. The key principles adopted in the guidelines are;

Consultation with citizens must be genuine, meaningful, timely, balanced and with the ultimate objective of leading to better outcomes and greater understanding by all involved of the benefits and consequences of proceeding with a particular policy or legislation proposals.

Consultation should be targeted at and easily accessible to those with a clear interest in the policy in question.

This Noise Action Plan aims to meet the requirements of the Regulations and to outline the approach to be adopted by Kilkenny County Council in relation to the identification, monitoring and mitigation against high noise levels and the preservation of quiet areas. It incorporates a commitment to establish policies and protocols in relation the treatment of noise and to conduct regular review as outlined in the Regulations.

A formal public consultation was undertaken on the third round Draft Noise Action Plan 2019-2023, as detailed below. This gave the public an early and effective opportunity to participate in the preparation of the plan.

The Draft Noise Action Plan 2019-2023 was placed on public display for 6 weeks, during which, and for a further two weeks thereafter, written submissions were accepted. Notification was placed in the local papers in advance advising the public of the locations where the plan was on display and the relevant times and dates. A copy of the Draft Action Plan was displayed in the following locations:

<http://consult.kilkenny.ie/>

<http://www.kilkennycoco.ie/>

Kilkenny County Council, County Hall, John St., Kilkenny,

Kilkenny County Council, Kilkenny City Municipal District Office, City Hall, High Street, Kilkenny

Kilkenny County Council, Piltown Municipal District Office, Ferrybank Shopping Centre, Ferrybank, Co. Kilkenny.

Kilkenny County Council, Castlecomer Municipal District Office, Kilkenny Street, Castlecomer, Co. Kilkenny.

Kilkenny County Council, Kilkenny City Municipal District Rural Office, Ladyswell, Thomastown, Co. Kilkenny.

Kilkenny County Council, Kilkenny City Municipal District Rural Office, Clonmel Road, Callan, Co. Kilkenny.

A copy was also available on the Kilkenny County Council Website [www.kilkennycoco.ie](http://www.kilkennycoco.ie) and was on public display from the 28th May to 11th July 2018.

The public were invited to make submissions online, by e-mail or in writing. Submissions or observations with respect to the Draft Noise Action Plan 2019-2023 may be made:

Online at <http://consult.kilkenny.ie/>

or

e-mailed to [noiseplan2019-2023@kilkennycoco.ie](mailto:noiseplan2019-2023@kilkennycoco.ie) to arrive no later than the advertised date.

or

in writing to **Mr. Sean McKeown**, Director of Services, Environment, Planning & Economic Services

Submissions were accepted up until Wednesday 25<sup>th</sup> July 2018.

In addition, a number of statutory bodies and stakeholder organisations were contacted and requested to provide a review and feedback on the proposals set out within the Draft Noise Action Plan 2019-2023. A list of these bodies is included in Appendix F.

Following the public consultation the submissions received were taken into consideration when finalising the Noise Action Plan 2019-2023. A summary of the submissions is available for public viewing on the Council's consultation website.

Any information collected will be treated in line with Kilkenny County Council's Data Protection Policy. Under Freedom of Information Legislation, every person has the legal right to access official records held by public bodies prescribed under the Act.

Once the Noise Action Plan 2019-2023 has been finalised, it will be published in electronic format, within 28 days of being finalised. The Noise Action Plan 2019-2023 shall be available on the Kilkenny County Council website [www.kilkennycoco.ie](http://www.kilkennycoco.ie). A notice to this effect will be placed in the local papers at the same time. A copy of the finalised plan will be forwarded to any party who makes a submission and the statutory bodies in Appendix F.

## **10 Implementation Plan**

### **10.1 Roles and Responsibilities**

Kilkenny County Council is the designated Action Planning Authority.

The primary noise source requiring mitigation within the county under the Noise Directive is generated by major roads. Accordingly, TII and the Environmental Protection Agency are the major stakeholders with direct input in the development of the Action Plan. Kilkenny County Council shall be responsible for the development of the Noise Action Plan.

As noted above the primary noise source requiring mitigation under the Noise Directive is generated by major roads and accordingly Kilkenny County Council shall be reliant on TII and the DOT for to provision of resources to investigate and mitigate against any noise issues arising.

### **10.2 Targets and Objectives**

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

The objective of the Directive is to establish an EU wide approach to avoid prevent or reduce environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health, and to preserve existing good quality environmental noise levels.

The Regulations identify and assign responsibilities to the particular organisations required to produce strategic noise mapping, and to those organisations responsible for the development of action plans.

Kilkenny County Council as the Action Planning Authority was required to produce Action Plans for the first round during 2008, for the second round in 2013 and this the third round in 2018 every five years thereafter. The Action Plan must be produced based on the results of the noise mapping. It is also required to review and revise the noise maps, if necessary, from time to time and whenever a major development occurs affecting the existing noise situation.

The long term objective is to either eliminate or substantially reduce the noise exposure to residents within the subject areas requiring noise mitigation measures. The establishment of designated Quiet Areas in Open Country, which are subject to EPA and Ministerial Approval, will focus on areas of national, regional or local importance in terms of landscaping cultural and historical aspects, amenity areas and environmentally sensitive locations.

These objectives will be achieved through the ongoing development of the Noise Action Plan and through the National planning processes and regulations and the County and City Development Plan. This approach will be supported subject to the provision of specific resources by a process of regular review and verification by on site field surveys and measurement within the specified timeframes for the Action Plans.

### **10.3 Review of Noise Action Plan 2014- 2018 (Round 2)**

The second Noise Action Plan was finalised in 2013 and a number of objectives were programmed over the five year period of the Plan. The following outlines progress to date:

Kilkenny County Council is increasing its usage of low noise road surfacing materials in urban and residential areas.

The Motorway network within the County has been completed on the M8 and M9, along with completion of the N25 Waterford By-Pass. These schemes had accompanying Environmental Impact Assessment and noise mitigation measures were provided as part of these schemes.

A review of the 2<sup>nd</sup> round noise mapping was carried out during the lifetime of the 2014-2018 Noise Action Plan. This primarily comprise the updating of traffic data and road characteristic data for the preparation of Noise Mapping for the 3<sup>rd</sup> Round. There were a number of additional lengths added to the R693 and R712 Regional Roads amounting to a total of approximately 7 kms. The data was assembled and issued to the TII who carried out the Noise Mapping on behalf of Kilkenny County Council as part of a centralised noise mapping contract co-ordinated by Kildare County Council. The mapping was received in early 2018 and is to be incorporated in the proposed Noise Action Plan 2019- 2023.

The County Development Plan 2008-2014 was under review during the Plan period. The adopted County Development Plan 2014-2020 and the Kilkenny City & Environs Development Plan 2014-2020 now make reference to the Noise Action Plan and will take into consideration new development in the vicinity of major road included in the Noise Action mapping areas.

Due to funding and resourcing deficiencies within the period of the Plan no assessment was carried out in relation to the identification of Quiet Areas in Open Country. Kilkenny County Council was not in a position to engage external consultants and expertise to assist with identification of areas requiring noise mitigation measures and the establishment of baseline studies of these areas. Furthermore, the provision of budget funding, cost benefit analysis and the formal establishment of actionable events to mitigate against excessive noise was not been achieved during this timescale.

### **10.4 Programme of Works 2019-2023**

It is proposed to develop a process within the Noise Action Plan to effectively manage environmental noise throughout the County. The programme is scheduled to be phased over 5 years culminating in the preparation of the 4<sup>th</sup> phase noise action plan to be completed in 2023. The proposed phasing of the plan development is as follows:

Year 1 -2019

Review TII Generated Strategic Noise Mapping

Confirm areas requiring noise mitigation measures

Prioritise impacted areas and develop support decision matrix

Consult with TII, the Department of Transport Tourism and Sport and the EPA, regarding a brief for external noise consultants for the carrying out of field verification studies where required

Identify Quiet Areas in Open Country for EPA and Ministerial approval.

Ensure that the preparation of the new County Development Plan 2020-2026 incorporated the third round Noise Action Plan. (Note the preparation of the new 2020-2026 County Development Plan is expected to commence during 2018.)

#### Year 2 - 2020

Confirm financial funding for procurement of field studies

Engage external noise consultants where required

Conduct baseline studies of existing areas requiring mitigation measure as per noise mapping prior to completion of key road infrastructure

Annual review of Noise Action Plan

#### Year 3 - 2021

Re-assess areas requiring mitigation measures post completion of road infrastructure

Identify areas still requiring noise mitigation measures

Develop priority list of actionable works to mitigate against excessive noise and conduct cost benefit analysis.

Establish and agree budgets for mitigation works with relevant authorities

Annual review of Noise Action Plan

#### Year 4 - 2022

Conduct review of Noise Action Plan for Phase 4

Conduct public consultation on basis of updated noise mapping

#### Year 5 – 2023

Review and confirm Quiet Area for delimiting and submit proposal to EPA and Minister

Finalise Action Plan for period 2024 -2028

#### Post 2023

Conduct review of Action Plan in 5 years cycles

### **10.5 Evaluation and Review**

The above programme over this 5 year second phase of the development of the Noise Action Plan proposes to review the Action Plan on an annualised basis or as the need arises. Any works to be carried out, subject to funding, will be monitored and appraised, a report for round 3 will detail progress against the planned timetable, any actions commenced or undertaken and any costs and outcomes or benefits achieved. The road infrastructure within the County is being upgraded on a continual basis as development needs arise and funding is made available for projects to proceed. Significant progress has been made in the past ten years with the completion of the motorway network in County Kilkenny and improvements to the National Road network. A number of National Roads have been re-classified as Regional Roads on foot of the completion of the motorway network. With the introduction of further road infrastructure improvement projects where appropriate noise impacts are assessed under the design and EIS (where required) phases and any amelioration measures incorporated in the projects.

## **10.6 End of Program Review**

At the end of the third phase period in 2023, Kilkenny County Council will conduct a review of the programme of works and policies developed over the previous 5 years. The review will assess the effectiveness of the measures adopted and determine if the measures were cost effective and value for money. This process will be refined and development over the following phases at 5 year intervals.

## **11 Summary and Conclusion**

Kilkenny County Council has prepared this Draft Noise Action Plan 2019-2023 in accordance with the requirement of the 2006 Environmental Noise Regulations (S.I. No. 140 of 2006). The Plan is based on the strategic noise mapping prepared by TII on behalf of Kilkenny County Council, as the only noise source requiring assessment is generated by major roads as carried traffic in excess of the current threshold levels.

The Noise Action Plan sets out the role and responsibilities of Kilkenny County Council as Action Planning Authority in regard to existing noise levels and the mitigation and protection measures for areas identified for treatment. The Plan includes an approach to the prioritisation and analysis of areas for which mitigation measures are required and the determination of Quiet Areas.

A cost benefit analysis is recommended to be conducted to prioritise list of actionable works for noise mitigation.

A review process shall be developed with a view to assessing the impact of the measures adopted by the Action Planning Authority.

## 12 Appendix A: Glossary of Acoustic and Technical Terms

Term	Definition
Agglomeration	Major Continuous Urban Area as set out within the Regulations
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
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.
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

Term	Definition
	$L_n$ <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)
Noise Level - $L_{den}$ – Day/Evening/Night	A combination of $L_d$ , $L_e$ and $L_n$ as follows: $L_{den} = 10 * \log \frac{1}{24} \{ 12 * 10^{(L_{day})/10} + 4 * 10^{(L_{evening}+5)/10} + 8 * 10^{(L_{night}+10)/10} \}$
Noise Level – $L_{A10,18h}$	$L_{A10,18h} = L_{A10,18h}$ (06:00 to 24:00)
Noise Mapping (Input) Data	Two broad categories: (1) Spatial (e.g. road centre lines, building outlines). (2) Attribute (e.g. vehicle flow, building height – assigned to specific spatial data)
Noise Mapping Software	Computer program that calculates required noise levels based on relevant input data
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 Railverkeerslawai '96, Ministerie Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 20 November 1996’.
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’.

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NOMEports:

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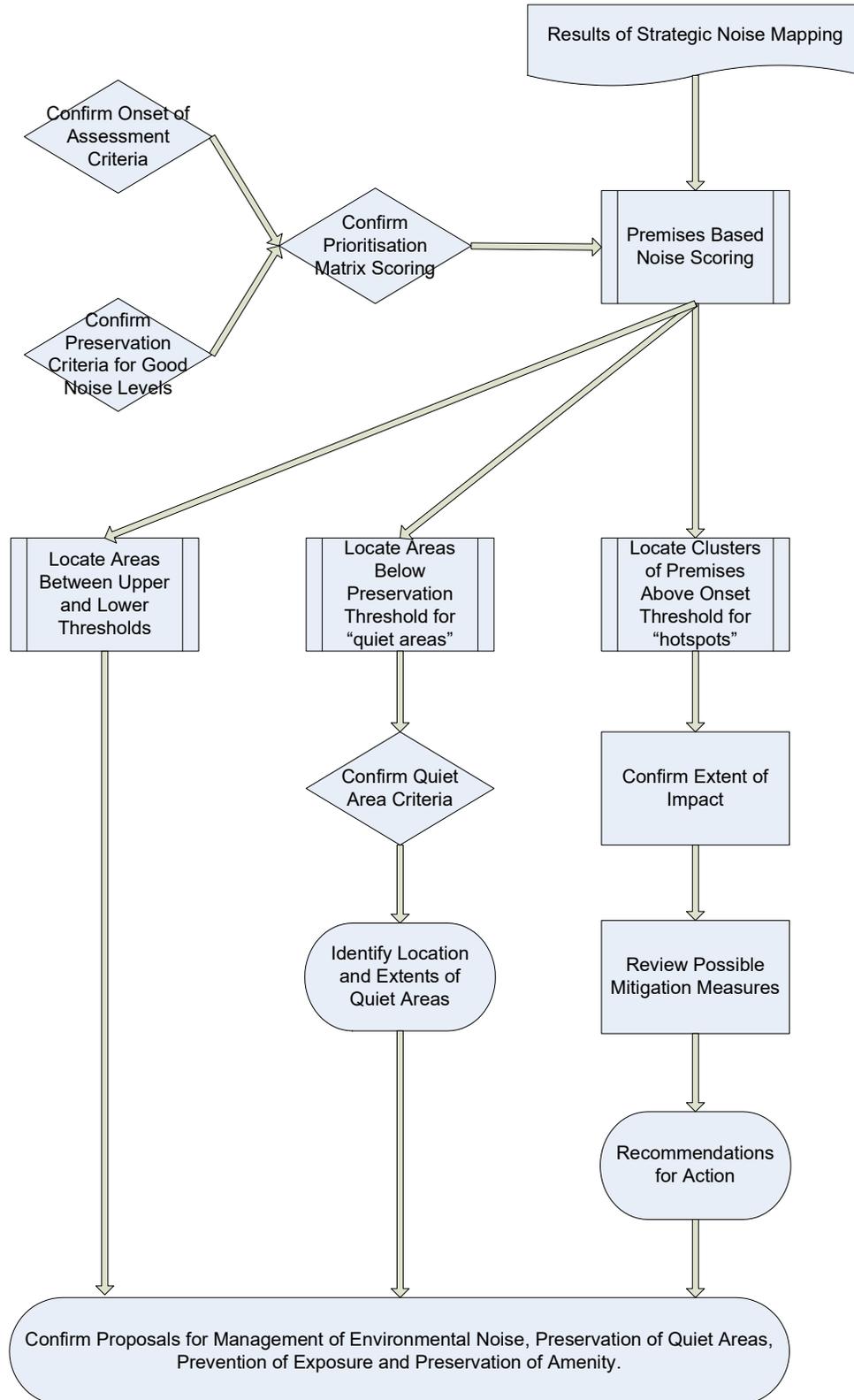
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# 14 Appendix C: Overview / Flow Diagram of Process for Action Planning Decision Making



## 15 Appendix D: Final /Completed Decision/Selection Matrix

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

Table D1 presents the prioritisation decision support matrix to be used to support the action planning decision making process.

**Table D1:** Example decision support matrix

		Priority Matrix		
		Location:		
Decision Selection Criteria		Score Range Lden	Score Range Lnight	SubTotal
Noise Band(dB(A))	<45	5	6	
	45 - 49	4	5	
	50 - 54	3	4	
	55 - 59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75 - 79	4	6	
>=80	5	7		
Type of Location	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	
	Quiet Area	3	3	
	Recreational open space	2	2	
Type of Noise Source	Air	3	4	
	Industry	2	3	
	Rail	2	3	
	Road	3	4	
<b>Total Score</b>				0

**Note:** for Air noise the L<sub>DEN</sub> column is used with the L<sub>Aeq,16hr</sub> results.

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<sub>DEN</sub> and 63 dB L<sub>night</sub> is shown in Table D2.

**Table D2:** Example of use of decision support matrix

		Priority Matrix		
		Location:		
Decision Selection Criteria		Score Range Lden	Score Range Lnight	SubTotal
Noise Band(dB(A))	<45	5	6	3
	45 - 49	4	5	
	50 - 54	3	4	
	55 - 59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75 - 79	4	6	
>=80	5	7	3	
Type of Location	City Centre	1	1	5
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	
	Quiet Area	3	3	
	Recreational open space	2	2	
Type of Noise Source	Air	3	4	7
	Industry	2	3	
	Rail	2	3	
	Road	3	4	
<b>Total Score</b>				<b>18</b>

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.



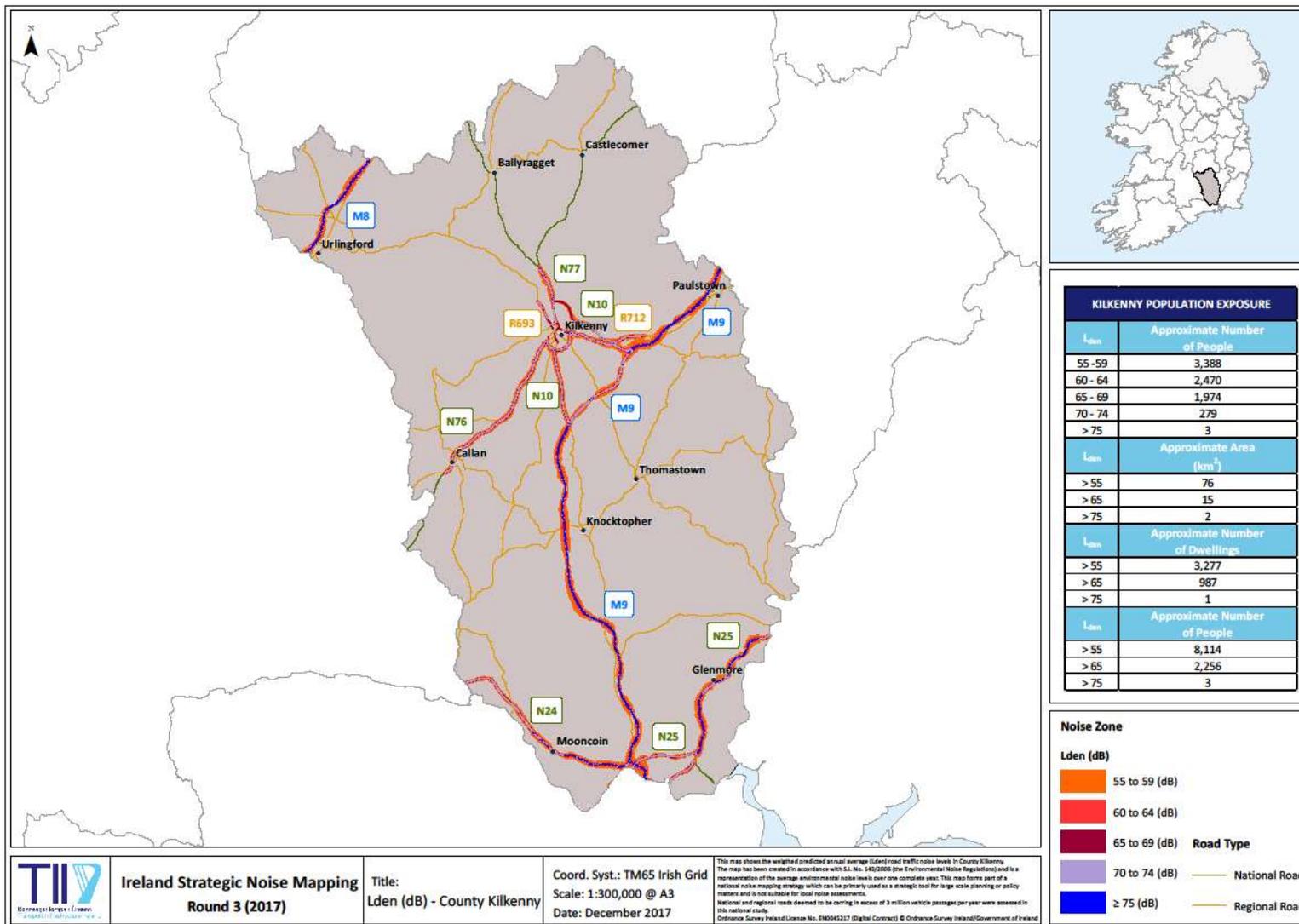


Figure E2: 2017 Lden Noise Map

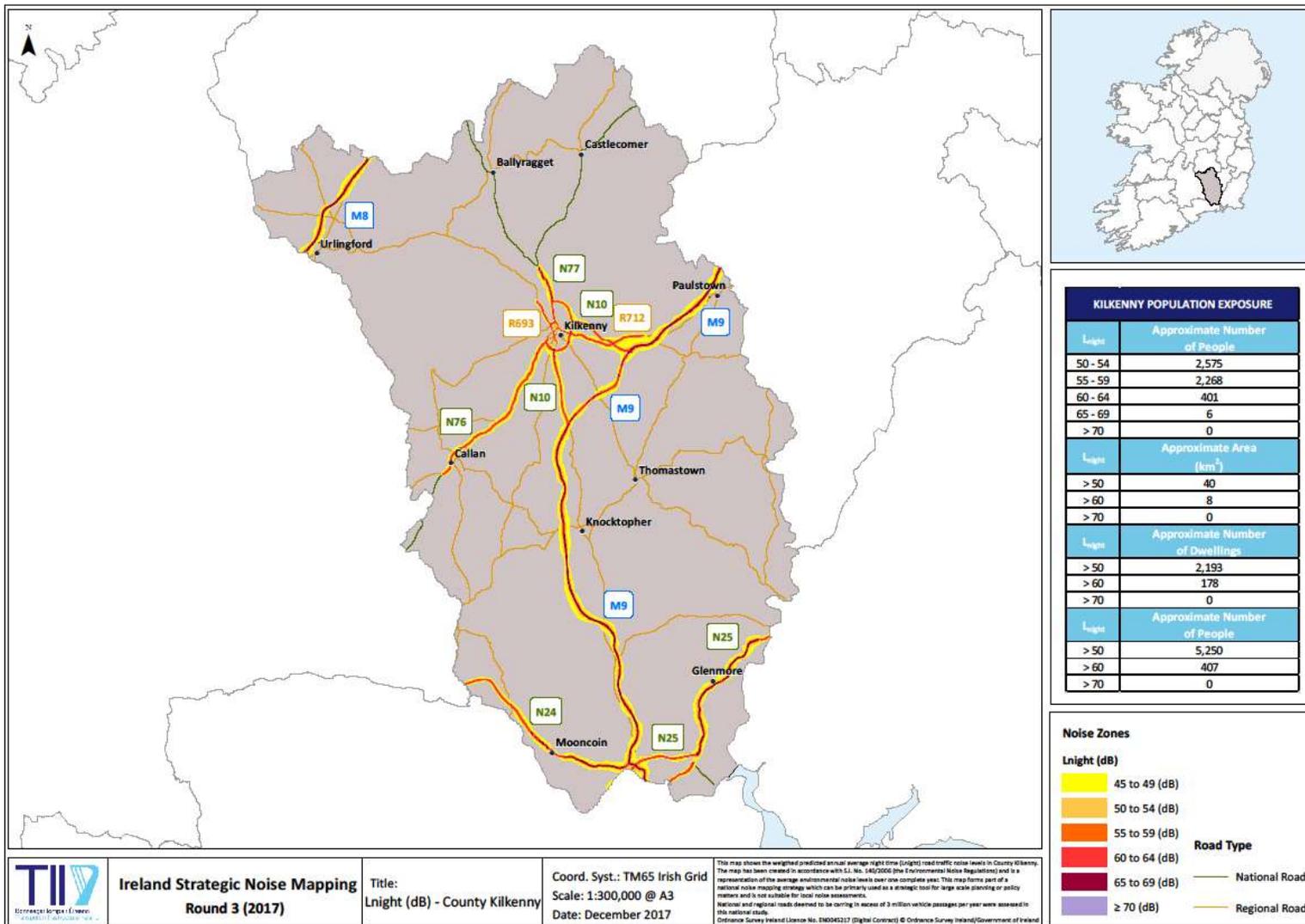


Figure E3: 2017 Lnight Noise Map

## **17 Appendix: F: Public Consultation**

During the public consultation process Kilkenny County Council will make copies of the Draft Noise Action Plan 2019-2023 available to access by the public at locations to be advertised throughout Kilkenny County, and by placing an electronic version on the website of the Kilkenny County Council.

In addition, a number of statutory bodies and stakeholder organisations will be contacted and requested to provide a review and feedback on the proposals set out within the Draft Noise Action Plan 2019-2023 as follows:

### **Government Departments**

Department of the Communications, Climate Action and Environment

Department of Housing, Planning and Local Government

Department of Transport, Tourism and Sport

Department of Education and Skills

Environment Protection Agency

### **Adjacent Action Planning Authorities**

Carlow County Council

Laois County Council

Tipperary County Council

Waterford County Council

Wexford County Council

### **Regional Authorities**

Southern Regional Assembly.

### **Local and National Pressure Groups**

An Taisce

### **NGO & Professional Bodies**

Iarnrod Eireann

Institute of Acoustics

Institute of Public Health

Transport Infrastructure Ireland (TII)



# 18 Appendix G: Summary of the Overall ProPG Guidance Approach

