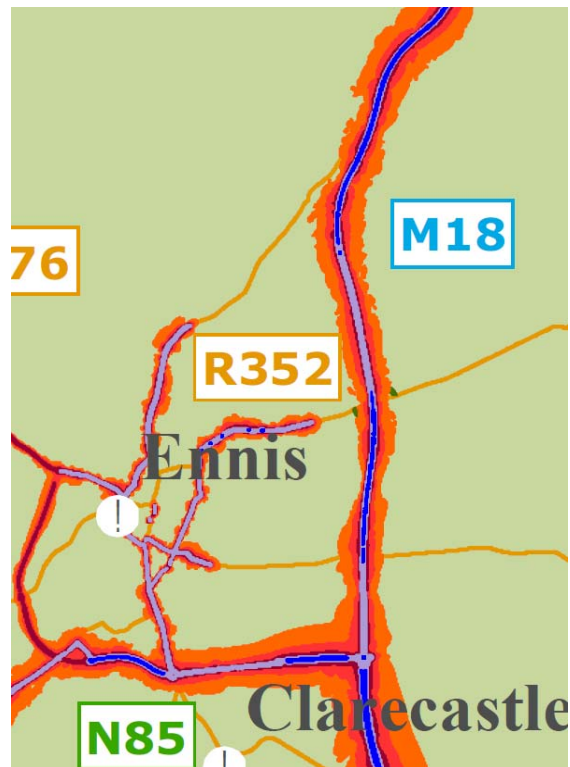


# ÚDARÁIS ÁITIÚLA AN CHLÁIR

## CLARE LOCAL AUTHORITIES

### NOISE ACTION PLAN 2013



JULY 2013

## EXECUTIVE SUMMARY

This Noise Action Plan 2013 has been prepared by Clare Local Authorities to address environmental noise from major roads with more than three million vehicles per annum. The action planning area covers the M18, N18, N19, Sections of R445, R458, R463, R352, R469, R471, R871, R912.

It is a follow up to the 2008 Noise Action Plan which addressed environmental noise from roads with more than six million vehicles p.a.

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

The aim of the Directive and the Regulations is to provide for the implementation of an EC common approach to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise.

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

Noise Mapping Bodies and Action Planning Authorities were assigned responsibility under the regulations to draw up noise maps for the second round in 2012 and prepare action plans for noise from the following noise sources:

- sections of rail route above a flow threshold of **30,000** train passages per year. ( No sections in Clare)
- major airports with more than **50,000** movements per year -a movement being a take off or landing. (Not applicable to Clare at present).
- Sections of major roads with a flow threshold of **3 million** vehicles per annum.
- agglomerations with more than **100,000** inhabitants. (Not applicable to Clare)

The National Roads Authority (NRA), as the noise mapping body for major national roads, has prepared noise maps for the sections of the National Routes – (M and N routes) in Clare that were confirmed by verified vehicle count data to have more than **3** million vehicles per annum. The NRA on behalf of Clare Local Authorities has prepared noise maps for Regional roads (R route) with more than **3** million vehicles per annum. The NRA has estimated from the noise maps and from geodirectory data that approximately **7093** individuals living within the action planning area in Clare may be located in environmental noise bands from 55 to >75dB  $L_{den}$ . Approximately **3932** individuals may be located in noise bands from 50 to >70dB  $L_{night}$

The purpose of this Action Plan is to endeavour to manage the existing noise environment and protect the future noise environment within the action planning area. Management of the existing noise

environment may be achieved by prioritizing areas for which further assessment and possible noise mitigation may be required. Protection of the future noise environment may be achieved by acoustical planning, which further incorporates noise into the planning process via measures such as land-use planning, development planning, sound insulation measures, traffic planning and control of environmental noise sources.

#### **ACTION PLAN POLICY STATEMENT**

***Clare Local Authorities will seek to address environmental noise from major roads in the county, will endeavour to maintain satisfactory noise environments where they exist and will have regard to acoustical planning in the planning process (within the confines of the 2000 Planning and Development Act) to endeavour to ensure that future developments include provisions to protect the population from the effects of environmental noise in the interests of residential amenity and public health.***

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## **1.0 BACKGROUND/INTRODUCTION**

### **1.1 Purpose and Scope of the Environmental Noise Directive.**

EU Directive 2002/49/EC (known as the Environmental Noise Directive, or “END”) deals with the assessment and management of environmental noise<sup>1</sup>.

The aim of the directive is to:

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

The Directive requires that Member States:

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

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

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

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

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

### **1.2 Purpose and Scope of the Environmental Noise Regulations.**

END was transposed into Irish Law by the Environmental Noise Regulations 2006<sup>2</sup>. The regulations provide for the implementation of a common approach within the European community intended to avoid, prevent or reduce on a prioritized basis the harmful effects, including annoyance, due to exposure to environmental noise.

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

The regulations specify the process to be followed in addressing environmental noise from transport sources.

### **Round One.**

Noise mapping bodies made strategic noise maps before the 30<sup>th</sup> June 2007 for the following:

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

Round 1 Final Noise Action Plan was submitted by Clare Local Authorities to the EPA on the 31<sup>st</sup> October 2008 on foot of a public consultation process. The final deadline for reporting of Action Plans to the European Commission was the 18<sup>th</sup> January 2009.

The fundamental objective of the action plans is the prevention and reduction of environmental noise.

### **Round Two.**

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

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

Timetable:

A draft Noise Action Plan was submitted to the EPA on 1<sup>st</sup> March 2013.

The draft Plan went to Public Consultation and then the Plan was finalised.

The EPA will submit a summary of the Noise Action Plan to the European Commission by 18<sup>th</sup> January 2014.

## **1.3 Roles and Responsibilities of designated bodies.**

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

### **1.3.1 Noise Mapping Bodies:**

- For major national roads, the National Roads Authority (NRA) is the noise mapping authority, on behalf of the action planning authority concerned.
- For major non-national roads, each local road authority is the noise mapping authority concerned, therefore Clare Local Authorities is designated for County Clare.
- For major airports, the relevant airport authority is the noise mapping body, on behalf of the action planning authority concerned.
- For major railways, Iarnrod Éireann or the Railway Procurement Authority, as appropriate, is the noise mapping body on behalf of the action planning authority concerned.



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

### 1.3.2 Action Planning Authorities

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

- Each local authority is the action planning authority for major roads in the local authority area, therefore Clare Local Authorities is the action planning authority for major national and major non national roads in County Clare.

## 1.4 Key Phases.

### 1.4.1 Identification of areas to be mapped

In Clare, strategic noise maps and associated action plans must be prepared for major roads only. The requirements for major railways, major airports or agglomerations of greater than 100,000 don't apply.

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

For **Round 1** the NRA identified the N18 from the Limerick border up to 3km north of Ennis town as the only major road in Clare with this level of vehicle movement, based on traffic count data for 2005. Clare County Council did not identify any regional road as being above the 6 million vehicle threshold.

For **Round 2** the NRA identified the following routes with more that 3 million vehicles pa:

- the M18 motorway from Smithstown Interchange to Galway border
- the N18 from Limerick border to Smithstown Interchange
- the N19 from Smithstown Interchange to Shannon Airport entrance
- the N68 from Ennis to Kilrush
- A section of the N85 from Killow Interchange via Lehinch Road Roundabout, Ennis to the N85 junction with the R476

Clare Local Authorities identified the following Regional Roads with more than 3 million vehicles per annum:

- R445 - from Limerick border to N18 junction (old N18)
- R463 - from Limerick border to R463/R465 junction
- R471 - Shannon Town Centre Roundabout to Ballycasey Roundabout (old N19)
- R458 - R458/N85 Clareabbey Roundabout to Ballycorey Junction through Ennis (old N18)
- R352 - R352/N85 Laureen Roundabout to R352/R458 Maid of Erin Roundabout
- R352 - R352/R871 Junction to Ballymacahill Cross
- R469 - Ennis Cathedral to Junction to Industrial Estate
- R871 - R871/R458 Junction to R871/R352 Junction
- R912 - Abbey Street in Ennis

### 1.4.2 Preparation of Strategic noise maps

#### 1.4.2.1 Purpose

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

#### 1.4.2.2 Preparation

The NRA ran computerised noise modelling programmes for the relevant roads with volumes above 3 million vehicles per year and generated GIS grids of noise levels as an output of the noise modelling process.

The NRA generated GIS polygon contour layers for the following decibel bands for  $L_{den}$  and  $L_{night}$ :

<b><math>L_{den}</math></b>	<b><math>L_{night}</math></b>
➤ 55-59	45-49
➤ 60-64	50-54
➤ 65-69	55-59
➤ 70-74	60-64
➤ $\geq 75$	65-69
	$\geq 70$

See Appendix 1 Glossary of acoustic and technical terms

The resultant noise maps are a visual representation of the estimated noise level bands within each action plan area.

### 1.4.3 Development of noise action plans.

#### 1.4.3.1 Purpose.

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

#### 1.4.3.2 Scope

The local authority areas covered by the noise action plans are those areas identified by noise mapping as being affected by environmental noise from the major noise sources. The action plans refer to places near the major noise sources i.e. major roads, major railways and major airports and within any relevant agglomeration. The noise from these sources is regarded as affecting an Action Plan Area if it causes either an  $L_{den}$  value of 55dB(A) or greater or an  $L_{night}$  value of 45dB(A) or greater anywhere within an area.

### **1.4.3.3 Public participation**

The Environmental Noise Directive and the Noise Regulations provide for strategic noise maps and action plans to be made available to the general public. They also provide for public consultation on proposed action plans and for the results of public consultation to be taken into account in finalizing action plans.

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

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

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

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

Over and above the statutory requirement to seek input from the public and other relevant stakeholders in preparation of the final Noise Action Plan, it is the policy of Clare Local Authorities to maintain good communication with the general public and other stakeholders in all areas. Objective 6 of the Corporate Plan (2009-2014) is "Enhancing Democracy- Work within a framework of democratic principles to facilitate optimum public participation and community involvement". One of the supporting strategies to this objective is to increase openness, accessibility and communication channels regarding Local Authority activities.

### **1.4.4 Implementation of the Action Plan**

Mitigation and protection measures detailed in Section 7 of this Action Plan will be implemented if required, on a prioritized, phased basis over the five-year life of the Plan. Monitoring measures may be undertaken where noise-mapping data must be verified by measurement prior to the implementation of any corrective action. Noise prevention measures may also be proposed for inclusion in any new Ennis and Environs Plans.

## **2.0 Existing noise management legislation and guidance**

### **2.1 National Legislation and guidance**

The Environmental Noise Regulations are concerned with community or environmental noise, which is classified in the draft I-INCE publication "A Global Approach to Noise Control Policy" as follows:

***Community/Environmental Noise***

Unwanted sound in a non-occupational setting, indoors or outdoors, caused by sources over which an individual has little or no control, including sounds produced by neighbours.

Many different noise sources contribute to community/environmental noise, including:

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

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

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

**2.2 Current Community Noise Management Situation**

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

**2.2.1 Environmental Protection Agency Act 1992**

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

- **106** gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property;
- **107** gives powers to local authorities and the EPA to serve notice to take steps to control noise;
- **108** sets out a process whereby noise issues may be taken to the District Court, which may make an order requiring that the person or body responsible for the noise takes steps to eliminate or ameliorate the noise in question. S108 enables private individuals to take a case to the courts at very low financial cost. This procedure is recommended for use by the public, particularly where the problem is caused by noisy neighbours in privately owned or rented accommodation.

In relation to general neighbourhood noise problems, Clare Local Authorities encourage complainants to exert their rights under The Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 (S.I. No. 179 of 1994), which provides straightforward access to the Courts by individual or groups concerned about excessive noise<sup>3</sup>.

### **2.2.2 IPPC and Waste Licensing**

Noise conditions are routinely imposed as part of an IPPC licence. The relevant guidance is set out in the EPA publication "*Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to scheduled activities*" published by EPA 2012. This document contains suggested noise limits of 55 dB(A) L<sub>A</sub>r,T for daytime and 45dB(A) L<sub>A</sub>eq,T for night-time; with said limits to be applied to "*sensitive locations*". Whilst these limits have a very specific application, they have appeared in many different contexts and often form the basis for conditions in planning permissions. Similar noise conditions are also imposed on waste-licensed facilities.

### **2.2.3 Waste Permitting**

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

### **2.2.4 Wind Energy Planning Guidelines**

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

### **2.2.5 Quarries and Ancillary Activities**

Section 261 of the Planning and Development Act, 2000, as amended introduced a new system of one-off registration for all quarries. Only those quarries for which planning permission was obtained in the 5-year period before S261 became operational were excluded. The Department of the Environment published guidelines for Planning Authorities for quarries and ancillary activities<sup>17</sup> in April 2004, including recommended noise conditions for inclusion as part of registration or where a full planning permission was required. A total of 208 quarries in Clare applied to register. Depending on the complexity of the quarrying operation, noise conditions were included as part of the registration process and as part of the planning process for quarry extension applications. For larger quarry operations, environmental noise conditions along the following lines have been imposed by the planning authority: *Noise emissions from the facility shall not exceed 55dB(A)LA<sub>eq, 30 mins</sub> during the daytime and 45 dB(A)LA<sub>eq, 15 min</sub> during the night time at the façade of the nearest noise sensitive locations, subject to adjustment in the event of a change in the accepted limits for industrial noise.*

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

### **2.2.6 Building Regulations**

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

### **2.2.7 Planning.**

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

The National Roads Authority has published a guidance document<sup>18</sup>, which sets out the procedure to be followed in respect of the planning and design of national road schemes.

The Department of the Environment has published the following documents relating to sustainable development in the urban environment<sup>4</sup>:

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

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

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

## **2.3 Local Planning Policy**

### **2.3.1 Clare County Development Plan 2011 to 2017**

The Clare County Development Plan (2011 to 2017)<sup>19</sup> sets out objectives in relation to transport, environment and development management which directly and/or indirectly influence the impact of noise.

Objective 9.9 a is “To ensure that all proposals for development with regard to transportation infrastructure shall comply with the provisions of the Clare Noise Action Plan 2008”.

Objective 9.9 b is “To seek to minimise noise pollution. Proposals for development will be required to demonstrate that there will be no unacceptable disturbance to the amenities of the area or to farm livestock or wildlife”.

It seeks to provide roads projects identified in Table 11.2 and ensures that such projects are designed and constructed to fulfil their intended purpose.

It promotes the use of cycling and walking as modes of transport thus reducing car usage.

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

In relation to developments alongside distributor roads, the Roads authority may recommend a setback distance of 15m from regional roads to ensure that noise levels are at an acceptable level, except for high-density urban developments, where buildings may be permitted at the inside edge of footpaths in suitable circumstances.

When the Clare County Development Plan (2011 to 2017) is up for review the guidance and objectives in relation to noise can be reviewed and amended as necessary.

### **2.3.2 Ennis and Environs Development Plan, 2008 - 2014:**

Consideration of noise issues through the planning process is also addressed in the Ennis and Environs Development Plan 2008-2014<sup>6</sup>.

Policy TR1 on page 144 deals with Alternative Modes of Transport and Smarter Travel.

Policy TR9 on page 147 deals with Promotion of Alternative Modes of Transport.

Policy TR20 on page 152 deals with Town Centre Transportation Development.

The Ennis and Environs Development Plan 2008-2014 includes a number of transport policies which should have a positive impact on long term road noise by facilitating the development of a multi faceted quality public transport system for the area and by developing park and ride facilities at key location in the Plan area, subject to the availability of finances.

When the Clare County Development Plan 2011-2017 and other relevant Development Plans are up for review again, other documents and strategies such as the Clare Noise Action Plan will inform the policy of these plans.

### 3 Description of the Action Planning Area

#### 3.1 County Clare.

Clare is located on the west coast of Ireland and is bounded to the west by the Atlantic Ocean and to the east and south by Lough Derg and the Shannon River and Estuary. The diversity of landscapes in the county range from the uplands of Slieve Aughty and Slieve Bernagh in the east across the central lowlands around Ennis to the gently sloping topography of the western side of the county. The Burren, a unique and renowned karst limestone region, is located in the northwest of the county. Land use in Clare is predominantly agricultural in nature. Approximately 10% of the land is under forestry.

#### 3.2 Population Data:

Ennis town is the largest urban centre in Clare with a population of 20,180 (2011)<sup>5</sup>. Ennis has been identified as a Hub town under the National Spatial Strategy, with the fastest growing population of the 9 designated hub towns in the country<sup>6</sup>. Shannon Town is the second largest town in the county, with a population of 9,673 (2011)<sup>5</sup>.

**Table 1: Census Data for Clare**

Year	Total Population	Rate of change in population since last census	Town	Rural
1996	94,006	+6.7	46,116	47,890
2002	103,277	+15.7	52,787	50,490
2006	110,950	+8.2	43,391	67,559
2011	117,196	+5.62	46,381	70,815

#### 3.3 Transport Infrastructure in Clare

##### 3.3.1 Road Network

There are approximately 4,142km of roads in Clare. There are two national primary routes; the N18 - Limerick to Galway Road with Motorway designation from Smithstown Interchange (near Shannon) northwards to the Galway border and the N19, from the Smithstown Interchange into Shannon airport. There are three national secondary routes in the county (N67, N68 and N85).



The majority of the road length (94%) is made up of regional and local roads, a reflection of the predominantly rural nature of the county. Traffic count data from 2011, and Jan/Feb 2012 indicated that traffic flows along all parts of the National Primary some parts of the National Secondary and regional routes were above the 3 million vehicles per annum threshold for noise mapping/action planning specified for the second round of implementation of the Regulations.

### **3.3.2 Rail Network**

Through County Clare train services operate on the Ennis to Limerick line and the Ennis to Galway line. Figures received from Iarnrod Eireann indicate that there were **7600** train movements in 2011 and **7700** in 2012. The estimated number in 2013 is 6800. These values are all below the threshold of 30,000 trains per year and therefore noise mapping/action planning is not required.

### **3.3.3 Air Transport**

Shannon airport is an international airport situated in the south of the County. There were a total of **27,000** movements of aircraft into and out of the airport in 2011, with **22,000** in 2012. These included commercial, cargo and training flights. A major airport is defined in the legislation as a civil airport that has more than 50,000 movements per year (a movement being a take-off or a landing), excluding those purely for training purposes on light aircraft. Shannon Airport flight movements are below the threshold for noise mapping/ action planning for this round.

### **3.3.4 Bus Transport**

Bus Eireann operates an express bus service between Cork and Galway that serves Ennis. Citylink operates an express bus service between Cork and Galway that also serves Ennis. Bus Eireann also provides an infrequent service from Ennis to north and west Clare and a regular service to Shannon Airport. This is the only local bus route in the Plan area with bus stops between Ennis and Clarecastle. Clare Accessible Transport and East Clare Accessible Transport are a community-based organisation that serves some of the rural parts of the Ennis area and the east of the county.

## **3.4 Extent of Action Planning Area**

The Clare action planning area is defined from the legislation as the area affected by noise from a major road carrying greater than **3** million vehicles per annum. Vehicle count data was obtained from Clare County Council's roads' surveys and NRA surveys for the M18, N18, N19, N68 and N85. The NRA data identified the M18, N18, N19, Part of the N85, and the N68 as major roads which needed to have noise mapping. Clare Local Authorities identified parts of the R445, R463, R471, R458, R352, R469, R871, R912 as roads which needed noise mapping. See more detailed descriptions in Section 1.4.1

The exact action planning area is a clearly defined stretch of these roads including lands on both sides of the road. The boundary of the lands is not defined by distance from the road noise source

but rather it is the land area defined by computer modelling to be affected by noise levels of greater than 45dB(A)  $L_{night}$  and/or 55dB(A)  $L_{den}$ .

#### **4.0 Responsible Authority for Action Planning**

##### **4.1 Name and Contact Details**

Clare Local Authorities,  
Roads Section,  
Áras Contae an Chláir,  
New Road,  
Ennis,  
Co. Clare.  
Telephone number : 065 6846479  
Fax number: 065 6821915  
Email: [roaddesign@clarecoco.ie](mailto:roaddesign@clarecoco.ie)

##### **4.2 Description of other bodies of relevance.**

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

##### **4.3 Description of noise reduction measures already in place.**

The single most effective noise reduction measure already in place in the action planning area is the construction of the Ennis bypass, which opened to traffic in January 2007. Round 1 mapping ended at Ballycorey , just north of Ennis. The N85 western relief road opened in April 2008. When the Round 1 and 2 noise maps are compared it is evident that the old N18 through Ennis, now the R458, has benefited by a reduction in noise levels of 5db  $L_{den}$  through much of its length.

Two Ennis Secondary Schools are adjacent to the old N18 and will have benefited from these noise reductions. Looking at St Flannans College , a secondary School adjacent to the R458 - old N18 , part of the School was in the 65-69 dB  $L_{den}$  band in 2008 . Note the contours are derived from 2006 traffic data. In the 2013 report ,only a very small part of the east façade is in the 60-64 dB  $L_{den}$  band with the majority of the School <55 dB  $L_{den}$ .

Therefore a significant reduction is evident.

Similarly, the majority of the Mid West Regional Hospital is now <55dB  $L_{den}$  . Parts of the building were in the 65-69 dB  $L_{den}$  band in the 2008 Plan. Again a significant reduction is evident at this sensitive location.

The Gort to Crusheen scheme opened in November 2010. This bypassed Barefield and Crusheen. Traffic calming measures have been implemented in the county as required, including at two locations on the old 18 now R458 , in Barefield and in Crusheen In addition to the primary road

safety benefit of these measures, they also effect a reduction in road noise because of the lower noise levels produced by slower moving vehicles.

Noise barriers were installed on the Ennis Bypass at Manus south of Clarecastle.

## **5.0 Summary of noise mapping results.**

### **5.1 Overview of the preparation of the noise map**

The roads identified as falling above the 3 million threshold have been listed in Section 1.4.1.

The Environmental Noise Regulations require the NRA to develop noise mapping for National roads and Clare Local Authorities are required to develop noise mapping for regional roads.

In January 2012 a centralised approach to noise mapping of roads over the 3 million threshold was adopted. The NRA developed noise maps for national roads and for regional roads the NRA developed noise mapping on behalf of Clare Local Authorities.

In Clare, vehicle counts and classifications are obtained from fourteen-hour physical traffic counts carried out at approximately sixty locations on regional and national roads in the county. This data covers the years from 1989 to present and counts are conducted every year. These counts were used initially to identify the Regional roads above the 3 million threshold. Following on from this many roads and sections of roads were eliminated from the study.

In order to get more accurate data on individual roads, particularly in Ennis, it was decided to acquire a Radar counter which would yield data on speeds as well as volumes and vehicle lengths. The existing count data would not have included information on speed. Also the 2011 data would only have existed at a number of isolated locations and would not give accurate information within the Towns. Acquisition of the counter meant that the detailed counts commenced in January 2012 and were completed in February 2012.

The list was further refined if any section fell below the threshold traffic volume. Verification using manual counting also took place. The conditions under which the counts were undertaken were taken to represent the normal situation and were converted to AADT using RT201- Expansion Factors for Short Period Traffic Counts.

Comparison of AADT for 2011 and AADT for 2012 shows only a very slight difference and therefore it is acceptable to use the count data gathered in early 2012 as it yields much more accurate results.

The strategic noise maps were prepared by the NRA using the recommended interim method of noise assessment set out in the second schedule of the Regulations. The model used was the UK national computation method "Calculation of Road Traffic Noise (CRTN), Department of Transport-Welsh Office, HMSO, London, 1998", adapted as set out in paragraph 2.1 of Annex II to the Directive. The model took account of information such as traffic flow data, vehicle type data, traffic speed, road width, road incline, road barriers and features which affect the spread of noise such as buildings and the shape of the ground (e.g. earth mounds), and whether the ground is acoustically absorbent (e.g. fields) or reflective (e.g. concrete or water).

The NRA generated GIS grids of noise levels as an output of the noise modelling process. GIS polygons were generated from the grids. The polygons are maps showing the noise contour bands in 5dB contours from 55dB to >75dB for L<sub>den</sub> and from 45dB to >70dB L<sub>night</sub>.

## 5.2 Presentation of results.

### 5.2.1 Noise Contour Maps

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

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

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

### 5.2.2 Summary Exposure Statistics

The population exposure methodology was prepared by the EPA during the noise mapping process. The method is described in “Revised Section 10 of Guidance” in Appendix II. In summary, population exposure in each noise contour band was generated by cross referencing geodirectory locations with population data to create a set of population figures for each stretch of major road in the country. A summary report was provided to each local authority to assist in preparation of the action plans. The estimated population exposure results for Clare are shown in tables 2 and 3 below.

**Table 2: Population Exposure Data, (L<sub>den</sub>)**

Decibel Level Contour	Total Residences per noise contour	Estimated Population
55 - 59	1400	3300
60 - 64	1000	2200
65 - 69	800	1700
70 - 74	300	500
> 75	6	16

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

<b>Decibel Level Contour</b>	<b>Total Residences per noise contour</b>	<b>Estimated Population</b>
50 - 54	-	2400
55 - 59	-	1900
>50	2379	
60 - 64	-	700
65 - 69	-	28
>60	452	
> 70	0	0

The total action plan area is subdivided approximately as follows:

>55dB  $L_{den}$  46 km<sup>2</sup>

>65dB  $L_{den}$  12 km<sup>2</sup>

>75dB  $L_{den}$  2 km<sup>2</sup>

The NRA was the source of above data.

### **5.3 Limitations of the noise mapping process.**

#### **5.3.1 Limitations of the computer modelling method**

The data used to generate the noise maps was obtained from computer modelling rather than from actual noise measurement. This approach is in accordance with the Noise Regulations. There are technical and practical reasons for using computer modelling in preference to noise measurement to produce noise maps<sup>10</sup>: Noise levels at each monitoring location will generally result from a combination of different sources and physical measurement would not allow for the specific contribution from road noise to be determined. Furthermore, to produce a map based on measurements would require a large number of measurements to be made at each location over extended monitoring periods, at prohibitive expense.

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

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

#### **5.3.2 Limitations of the vehicle count data**

The noise mapping produced is based on counts taken in 2011 and Jan/Feb 2012. These counts will have to be repeated each year to ascertain if volumes are increasing or decreasing in each subsequent year.

## **6 Identification of areas to be subjected to noise management activities**

### **6.1 Assessing and prioritising actions.**

There are no statutory limits in place in relation to environmental noise exposures at EU or national level. The EPA recommends<sup>4</sup> that the proposed onset levels for assessment of noise mitigation measures for noise due to road traffic should be as follows:

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

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

- 55dB,  $L_{den}$  and
- 45dB,  $L_{night}$

In order to focus resources on areas in most need of improvement, a decision matrix will be applied, based on work carried out by Dublin Agglomeration<sup>11</sup>. See Table 4 below. The final matrix score is determined based on three variables:

- 1. The calculated environmental noise level from the noise mapping data.**
- 2. The type of location e.g. town centre, commercial, residential.**
- 3. The noise source i.e. road**

#### **1. Calculated environmental noise level.**

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

#### **2. Type of location.**

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

#### **3. Noise Source**

In Clare, the noise source is the same for all assessments i.e. noise from major roads.

It has been suggested in EPA Noise Guidance Document<sup>4</sup> that each Action Planning Authority may impose an additional weighting factor to the matrix to include the number of residents at each address. However Clare Local Authorities does not propose to impose this additional weighting for the following reasons:

- The number of residents at a particular location may change with change of ownership.
- While there may be only one or two residents at a particular address, their lifestyle habits may be such that they spend considerably more hours around the home than for example a large family where the adults are at work all day and children are at school.

Data obtained from the matrix tool will enable Clare Local Authorities to prioritise actions. A matrix assessment score of **17** or greater will be taken to indicate that the threshold levels may have been exceeded and that the location should be included in the shortlist for further assessment.

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

Priority Matrix				
Location		Eg. School Main Street		
Decision Selection Criteria		Score Range	Score Range	Sub Total
		L <sub>den</sub>	L <sub>night</sub>	
Noise Band	45-49	4	5	
	50-54	3	4	
	55-59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	75-79	4	6	
	>/=80	5	7	
Type of Location	Town centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive	3	3	
	Open countryside	3	3	
	Recreational open space	2	2	
Type of noise source				
	Road	3	4	
		<b>Total score</b>		

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

A quiet area in open country is defined as an area delimited by the action planning authority following consultation with the agency and approval by the minister, that is undisturbed by noise from traffic, industry or recreational activities. At present, there are no such areas identified in Clare for which noise mapping has been carried out therefore quiet areas are not relevant to this action plan.

Noise Sensitive locations are locations for which a quieter noise environment is preferable for effectively carrying out the functions of the particular location. They include schools, libraries, hospitals, nursing homes, funeral homes, churches and other places of worship.

Decision support Matrix 'B' can be applied - see Table 5 below - to identify noise sensitive locations, recreational open spaces or quiet areas for which mitigating measures may be required to preserve a good quality noise environment.

**Table 5. Matrix B: Decision Support Matrix to preserve quiet areas**

Priority Matrix				
Location				
Decision Selection Criteria		Score Range	Score Range	Sub Total
		L <sub>den</sub>	L <sub>night</sub>	
Noise Band	<45	0	0	
	45-49	1	2	
	50-54	2	3	
	55-59	3	4	
Type of Location	Noise Sensitive	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>		

The noise maps will be examined to identify any noise sensitive locations situated within the action planning area. Any noise sensitive locations identified will be tested against Matrix 'A' –Table 4 above - to establish whether mitigation measures need to be carried out to improve the existing noise situation. They will also be tested against Matrix 'B' to identify whether protective measures need to be taken to preserve the quiet environment at these locations.



## **7. Mitigation and Protection Measures:**

### **7.1 The Source of Road Noise.**

The level of environmental noise generated by a particular road is dependent on a range of factors including the number and type of vehicles, the speed of the vehicles, the road surface and the incline. The extent to which the noise travels from the road is affected mainly by the following parameters: distance, weather, the presence of acoustic barriers, buildings, road width, road incline, nature of the topography and whether the ground is acoustically absorbent or reflective. The most significant factor in terms of noise generation is the noise produced by the vehicle. Vehicle noise arises from three sources:

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

Engine noise is the dominant source at lower speeds (under 30kph for passenger cars/under 50kph for lorries), tyre/road noise dominates above that and aerodynamic noise becomes louder as a function of the vehicle speed<sup>12</sup>.

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

The EU noise limits are a valuable tool for ensuring that noise emissions are minimized for new vehicles. However they only apply to new vehicles. As vehicles age, the level of noise produced by the engine increases with wear and tear on the parts but there is presently no requirement in Ireland to assess noise emissions from older vehicles. Another practical limitation to the noise emission limits is that while a newly purchased vehicle may comply with its emission limit, modifications to or removal of the vehicle silencer will result in an excessively noisy vehicle. Installation of a sports exhaust on a vehicle is not illegal at present and is a major contributor to nuisance noise from road vehicles.

Tyre rolling noise emissions have increased over time, predominantly due to the trend towards wider and heavier tyres. Tyre/road contact begins to dominate the noise emission above 30km/h for passenger cars and above 50km/h for lorries. For this reason, it was deemed necessary to regulate tyre/road noise separately at EU level.

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

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

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

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

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

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

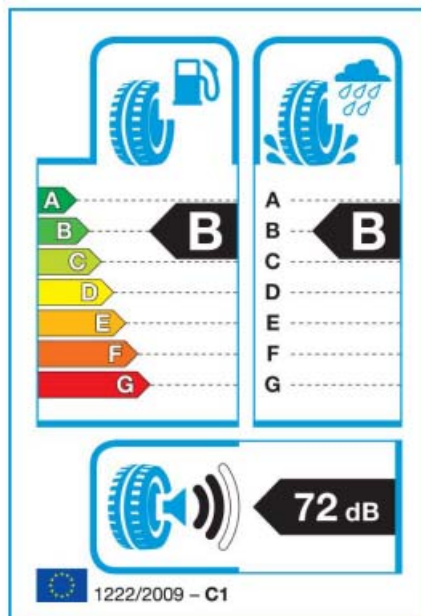


Figure x.x: Example of EU Energy label for tyres

**7.2 Measures To Reduce Noise From Major Roads.**

**7.2.1 Existing Developments.**

There are a limited number of approaches that can be taken to reduce noise from major roads for *existing* dwellings:

Relocating the road away from high-density settlements by the construction of a Bypass is obviously the most effective method of minimizing the numbers of dwellings likely to be affected by the road noise. This mitigation measure has been implemented in Clare with the opening of the Ennis Bypass and Western Relief road. Noise barriers were installed at a number of locations. Where areas are identified by further assessment as requiring possible mitigation, it may be

possible to install noise barriers on major roads away from residential areas (where pedestrian access is not an issue).

Traffic calming measures can be employed where the major road passes through a built-up area.

Changes to the road to use low noise surfaces may be appropriate in some instances.

Improved insulation will reduce noise levels within dwellings but this is only effective when windows are kept closed.

### **7.2.2 Future Developments.**

The measures available for the protection of future developments from exposure to noise from major roads include acoustical planning measures in land use zoning and development layout, design and specifications, such as: locating residential developments away from major roads; using the lands around major roads feeding into towns for commercial/industrial development; incorporating noise issues into the design of housing developments by locating the access roads and green areas on the major road side of the development, thus increasing the separation distance between the houses and the roads; using a higher standard of insulation for new dwellings adjacent to major roads and also using higher standards of insulation for the exposed façades of new dwellings. These are acoustical planning measures although not all are within the control of the pa.

## **7.3. Proposed Measures For Clare Action Planning Area**

### **7.3.1 Mitigation Measures:**

Residences located within the action planning area will be tested using the decision matrix - Matrix A - to prioritise areas for which further assessment may be required. Some Schools and residential streets were assessed using this Matrix A and some scores were found to be 17 and higher.

Reducing traffic density is the most effective way to reduce road noise emissions. Clare Local Authorities will strive to reduce traffic density on a countywide basis by:

- **Promoting Public Transport:**

Objective 11.9 of the Clare County Development Plan 2011 to 2017 deals with the rail network.

**11.9 a** is "To support and facilitate the expansion of the rail network and the opening/reinstating of railway stations on the Western Railway Corridor within County Clare and in particular Crusheen"

**11.9 b** is "To support the improvement and upgrading of the existing rail infrastructure and rail services and to protect lands adjacent to rail stations against encroachment by inappropriate uses that could compromise the long term development of the rail facility."

**11.9 c** is "To identify and safeguard land required for the development of rail infrastructure including bridges, stations and goods terminal and areas necessary fo the development of the rail facility".

A new pedestrian bridge is currently under construction closed to Ennis Bus and Train Station. This may encourage higher usage of the Bus and Train facilities as access will be greatly improved.

Objective 11.11 of the Clare County Development Plan 2011 to 2017 deals with the proposed Shannon Rail Link.

**11.11** is "To permit developments within the selected proposed route of the Shannon Rail Link where it is demonstrated that such developments will not inhibit the future development of the selected route as a rail link."

Objective 11.12 deals with Bus Services.

**11.12** is "To support the provision of more regular and efficient bus services throughout the County and to encourage private/ public partnership in the provision of more widespread rural bus services".

Objective 11.13 deals with Bus Facilities.

**11.13** is "To facilitate the creation of bus corridors, integrated bus transportation stations, and bus parking facilities within settlements and at tourist attractions, throughout the County".

A bus parking facility was constructed in Ennis town centre in 2012.

Objective 11.14 deals with Community Transport.

**11.14** is "To work with others to encourage and promote a sustainable community based transport scheme that will enable access to service centres for all members of the community in the County. A bus transport scheme called "East Clare Accessible Transport" already exists in Clare.

- **Promoting cycling and carpooling**

Smarter Travel is promoted in Clare via a dedicated Sustainable Travel Officer in the Road Design Office who coordinates funding applications for Smarter Travel projects; manages Smarter Travel projects during construction and helps to incorporate National policy in Local Development plans as well as promoting the sustainable modes of travel such as cycling, walking, car sharing and public transport.

Clare County Council is also involved in promoting Smarter Travel Workplaces which is a process whereby large employers create Travel plans for their organisations and work premises. It strives to implement sustainable travel options for people coming to and from work and also for travel within work time with initiatives such as eco-driving, car sharing clubs, promotion of cycling, walking and public transport options.

- **Future development of Park and Ride facilities at key location in Ennis and its environs (subject to the availability of finances).**

- **Improved traffic management and smoothing traffic flows.**

Improvements to traffic management are proposed as follows in Ennis:

- Pedestrianisation of some town centre streets.
- Designation of cycle routes.
- Use of one-way systems.
- Modifications to junction types.

Where appropriate, new traffic calming areas will be designated and existing traffic calming measures will be optimised.

Clare Local Authorities will consider improvement or changes to road surfaces during routine road maintenance, where necessary, by:

- Improving the quality of road surfaces by ongoing road maintenance programmes.
- Using low-noise road surfaces where appropriate.

Where relevant, Clare Local Authorities will investigate the feasibility of extending speed limit zones. For major national roads, this would be done in consultation with the NRA.

Clare Local Authorities will ensure that council-owned fleet vehicles are maintained to an adequate level to minimise unnecessary noise generation. Consideration will be given to using quieter vehicles such as electric rather than diesel.

### **7.3.2 Protection Measures for future improvement:**

Clare Local Authorities will endeavour to utilise the planning process as necessary:

- To incorporate the aims of the present and future noise action plans into the county development plan and into relevant local area plans, protecting larger areas from road noise. Special consideration should be given to zoning objectives, speed limits and established settlements within the area.
- Developers are encouraged (or required at the discretion of the Planning Authority) to produce a sound impact assessment and implement mitigation measures as follows:
  - *For new developments proposed within the current action planning area or*
  - *For developments proposed near major roads (i.e. traffic volumes in excess of 3 million vehicles per annum or otherwise on a case by case basis).*
- Where developments are planned adjacent to major roads, to incorporate acoustical planning into the development design e.g. designing the development so that the access road is adjacent to the major road noise source. It may also involve the use of buffer zones and/or noise barriers and traffic calming measures.
- To ensure that all future developments are designed and constructed so as to minimise noise disturbance.

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

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

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

The powers of the Planning Authority to impose the above measures are restricted by the provisions of the existing Planning Acts.

Protection measures for future improvement may also include extending speed limit restrictions around built-up areas.

### **7.3.3 Monitoring Measures:**

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

Clare Local Authorities will endeavour to ensure that sufficient traffic count data collected on a continuous basis.

### **7.3.4 Consultative Measures**

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

These areas may include:

- i. Liaising with the NRA to extend speed restriction zones for national roads passing through built-up areas. Of relevance to the present and future action planning areas.
- ii. Liaising with the NRA to impose set back distances for developments alongside national roads.
- iii. Consult with the Department of Environment, Community and Local Government regarding present restrictions on Planning Authorities in relation to the imposition of planning measures to address noise in the assessment of applications.

- iv. Recommend to the Planning Authority that measures proposed in this action plan be included in the Clare County Development Plan and in relevant Local Area Plans.
- v. Recommending to the Department of Transport, Tourism and Sport that noise monitoring be incorporated as part of the NCT and DOE commercial vehicle tests. Wear and tear on a vehicle will increase noise emissions and should be addressed in vehicle testing. A vehicle with a missing or defective silencer will not pass the NCT test. However a vehicle with a modified exhaust (approved sports exhaust) will pass the test unless the air emission limits are exceeded.
- vi. Recommending to the Department of Transport, Tourism and Sport that modified sports exhausts be made illegal for normal road use. This recommendation will obviously have resource implications for the Gardai in terms of enforcement.
- vii. Possibly recommending to the Department of Justice that An Garda Síochána be provided with noise testing instrumentation for roadside checks (of limited effectiveness without supporting legislation and emission limits – recommendation (vi) above would be easier to enforce and also more effective).
- viii. Liaising with the EPA to establish limit values for community noise.
- ix. Recommending to the Department of Transport, Tourism and Sport that tighter tyre rolling noise limits should be implemented at EU and national level.

## **8. Public Participation.**

The purpose of the Public Consultation is to allow for public participation in preparation and review of the Clare Noise Action Plan. The Draft Clare Noise Action Plan 2013 was advertised. The draft plan was made available for inspection in public libraries in Ennis, Shannon, Kilrush and Newmarket on Fergus. It was also published on the Clare County Council website [www.clarecoco.ie](http://www.clarecoco.ie). A newspaper notice was placed in the Clare Champion inviting submissions from the general public. Submissions/comments were made in writing and addressed to:

Acting Administrative Officer,  
Roads Section,  
Clare County Council  
Áras Contae an Chláir,  
New Road,  
Ennis,  
Co. Clare.

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

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

- Department of Transport, Tourism and Sport
- Department of Environment, Community and Local Government
- National Roads Authority

- Environmental Protection Agency
- Irish Aviation Authority
- Tipperary NR County Council
- Limerick County Council
- Galway County Council
- Strategic Policy Committee on Environment and Consumer Protection.

Clare Local Authorities did not deem it relevant or necessary to undertake a strategic environmental assessment of the Draft Noise Action Plan 2013 during the Public Consultation period.

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

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

The finalised Clare Noise Action Plan 2013 will be published. A newspaper notice will be placed in the Clare Champion advertising the fact that the Clare Noise Action Plan 2013 is available.

Copies will be made available for inspection in the public libraries in Ennis, Shannon, Kilrush and Newmarket on Fergus. It will also be published on the Clare County Council website [www.clarecoco.ie](http://www.clarecoco.ie).

## **9. Implementation Programme**

### **9.1 Roles and Responsibilities**

Under the Environmental Noise Regulations, 2006, the National Roads Authority (NRA) is the noise mapping body for major national roads in Clare. Clare Local Authorities are the noise mapping body for major non-national roads in the county. Clare Local Authorities are the Action Planning Authority for major roads in Clare. The volumes of rail and air traffic in the county are below the thresholds for noise mapping and so the Regulations do not apply to these areas at present.

Clare Local Authorities are responsible for preparation of this noise action plan and for meeting the stated objectives of the plan, including implementing measures to improve existing noise levels at a local level (if appropriate) and identifying and implementing measures for the protection of the future environment from road noise. Clare Local Authorities are also responsible for identifying major non-national roads that fall under the second phase of implementation of the regulations (i.e. more than 3 million vehicles per annum) and ensuring that noise mapping is carried out for these roads. The NRA is the noise mapping body for major national roads under this second phase of implementation of the regulations on behalf of Clare Local Authorities.

### **9.2 Targets and Objectives:**

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

The 2008 Action Plan included a Programme of works for 2008 to 2012.

The matrix assessment method to identify possible areas for further assessment was not carried out in Programme year one to two, 2008 to 2009. It is understood now that this was as a result of



lack of budget and resources. As a consequence therefore no locations for monitoring were identified and monitoring did not take place.

The road, rail (for Limerick Ennis-Galway line) and air traffic (for Shannon Airport) data collection elements of the programme were implemented.

Cooperation with the EPA and NRA in the production of the Noise Mapping and draft Noise Action Plan 2013 also took place.

### **9.3 Programme of Works**

#### **Year one to two (2013 to 2014):**

Apply the matrix assessment method described in section 6.1 to identify from noise maps specific areas for which further assessment may be warranted (i.e. monitoring).

#### **Year Two (2014):**

Initiate monitoring in specific areas if required, to determine existing noise levels in dB(A). Identify appropriate mitigating measures for specific locations for which corrective measures are required.

Undertake consultative measures outlined in 7.3.4 above.

#### **Year three to four (2015 to 2016):**

Commence implementation of the relevant actions as outlined in section 7, where necessary.

Ensure that adequate traffic flow data is collected for all roads in the county.

Communicate with Shannon Airport Authority to receive updates on flight numbers.

Communicate with Iarnrod Eireann to receive updates on rail transport figures.

The Road Design Section has placed the 2013-2014 work elements into its Programme.

### **9.4 Evaluation, Review and Corrective Action Programmes**

#### **9.4.1 Ongoing Review**

Progress will be reviewed against the programme of works on an annual basis. An annual interim summary report will be prepared. This report will highlight progress in implementation of action plan measures and will also identify areas where corrective action is required or where the proposed measures must be modified for presently unforeseen reasons.

#### **9.4.2 End of programme review**

An end-of-programme review of the action plan will be prepared by **December 2016**. This review will summarise progress in implementing measures, identify the extended noise mapping/action planning area, highlight aspects of the original action plan which were modified, giving reasons for the modification and recommend measures for future improvement.

## 10. Financial Provisions

### 10.1 Budgetary Provisions.

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

### 10.2 Cost Benefit Analysis.

Evaluation of the impact of noise nuisance is complicated because noise nuisance is subjective; it is largely related to the type of noise, the source of the noise and whether it is welcome or unwelcome, and background noise levels in the environment. Responses to noise from the different transport sources can vary considerably<sup>14</sup>. Assessing the impact of mitigating measures to address noise nuisance is further complicated because noise is measured on a logarithmic scale and human perception of loudness does not directly coincide with increased sound pressure levels (e.g. a 3dB increase in noise, which represents a doubling in sound pressure level, is the smallest statistically significant increase in loudness detectable by the human ear). To reduce the subjective "loudness" of a noise source by 50% would require a 10dB drop in noise level and may be very difficult to achieve without major investment in noise mitigation. Assigning a monetary cost to the noise nuisance can enable cost benefit analysis to be used as a decision support tool in determining what (if any) noise mitigation measure is to be implemented.

The position of the EC working group on health and socio-economic valuation of noise<sup>15</sup> recommends the following in relation to road noise:

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

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

## 11. SUMMARY AND CONCLUSIONS

The Clare Local Authorities Action Plan addresses road noise from

- the M18 motorway from Smithstown Interchange to Galway border
- the N18 from Limerick border to Smithstown Interchange
- the N19 from Smithstown Interchange to Shannon Airport entrance
- the N68 from Ennis to Kilrush
- A section of the N85 from Killow Interchange via Lehinch Road Roundabout, Ennis to the N85 junction with the R476
- R445 - from Limerick border to N18 junction (old N18)
- R463 - from Limerick border to R463/R465 junction
- R471 - Shannon Town Centre Roundabout to Ballycasey Roundabout (old N19)
- R458 - R458/N85 Clareabbey Roundabout to Ballycorey Junction through Ennis (old N18)
- R352 - R352/N85 Claureen Roundabout to R352/R458 Maid of Erin Roundabout
- R352 - R352/R871 Junction to Ballymacahill Cross
- R469 - Ennis Cathedral to Junction to Industrial Estate
- R871 - R871/R458 Junction to R871/R352 Junction
- R912 - Abbey Street in Ennis

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

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

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

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

Noise maps were prepared for major roads in Clare based on a road noise computation model run by the NRA. These maps present calculated environmental noise levels from major roads in coloured noise contour bands from 55dB  $L_{den}$  and 45dB  $L_{night}$ , to greater than 75dB  $L_{den}$  and greater than 70dB  $L_{night}$ , in 5 dB bands.

The noise maps for Clare were prepared based on the roads network in place in the county in 2012. The NRA has estimated that a total of 32,136 individuals are resident within the noise mapping/action planning area.

In terms of management of *existing* road noise, the first action proposed under the current plan is to use a decision matrix to identify areas for possible further assessment. Where further assessment indicates that noise mitigation may be required, this will be carried out on a prioritized basis, applying cost benefit analysis to any proposed measures. The monetary benefit of noise mitigation will be calculated from the figure of €25 per dB ( $L_{den}$ ), per household per year.

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

## **Appendix I**

### **Glossary of acoustic and technical terms**

## Glossary

**Acoustical Planning:** Controlling future noise by planned measures such as land-use planning, systems engineering for traffic, traffic planning, abatement by sound-insulation measures and control of noise sources.

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

**Decibel (dB):** A unit of measurement of sound. When measuring environmental noise, an “A” weighting network is used (called dB(A)) which filters the frequency of the sound to mimic human hearing, which is most sensitive to frequencies between 500Hz and 5,000Hz. The decibel scale is logarithmic. If two noise sources emit the same sound level (eg 80dB(A)), the combined sound level from the two sources is 83dB(A) and not 160dB(A).

The human perception of “loudness” is that a 10dB increase in sound level is perceived as being twice as loud. A 3dB increase, which is a doubling of the sound level, is perceived as a barely perceptible change in loudness.

A decibel level of zero represents absolute silence. A level of 140dB(A) would cause ear pain.

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

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

**Daytime:** Between the hours of 7am and 7pm

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

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

**Environmental Noise:** Shall mean unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity such as integrated pollution prevention and control licensed industries.

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

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

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

**L<sub>day</sub>:** (day-noise indicator) shall mean the noise indicator for annoyance during the day period. This is the average value in decibels for the daytime period

**L<sub>evening</sub>:** (evening-noise indicator) shall mean the noise indicator for annoyance during the evening period. This is the average value in decibels for the evening time period.

**L<sub>night</sub>:** (night-time noise indicator) shall mean the noise indicator for sleep disturbance. This is the average value in decibels for the nighttime period

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

**Major railway:** A railway line, which has more than 30,000 train passages per year.

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

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

**Noise annoyance:** Noise annoyance is defined by the World Health Organisation (WHO) as 'a feeling of displeasure evoked by noise'<sup>16</sup>.

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

## **Appendix II**

### **Summary of method used to generate County-specific statistics of population exposed to noise from roads**



## Summary Information on method used to generate County-specific statistics of population exposed to noise from roads.

### 10 Stage 7 –Post Processing and Analysis

After the completion of the noise calculations the noise level results are available as derived datasets from the noise modelling process.

The noise results generated can now be mapped, presented graphically, and used as the basis for supplementary analysis in order to derive the required information for reporting to the Commission.

#### 10.1 Reporting Requirements

As mentioned within the EPA Guidance the precise content of the reports to be submitted to the EC and EEA are not yet finalised. The EPA is awaiting publication of the Handbook for the revised EEA Reportnet Reporting Mechanism which is expected in May 2012, prior to finalising the reporting requirements for the noise mapping bodies.

#### 10.2 Requirements of the Directive

Annex VI of the END requires that “the estimated number of **people** living in dwellings” exposed to various noise levels “4 m above the ground on the **most exposed façade**” is provided for various scenarios.

For this reason it is necessary to more clearly define the terms “people”, “dwellings”, and “most exposed façade”.

For the purposes of the statistics required by Annex VI, persons (or people) can be defined as “human” beings, thus being consistent with the scope of the END defined in Article 2, paragraph 1. They are members of “the public” as defined in Article 3 (v) as “one or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups”.

The term “population” is not referred to in the END, and is only a convenient means of referring to the exposure assessment, which as noted above is for “the estimated number of people living in dwellings”. It should be noted that the estimation of the number of people living in dwellings does not directly assess the exposure of people, as individuals move around; rather the exposure assessment is carried out upon the building/dwelling in which people normally reside. In the assessment there is no attempt to reflect the temporal dimension of the movement of population in this exposure assessment.

The CSO defines dwellings as “any building or structure, permanent or temporary created or used for private or communal human habitation or part of such a structure (e.g an apartment)”. CSO divides dwellings into “Private Dwellings” which can include houses, bungalows, flats, apartments, bedsits, houseboats, mobile homes and caravans; and “Non-private Dwellings” which can include educational establishments, prisons, hotels, boarding houses, hospice, campsite, hostel and civilian ships.

Importantly, the use of “dwellings” within the END indicates that vacant or unoccupied dwellings should be included within the assessment of exposure of dwellings, but not within the assessment of exposure of people if the dwellings are known to be vacant, as this is contra to the phrasing used, e.g. “how many persons in the above categories live in dwellings that have” and “The estimated total number of people (in hundreds) living in dwellings”. For this reason the revised approach set out below will provide two approaches to identifying dwellings, one including vacant

dwellings, to be used in the dwelling exposure assessment, and the other which excludes them, for use in the assessment of numbers of people living in dwellings.

The term "building" as used by CSO is not referred to directly in the context of the exposure assessments required by Annex VI. A building may contain zero, one or more individual dwellings. Residential buildings can therefore be considered to be those buildings containing one or more individual "Private dwellings". Noise-sensitive buildings may be considered those buildings which contain "Non-private dwellings", or which have uses which the competent authority deems to be noise sensitive, such as libraries etc. The façades of a dwelling shall consist of all externally facing walls. Annex I, 1 defines the Lden using the stated formula, and in which: "the incident sound is considered, which means that no account is taken of the sound that is reflected at **the façade of the dwelling under consideration**". This indicates that the subsequent references to façade indicate **the façade of the dwelling under consideration**. Which would be consistent with Annex III regarding dose-response relationships: "dwellings with a quiet façade as defined in Annex VI".

Regarding the most exposed façade Annex I, 1 states: "the most exposed façade; for this purpose, the most exposed façade will be the external wall facing onto and nearest to the specific noise source; for other purposes other choices may be made". Subsequent practical experience has demonstrated that selection of the most exposed façade based upon distance may lead to contradictory situations. For this reason a revised definition is proposed: "the most exposed façade will be the external wall of the dwelling exposed to the highest value of Lden/Lnight from the specific noise source under consideration (e.g. road traffic)." The proposed definition is also more consistent with the existing definition of quiet façade.

Regarding quiet façade, Annex VI, 1.5 states: "a quiet façade, meaning the façade of a dwelling at which the value of Lden four metres above the ground and two metres in front of the façade, for the noise emitted from a specific source, is more than 20 dB lower than at the façade having the highest value of Lden." This makes determination of the presence of a quiet façade more complex as it necessary to determine the noise exposure at a different distance from the façade of the dwelling than for the most exposed façade. As the reporting of quiet facades is optional, it is not currently proposed to determine the presence of quiet facades.

### **10.3 Relevant Input Datasets**

Given the above definitions the input datasets required to undertake the required assessments may be identified.

#### ***Central Statistics Office***

CSO publish statistical information on population based upon Census returns. The most recent Census was held on 10 April 2011, and the preliminary information is currently available, with the final information currently expected to be available at the end of March 2012. 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. Data is not made available at Census Output Area level; rather these are merged up to the Electoral Division (ED) level which provides for the highest level of resolution available to the location of the population. There are approximately 3750 ED covering Ireland.

In order to provide an accurate spatial location for the population within each ED it is necessary to have an up to date map of ED areas which matches the ED codes within the population exposure statistics report. At present the readily available ED

boundary dataset does not match the population statistics spreadsheet, which will introduce errors into the geocoding of the population statistics. CSO have provided the EPA with an ED dataset which has the population data already assigned with the PERSONS\_2011 attribute containing the total number of people per ED.

**Proposal:** When the 2011 Census data is finalised by CSO, the EPA will request a finalised dataset for ED areas with the population data already assigned by CSO. This will provide the most detailed population distribution data direct from source, assigned to a consistent ED dataset and provide a reference for the exposure assessment.

With the number of people per ED area provided by CSO, it is now necessary to establish which buildings contain dwellings, and the total number of people living within those dwellings.

### **GeoDirectory**

The GeoDirectory data products are developed by OSi and An Post to provide a single point location object for each building in Ireland. The complete dataset is available with the "GeoAddress Locator" product, and each point location has a number of attributes which may be useful in identifying both vacant and occupied dwellings, for both CSO style private and non-private use categories.

GeoDirectory is updated quarterly. The most recent updates were published as:

Q4 2010 on 27th Jan 2011;

Q1 2011 on 8th April 2011;

Q2 2011 on 25th July 2011;

Q3 2011 on 24th October 2011;

Q4 2011 during January 2012; and

Q1 2012 is expected during April 2012.

Ideally, all the source datasets used as the basis of the assessment would be related to the same date in time, with all data correct and relevant as of that date, in order to minimise temporal mismatches between the datasets.

**Proposal:** Discussions with GeoDirectory have led to the conclusion that the dataset released from Q2 2011 release from 25th July 2011 provides the closest match to the Census date of 10th April 2011, it is therefore proposed to use this version of the dataset for the assessment of exposure.

As GeoDirectory provides a location point for each building, it is necessary to undertake a filter procedure in order to identify the two location datasets required for the assessment, namely:

Point locations for buildings containing dwellings, and

Point locations for buildings containing occupied dwellings.

The highest level of resolution within GeoDirectory is within the ADDRESS\_POINTS table, which has a many-to-one link to the BUILDINGS table i.e. there can be many address points within one building, and one building may contain one or many address delivery points.

The number of linked address points is provided by the RESIDENTIAL\_DELIVERY\_POINTS and COMMERCIAL\_DELIVERY\_POINTS attributes within the BUILDINGS table. The RESIDENTIAL\_DELIVERY\_POINTS have a blank entry in the ORGANISATION attribute within the ADDRESS\_POINTS

table, whereas the COMMERCIAL\_DELIVERY\_POINTS have an entry in the ORGANISATION attribute within the ADDRESS\_POINTS table. The ADDRESS\_POINTS table also has a VACANT attribute for each of the entries, whether they are commercial or residential.

As the noise level assessment is undertaken at the façade of the building object, it is appropriate to work from the BUILDINGS table as it provides the information relevant for the assessment, i.e. the number of residential delivery points within the building, and has the advantage that there should only be one single BUILDINGS\_ID per building in OSi Large Scale.

In order to produce a location dataset of "RESIDENTIAL\_BUILDINGS", the following filters should be applied to the GeoDirectory BUILDINGS table:

BUILDING\_USE – filter out all C (commercial) and U (unknown);

DERELICT – filter out all Y (yes);

INVALID – filter out all Y (yes);

UNDER\_CONSTRUCTION – filter out all Y (yes) entries; and

RESIDENTIAL\_DELIVERY\_POINTS – filter out all 0 (zero) entries, as they do not have any residential delivery points.

The resultant dataset contains the location points for all residential buildings, whilst the RESIDENTIAL\_DELIVERY\_POINTS attribute provides the total number of residential dwellings within each building.

In order to create a location dataset of "OCCUPIED\_RESIDENTIAL\_BUILDINGS" a two step process needs to be undertaken. First it is necessary to determine the number of occupied residential delivery points within each building. For each BUILDING\_ID within the "RESIDENTIAL\_BUILDINGS" dataset, the ADDRESS\_POINTS table should be queried, and the entries with blank ORGANISATION attributes and N in the VACANT attribute summed per building and the total value per BUILDING\_ID assigned to the new OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS attribute within the "RESIDENTIAL\_BUILDINGS" dataset.

The "OCCUPIED\_RESIDENTIAL\_BUILDINGS" dataset should then be created by running the following filter on the "RESIDENTIAL\_BUILDINGS" dataset:

OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS > 0 (zero)

The resultant dataset contains the location points for all occupied residential buildings, whilst the OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS attribute provides the total number of occupied residential dwellings within each building.

**Proposal:** GeoDirectory BUILDINGS and ADDRESS\_POINTS tables are to be processed as described to produce two location datasets of "RESIDENTIAL\_BUILDINGS" and OCCUPIED\_RESIDENTIAL\_BUILDINGS".

#### ***OSi Large Scale***

The GeoDirectory data product is stated as being sourced initially from the OSi Large Scale Map Database, with geocoding validated against OSi Large Scale maps by An Post staff.

OSi Large Scale is made up of three data products which have different scales and update cycles, but the same object layers. OSi Large Scale is produced in three different scales:

1:1,000 scale in urban areas;

1:2,500 scale in suburban and periurban areas; and

1:5,000 scale in rural areas.

Licensees are delivered updates on a rolling cycle:

1:1,000 scale is updated annually for each licensee

1:2,500 scale is updated every 3 years for each licensee

1:5,000 scale is updated every 5 yearly for each licensee

In addition to these aspects, the process of polygonising the Large Scale vector datasets is currently incomplete. In some areas Large Scale is made up of polygon objects, in other areas the vector product continues to be a CAD-style line dataset.

Within the areas of noise mapping it is necessary to have building polygon objects in order to successfully undertake the noise calculations. Detached, semi-detached and terrace properties should have each unit described as a separate polygon i.e. a semi-detached building is two adjoining polygon objects, a row of terrace properties is a series of adjoining polygon objects. The areas of noise mapping may encompass urban, suburban, periurban and rural locations, therefore it may be necessary to use a collection of different Large Scale data products at 1:1000, 1:2500 and 1:5000 to cover the entire mapping area.

Ideally all the building footprints would be available as individual building polygons, and spatial GIS processing tools could then connect the GeoDirectory building points to the Large Scale building footprints. At present it is thought that to achieve a building footprint dataset of this type of national coverage would require significant processing and data preparation along with an appropriate quality assurance procedure.

Within Large Scale the building footprints are thought to be described within the following layers:

INN\_WALLS – Inner walls of buildings

SOLID – Outline of solid buildings

PECK – Outline of pecked buildings

DW\_HOUSE – Outline of dwellings

BLD\_ANTIQ

BLD\_COASTL

BUILDINGS

MBARRACKS

MBUILDINGS

For consistency with Census and GeoDirectory it is recommended that the most recent OSi Large Scale datasets should be used:

1:1,000 data should be less than 12 months old as of 31st March 2012;

1:2,500 data should be less than 3 years old as of 31st March 2012; and

1:5,000 data should be less than 5 years old as of 31st March 2012.

**Note:** the 31st March was chosen to relate to the expected publication data of 2011 Census data.

From the source datasets the above layers should be extracted from Large Scale and merged into a LARGE\_SCALE\_BUILDINGS dataset. This dataset may then be clipped to the mapping extents, and should be checked and processed to ensure that all building objects are polygons.

CSO provide ED areas with no. of people assigned GeoDirectory Q2 2011 Filter BUILDINGS table RESIDENTIAL BUILDINGS Query ADDRESS table for Non-Vacant RDPs, and filter RESIDENTIAL BUILDINGS table OCCUPIED RESIDENTIAL BUILDINGS Osi Large Scale Extract building footprint layers LARGE SCALE BUILDINGS Exposure Assessment Procedure

**Figure 10.1:** Summary of input dataset processing

#### 10.4 Noise Grid Processing

The grids of noise assessment results delivered from the noise mapping software may have a number of aspects which require attention prior to the processing of the various stages of statistical analysis.

Noise results grids may contain:

Empty grid points or default data values for grid points located inside buildings where an assessment of noise level is not considered appropriate;

Default data values for grid points located outside the boundary of the area to be mapped; and

Result values to more than two decimal places.

To prepare the grids of noise results, it is recommended that the results files are verified, and relevant pre-processing undertaken:

Interpolation of grid values to assign indicated noise levels to points with blank or default values to produce a "seamless" results grid;

Rounding of the results to two decimal places; and

Masking of the seamless results grids to the extent of the area to be mapped.

These processed noise results grid files may then be used for the following:

Production of 5dB noise contour bands for graphical mapping of results; and

Production of reclassified grids into a set of 5dB categories.

o The reclassified grids are produced by assigning each point to a classification based upon the 5dB band in which the noise level resides.

The 5dB bands are:

Lden <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >=75

Lnight <50, 50 – 54, 55 – 59, 60 – 64, 65 – 69, >=70

**Note:** all class boundaries are .00, i.e. 55-59 is actually 55.00 to 59.99. This is in line with the approach of a number of the commercial noise mapping software packages. This may require the use of a database program such as MS Access, MS SQL or MySQL where class boundaries can be programmed. The default behaviour in MS Excel should not be used for this analysis as it rounds at .49 and .50, however the ROUNDDOWN function may be used to apply the class boundaries.

#### 10.5 Area Analysis

The EC recommended reporting mechanism, ENDRM 2012 DF8, requires information on the total area, inside and outside agglomerations, (in km<sup>2</sup>) exposed to Lden higher than 55, 65 and 75dB for major roads, major railways and major airports.

The reclassified grid files may be used to calculate these areas as each 10m interval grid point is at the centre of an area 10m by 10m, therefore each grid point represents 100 m<sup>2</sup>. This approach avoids the secondary processing required to produce equal noise level contours based upon an interpolation between the grid points, and therefore avoid introducing any further uncertainty into the results.

RECLASSIFIED NOISE LEVEL GRIDS Total grid points per 5 dB band x 100m2 Area Noise Level Exposure

**Figure 10.2:** Summary of area analysis

### **10.6 Assessment Datasets**

With the relevant input datasets prepared, they can be processed together to produce the datasets required for the assessment.

#### **1) Average number of people per residential delivery point, per ED**

The CSO ED boundary polygon dataset with 2011 Census data assigned to each ED area, should be loaded in GIS with the OCCUPIED\_RESIDENTIAL\_BUILDINGS point data derived from GeoDirectory.

A spatial query should be run to count the total number of OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS assigned to building points inside each ED area polygon. This total should be assigned as an attribute to the ED area polygon.

For each ED area polygon the average number of people per residential delivery point is then calculated by dividing the total PERSONS\_2011 for the ED, by the

total OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS for the ED. This average is then assigned as a new AVERAGE\_PERSONS\_PER\_ORDP attribute on the ED area polygon.

## **2) Number of people per occupied residential building**

For each of the OCCUPIED\_RESIDENTIAL\_BUILDINGS points the total number of people per building can be calculated from the AVERAGE\_PERSONS\_PER\_ORDP assigned to the ED area, within which the building is located, multiplied by the total number of OCCUPIED\_RESIDENTIAL\_DELIVERY\_POINTS for the building point. This total can then be assigned as a new PERSONS\_PER\_BUILDING attribute to the building point.

## **3) Finalising "RESIDENTIAL\_BUILDINGS" dataset**

The OCCUPIED\_RESIDENTIAL\_BUILDINGS dataset now contains an attribute for the total number of persons per building. It is a subset of the RESIDENTIAL\_BUILDINGS dataset. The PERSONS\_PER\_BUILDING attribute should be copied across to the equivalent building point within the RESIDENTIAL\_BUILDINGS dataset. All RESIDENTIAL\_BUILDINGS with a blank PERSONS\_PER\_BUILDING attribute should have it set to 0 (zero).

The RESIDENTIAL\_BUILDINGS dataset is then ready to use in the remainder of the assessment.

## **4) Noise exposure level per building**

### ***Façade noise level calculations***

Where noise level calculations have been carried out for façade receptors around buildings, they should be used as the source dataset for noise exposure for each building.

If the façade receptor points are at a distance of 0.1m from the building façade (as recommended by WG-AEN GPG v2) then the building polygon may be buffered by 0.2m and a spatial search undertaken inside the resulting polygon to find the highest and lowest noise level figures from the calculation point. These highest and lowest noise levels may then be assigned to the building polygon as attributes.

### ***Grid noise level calculations***

Where only 10m grids of noise levels have been calculated, or where buildings were absent from the noise assessment model but are available within the OSi Large Scale data, it will be necessary to generate building façade receptor locations, and assign noise levels to these points based upon interpolation from the grid of noise levels.

The façade receptor point should be created on the external building facades in the following manner:



**Figure 10.3:** Assignment of receptor points to building facades

a) Façades are split up every 5 m from start position on with a receiver position placed at half distance (blue/green).

b) The remaining section gets its receiver point in its middle (red).

**Note:** there are other means of generating façade receptor points which may be acceptable. This approach is presented one being straightforward to implement in GIS. At each façade receptor point the noise level should be determined by interpolation from the 10m grid noise levels nearby. The highest and lowest noise levels for each building polygon may then be identified and assigned to the building polygon as attributes.

**5) Linking “RESIDENTIAL\_BUILDINGS” datasets to building footprints**

The RESIDENTIAL\_BUILDINGS datasets and the LARGE\_SCALE\_BUILDINGS footprints can be linked using a spatial query to identify the “RESIDENTIAL\_BUILDINGS” points within each of the footprint feature of the “LARGE\_SCALE\_BUILDINGS” dataset. The GeoDirectory “BUILDING\_ID” table can then be assigned to the footprint polygons within dataset “LARGE\_SCALE\_BUILDINGS”.

CSO provide ED areas with no. of people assigned OCCUPIED RESIDENTIAL BUILDINGS  
Total OCCUPIED RESIDENTIAL DELIVERY POINTS per ED Average persons per  
OCCUPIED RESIDENTIAL DELIVERY POINT per ED Total persons per buildings =  
Occupied RDPs x Average persons per Occupied RDP RESIDENTIAL BUILDINGS including  
persons per building Intersect with Reclassified Noise Level Results

**Figure 10.4:** Distribution of persons in dwellings

**10.7 Assessment of Noise level Exposure**

After joining the dataset “RESIDENTIAL\_BUILDINGS” with the footprints dataset “LARGE\_SCALE\_BUILDINGS”, the highest and lowest noise levels assigned to each of the Large Scale footprint polygons may be copied across an attribute tables onto the dataset “RESIDENTIAL\_BUILDINGS\_POINTS”.

The total number of features within dataset “RESIDENTIAL\_DELIVERY\_POINTS” per noise level band then be calculated using the highest noise level per building to determine the total number of dwellings within each noise level band.

RECLASSIFIED NOISE LEVEL GRIDS Total RDPs in RBs per noise level band Dwelling  
Noise Level Exposure RESIDENTIAL BUILDINGS

**Figure 10.5:** Summary of dwelling analysis

The PERSONS\_PER\_BUILDING = 0 (zero) buildings can then be filtered out of the dataset, and the total number of persons per building summed per noise level band, using the highest noise level per building, to determine the total number of people exposed within each noise level band.

RECLASSIFIED NOISE LEVEL GRIDS Total Persons in Occupied RBs per noise level band  
Number of people living in dwellings noise exposure OCCUPIED RESIDENTIAL  
BUILDINGS

**Figure 10.6:** Summary of persons in dwellings analysis

The 5dB bands to be used are:

Lden <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >=75

Lnight <50, 50 – 54, 55 – 59, 60 – 64, 65 – 69, >=70

**Note:** all class boundaries are .00, i.e. 55-59 is actually 55.00 to 59.99. This is in line with the approach of a number of the commercial noise mapping software packages. This may require the use of a database program such as MS Access, MS SQL or MySQL where class boundaries can be programmed. The default behaviour in MS Excel should not be used for this analysis as it rounds at .49 and .50, however the ROUNDDOWN function may be used to apply the class boundaries.

## **Appendix III**

### **Bibliography and References**

## Bibliography and References

1. Directive 2002/49/EC relating to the assessment and management of environmental noise.
2. SI 140 of 2006, Environmental Noise Regulations 2006.
3. ENFO leaflet: Noise Pollution, A Guide to the Noise Regulations [www.enfo.ie](http://www.enfo.ie)
4. EPA Guidance Note for Noise Action Planning, EPA July 2009.
5. CSO Census data 1996, 2002, 2006 [www.cso.ie](http://www.cso.ie)
6. Ennis and Environs Development Plan 2008-2014
7. [www.shannonairport.com](http://www.shannonairport.com)
8. Information supplied by Shannon Airport Air Traffic Control Section.
9. RT.201 Expansion Factors for Short Period Traffic Counts (1978)
10. [noisemapping.defra.gov.uk](http://noisemapping.defra.gov.uk)
11. Draft Noise Action Plan for Dublin Agglomeration, Brian MacManus.
12. FEHRL Study S12.408210 Tyre Road Noise.
13. A Review of the Integrated Strategy for the Economic, Social and Cultural Development of County Clare, 2002-2012.
14. HEATCO, Developing Harmonised European Approaches for Transport Costing and Project Assessment, Final Technical Report, December 2006.
15. Valuation of Noise: Position Paper of the Working Group on Health and Socio Economic Aspects.
16. UK DOT, Transport analysis guidance, Noise, TAG unit 3.3.2, November 2006.
17. Quarries and Ancillary Activities: Guidelines for Planning Authorities, DOEHLG April 2004.
18. NRA Guidelines for the treatment of noise and vibration in national road schemes, 25<sup>th</sup> October 2004.
19. Clare County Development Plan 2011-2017.

## **Appendix IV**

### **EU Noise Emission Limits for New Road Vehicles**

From Council Directive 92/97/EEC of 10 November 1992 amending Directive 70/157/EEC on the approximation of the laws of the Member States relating to the permissible sound level and the exhaust system of motor vehicles.

Vehicle Type		Noise Limit (dB(A))
Vehicles intended for the carriage of passengers, and comprising not more than nine seats including the driver's seat:		74
Vehicles intended for the carriage of passengers and equipped with more than nine seats, including the driver's seat; and having a maximum permissible mass of more than 3.5 tonnes:	with an engine power of less than 150 Kw:	78
	with an engine power of not less than 150 kW:	80
Vehicles intended for the carriage of passengers and equipped with more than nine seats including the driver's seat; vehicles intended for the carriage of goods:	with a maximum permissible mass not exceeding 2 tonnes:	76
	with a maximum permissible mass exceeding 2 tonnes but not exceeding 3.5 tonnes:	77
Vehicles intended for the carriage of goods and having a maximum permissible mass exceeding 3.5 tonnes:	with an engine power of less than 75 kW:	77
	with an engine power of not less than 75 kW but less than 150 kW:	78
	with an engine power of not less than 150 kW:	80

However:

- for vehicles of categories 5.2.2.1.1 and 5.2.2.1.3, the limit values are increased by 1 dB (A) if they are equipped with a direct injection diesel engine,

-for vehicles with a maximum permissible mass of over two tonnes designed for off-road use, the limit values are increased by 1 dB (A) if their engine power is less than 150 kW and 2 dB (A) if their engine power is 150 kW or more,

-for vehicles in category 5.2.2.1.1., equipped with a manually operated gear box having more than four forward gears and with an engine developing a maximum power exceeding 140 kW/t and whose permissible maximum power/maximum mass ratio exceeds 75 kW/t, the limit values are increased by 1 dB (A) if the speed at which the rear of the vehicle passes the line BB& prime; (Figure 1) in third gear is greater than 61 km/h.

## **Appendix V**

### **Details of Public Consultation**

## **Details of Public Consultation**

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

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

The Public Consultation process commenced with the publication of a notice in the Clare Champion newspaper on 3<sup>rd</sup> May 2013.

A presentation on the Draft Noise Action Plan 2013 was made to the Environmental and Water Services Strategic Policy Committee on 2<sup>nd</sup> July 2013. The Committee agreed to place the Draft Noise Action Plan 2013 before the full Council meeting for consideration.

Copies of the Draft Noise Action Plan 2013 were issued to the following bodies :

- Department of Transport, Tourism and Sport
- Department of Environment, Community and Local Government
- National Roads Authority
- Environmental Protection Agency
- Irish Aviation Authority
- Tipperary NR County Council
- Limerick County Council
- Galway County Council

No comments were received.

The Draft Noise Action Plan was available for inspection at the locations outlined on the advertisement ie. Office and Libraries of Clare County Council in the Action Plan areas. It was also placed on the Clare County Council website. Closing date for receipt of submissions was 27<sup>th</sup> June 2013.

## **Submissions received**

Three submissions were received and are summarized below along with a summary response.

### **Submission 1:**

A submission was received from a Councillor. He recommends that Clare County Council prepare parking bye laws to prevent caravans, mobile homes etc parking on lands and roads identified within the Draft County Clare Noise Action Plan. He says that the parking bye laws if adopted will contribute to meeting the European Noise Directive requirements of reducing harmful effects to humans due to exposure to environmental noise .

### **Response to Submission 1:**

No objection to this proposal was made in principle. There is no definition of the word "dwelling" in the Directive ( EU Directive 2002/49/EC known as END).

Therefore, while noise mapping would not have included temporary dwellings such as caravans ( mapping used was OS mapping) , it would be safe to assume that they would not effect noise propagation patterns and therefore the noise contour values could be applied if a caravan is parked at a particular location adjacent to a public road.



There are, however, no statutory limits in place in relation to environmental noise exposure at National level. The EPA recommends (in EPA Guidance Note for Noise Action Planning, July 2009) that the proposed onset levels for assessment of noise mitigation measures due to road traffic should be as follows: 70dB Lden and 57dB Lnight.

It was decided that this matter would be referred to the Roads SPC for further consideration.

Submission 2:

A member of the Public asked if measures could be taken to address noise from the M18 motorway (between the Tulla Road and Ballymacahill area) which is heard at their property 1.9km away.

Response to Submission 2:

A summary of the response is that the location in question is outside the 55dB Lden contour and the 45 dB Lnight contour. The onset levels for assessment of noise mitigation measures are 70dB Lden and 57dB Lnight. It is unlikely therefore that noise barriers will be considered at this location.

Submission 3:

A member of the public said it was their view that more barriers should be installed in Shannon.

Response to Submission 3:

Noise maps were prepared for the N19 and R471 and there are no residential areas with noise levels above 70dB Lden and 57dB Lnight on those maps. There are residences in both the 55 to 59dB Lden range and the 60 to 64 dB Lden range. Given the above values it is unlikely that noise barriers will be considered. There are, however, other measures such as promotion of walking and cycling, traffic calming etc which Clare County Council could encourage/employ which would help to reduce traffic volumes/speeds on the existing roads around Shannon. Issues of traffic management are raised in the submission and these can be discussed with the Shannon Area Engineer. The issue of aircraft noise was also raised. Shannon Airport flight movements are below the threshold for noise mapping ie 27,000, with the threshold at 50,000.

Clare County Council would like to thank those who made submissions.

A presentation was made to the Council Meeting of Clare County Council on Monday 8<sup>th</sup> July 2013 for consideration by Members of Clare County Council.

The above submissions were outlined along with the responses.

No alteration or additions were requested by the Council Members and the Draft Noise Action Plan 2013 was approved by the Council.

The Clare Local Authorities Noise Action Plan 2013 has now been approved and is in place.

July 2013.

*ÚDARÁIS ÁITÚLA AN CHLÁIR*  
**CLARE LOCAL AUTHORITIES**

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

**NOTICE OF PUBLIC CONSULTATION ON DRAFT NOISE  
ACTION PLAN 2013 IN RESPECT OF COUNTY CLARE.**

*Clare County Council invite submissions from the public on the draft Noise Action Plan 2013, prepared under SI No. 140 of 2006, to address noise from major transport sources.*

This is a five-year strategic plan to address noise from major roads in Clare. The plan excludes noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside a means of transport or due to military activities in military areas.

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

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

- Roads Section, Clare County Council, Áras Contae an Chláir, New Road, Ennis (during normal working days from 9.00 a.m. to 5.00 p.m).
- Ennis Town Council, Waterpark House, Drumbiggle, Ennis.
- Kilrush Town Council, Town Hall, Kilrush.
- Shannon Town Council, Civic Offices, Shannon.
- De Valera Library, Harmony Row, Ennis.
- Kilrush Public Library, Kilrush
- Newmarket-on-Fergus Public Library, Newmarket-on-Fergus.
- Sean Lemass Library, Shannon Town.

The plan may also be accessed on the Clare County Council website [www.clarecoco.ie](http://www.clarecoco.ie).

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

Acting Administrative Officer,  
Roads Section,  
Clare County Council,  
Áras Contae an Chláir,  
New Road,  
Ennis,  
Co. Clare.

or by email to [roaddesign@clarecoco.ie](mailto:roaddesign@clarecoco.ie) up to and including 27<sup>th</sup> June 2013.

"For insertion in Clare Champion": **2<sup>nd</sup> May 2013**

## **Appendix VI**

### **Strategic Noise Maps**

*See book of A3 drawings*