



Sligo County Council

Sligo Borough Council

**Draft Noise Action Plan
for
Sligo County and City**

November 2009

Executive Summary

This Draft Noise Action Plan has been prepared by Sligo County Council and Sligo Borough Council in accordance with the requirements of the Environmental Noise Regulations 2006, Statutory Instrument No. 140 of 2006. These Regulations give effect to the EU Directive 2002/49/EC relating to the assessment and management of environmental noise.

The aim of the document is to provide an overview of the requirements of the Regulations, to review the results of the strategic noise mapping within County Sligo and to set out an approach to the strategic management and control of environmental noise over the next five years.

The objectives of the Sligo Local Authorities' noise action plan are to avoid, prevent and reduce, where necessary, on a prioritised basis, the harmful effects, including annoyance, due to long term exposure to environmental noise. This will be achieved by taking a strategic approach to managing environmental noise. This approach promotes action on environmental noise through four avenues, these being noise reduction at source, land use planning adapted to noise goals, procedures to reduce noise impact and operating restrictions to reduce noise emissions.

This Draft Noise Action Plan primarily considers the long term environmental noise impact from road traffic noise sources, and sets out an approach to review noise impact levels near to the major sources assessed during the strategic noise mapping in 2007 with a view to identifying locations where noise reduction is deemed necessary in the first instance. The process then goes on to undertake an assessment of potential noise mitigation measures which are then subject to a cost benefit analysis in order to result in recommendations for viable, cost effective, noise mitigation action.

The strategic noise mapping was undertaken in 2007 by the National Roads Authority for a section of the N4 within County Sligo and was based on data from 2006. The results of this assessment have been presented as maps and summary tables of statistics showing the estimated area, number of dwellings and people exposed to long term road traffic noise within the area covered by the noise maps.

The draft noise action plan proposes noise levels for the onset of this assessment of 70 dB L_{den} , and 57 dB L_{night} . An initial assessment indicates that there is no exposure above the L_{den} threshold, and there is an exposure of up to an estimated 146 people above the L_{night} threshold.

In the interests of equality and promotion of best practice, the action plan also sets out a number of proposals for the prevention and avoidance of increasing levels of environmental noise considered detrimental to human health, to be implemented through the planning process, which are to be applicable throughout County Sligo.

Summary of Actions

1. Increased levels of environmental noise will be prevented and avoided, where possible, within the requirements of the Development Plans, Local Area Plans and sustainable development, through the whole of Sligo County, by integration of noise management into the planning process for the development of new noise sensitive premises, or sources of long term environmental noise, such as road, railways and industrial sites. Actions will include the following:
 - Review County Planning development and planning guidance regarding noise control
 - Publish County planning guidance on noise assessment and control
 - Assess implementation and use of guidance on planning and noise
2. Noise reduction of existing sources of long term environmental noise, where necessary, will be considered within the area covered by the strategic noise mapping undertaken by the NRA in 2007. The approach to the assessment of relevant actions will use the following approach:

- Review strategic noise maps to identify priorities through use of a decision support matrix
 - Confirm the extent of the noise impact through refined noise modelling and/or long term noise monitoring
 - Draw up list of areas for noise mitigation review
 - Assess all identified sites
 - In context of proposed development & maintenance
 - Feasibility study for possible mitigation measures
 - Cost benefit analysis for feasible measures
 - Draw up list of cost effective interventions
 - Undertake cost effective actions for which funding is available
3. The preservation of relatively quiet areas in the vicinity of major noise sources, and quiet areas in the open countryside, will be considered and reviewed as part of the implementation of the noise action plan. Any possible designations which may be recommended by such a process would go to public consultation prior to submission to the Minister for adoption.
4. The following actions will be carried out in relation to preparation for 2012 strategic noise mapping:
- Estimate extent of sources under 2012 strategic noise mapping
 - Set out data requirements for 2012 strategic noise mapping
 - Collate, capture and consolidate data required for 2012 strategic noise mapping
5. An annual review of progress on implementation of the noise action plan will also be carried out.

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Glossary of Acoustic Terms

<i>Agglomeration</i>	<i>Major Continuous Urban Area as set out within the Regulations</i>
<i>Attribute Data</i>	<i>A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height</i>
<i>Attributing (Data)</i>	<i>The linking of attribute data to spatial geometric data</i>
<i>CRTN</i>	<i>The Calculation of Road Traffic Noise 1988. The road traffic prediction methodology published by the UK Department of Transport</i>
<i>Data</i>	<i>Data comprises information required to generate the outputs specified, and the results specified</i>
<i>dB</i>	<i>Decibel</i>
<i>END</i>	<i>Environmental Noise Directive (2002/49/EC)</i>
<i>ESRI</i>	<i>Environmental Systems Research Institute</i>
<i>GIS</i>	<i>Geographic Information System</i>
<i>INM</i>	<i>Integrated Noise Model</i>
<i>Irish National Grid (ING)</i>	<i>The official spatial referencing system of Ireland</i>
<i>ISO</i>	<i>International Standards Organisation</i>
<i>Metadata</i>	<i>Descriptive information summarising data</i>
<i>Noise Bands</i>	<i>Areas lying between contours of the particular noise levels (dB)</i>
<i>Noise Levels</i>	<i>Free-field values of L_{den}, L_{day}, $L_{evening}$, L_{night}, and $L_{A10,18h}$ at a height of 4m above local ground level</i>
L_{day}	<i>Daytime noise level = $L_{Aeq, 12h}$ (07:00 to 19:00)</i>
<i>Noise Mapping(Input) Data</i>	<i>Two broad categories: (1) Spatial (e.g. road centre lines, building outlines). (2) Attribute (e.g. vehicle flow, building height – assigned to specific spatial data)</i>
<i>Noise Mapping Software</i>	<i>Computer program that calculates required noise levels based on relevant input data</i>
<i>Noise Model</i>	<i>All the input data collated and held within a computer program to enable noise levels to be calculated</i>
<i>Noise Model File</i>	<i>The (proprietary software specific) project file(s) comprising the noise model</i>
<i>Output Data</i>	<i>The noise outputs generated by the noise model</i>
<i>OSI</i>	<i>Ordnance Survey for Ireland</i>
<i>Spatial (Input) Data</i>	<i>Information about the location, shape, and relationships among geographic features, for example road centre lines and buildings</i>
<i>WG – AEN</i>	<i>Working Group – Assessment of Exposure to Noise</i>

1. Introduction

1.1. Purpose of the Environmental Noise Directive (END)

In 2002 the European Union issued a Directive (2002/49/EC) to establish a method for dealing with environmental noise pollution. Also known as the Environmental Noise Directive, hereafter referred to as the END, the Directive's main aim is to put in place a European-wide system for identifying sources of environmental noise pollution, informing the public about relevant noise data and then taking the necessary steps to avoid, prevent or reduce noise exposure on a prioritised basis. The basic principles and requirements of the END can be summarized as follows:

Noise Assessment

The Directive aims to monitor environmental noise problems by requiring competent authorities in Member States to generate strategic noise maps for major roads, railways, airports and agglomerations, using harmonised noise indicators L_{den} (day-evening- night average sound level) and L_{night} (night time average sound level). These maps are to be used to as a means of presenting environmental noise data, as a source of information for the public and as an aid in the preparation of Noise Action Plans.

All member states are required to develop strategic noise maps describing the environmental noise situation within their territories. The first phase of these noise maps was due by 30th of June 2007 and updated versions are due every five years thereafter.

Strategic noise maps present noise level data in terms of a relevant noise indicator. Their purpose is to allow authorities to identify areas where noise limit values have been exceeded, estimate the number of people exposed to environmental noise and evaluate the contribution of various noise sources to the overall noise situation.

Development of Action Plans

The Directive aims to address local environmental noise issues by requiring competent authorities to draw up action plans to reduce environmental noise where necessary and maintain the environmental acoustic quality where it is good. The Directive does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities.

Action plans outline the measures which competent authorities intend to take to assess any environmental noise issues identified during the mapping process. This includes the prioritisation of retrofit action to reduce these noise levels when deemed to be too high and the preservation of the noise situation in locations which have been designated as quiet areas.

Disseminating Data to the Public

One of the underlying themes throughout the Directive is the dissemination of noise data to the general public using channels and media that are both suitable and effective. The Directive instructs that the public be made aware of any noise assessment data, be consulted during the formulation of action plans and informed of any decisions taken.

The overall goal of these actions is to develop a long-term EU strategy, which includes objectives to reduce the number of people affected by noise and provide a framework for developing existing community policy on noise reduction from major sources.

1.2. Scope of the END

The Directive is aimed at establishing harmonised EU measures to reduce noise emitted by the major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and also at providing a basis for developing and complementing the existing set of community measures concerning environmental noise. The Directive applies to environmental noise to which humans are exposed, in particular in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise sensitive buildings and areas. It does not apply to noise that is

caused by the exposed person himself/herself, noise from domestic activities, noise created by neighbours, noise at work places or noise inside means of transport or due to military activities in military areas. Noise maps are strategic tools and should not be used for the assessment of local noise nuisances.

1.3. Purpose and Scope of the Regulations

Statutory Instrument No. 140 of 2006, also known as The Environmental Noise Regulations, was brought into effect by The Minister for the Environment, Heritage and Local Government, for the purpose of giving effect to European Council Directive 2002/49/EC relating to the assessment and management of environmental noise. The Regulations were brought into force in accordance with the powers conferred on The Minister by sections 6, 53 and 106 of the Environmental Protection Agency Act 1992 (No. 7 of 1992), as amended by Part 2 of the Protection of the Environment Act 2003 (No. 27 of 2003).

The Environmental Noise Regulations provide for the implementation in Ireland of a common approach within the European Community intended to avoid, prevent or reduce, on a prioritised basis, the harmful effects, including annoyance, due to exposure to environmental noise.

The Regulations apply to environmental noise to which people are exposed, in line with the definition given above in section 1.2. As with the Directive itself, the Regulations do not apply to nuisance noise which can be dealt with under the Environmental Protection Agency Act 1992.

1.4. Roles and Responsibilities of Designated Bodies

The Regulations designate the Environmental Protection Agency (EPA) as the national authority responsible for overseeing the implementation of the Regulations. The EPA is required to provide advice and guidance to the relevant noise mapping bodies and action planning authorities. The EPA is responsible for reporting to the European Commission the information relating to strategic noise mapping and action planning in accordance with Article 10(2) of the Directive.

1.4.1. Noise Mapping Bodies

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

- For the agglomeration of Cork, Cork City Council and Cork County Council
- For the agglomeration of Dublin, Dublin City Council and the County Councils of Dun Laoghaire/Rathdown, Fingal, and South Dublin
- For major railways, Iarnród Éireann or the Railway Procurement Agency, as appropriate, on behalf of the action planning authority or authorities concerned
- For major roads,
 1. where such roads are classified as national roads in accordance with Section 10 of the Roads Act 1993 (No. 14 of 1993), the National Roads Authority, on behalf of the action planning authority or authorities concerned, and
 2. other than those provided for in part (i), the relevant road authority or authorities, as appropriate
- For major airports, the relevant airport authority, on behalf of the action planning authority or authorities concerned

Responsibilities

The relevant noise-mapping bodies were required by the 30th of June 2007 to produce strategic noise maps, in respect of the calendar year 2006, for:

- Any agglomeration with a population greater than 250,000
- Any major road with more than 6 million vehicle passages per year

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

The Regulations also state that the designated noise-mapping bodies are required to, no later than 30 June 2012, make a strategic noise map or revised map, as appropriate, for each of the following areas, in respect of the calendar year 2011:

- An agglomeration with more than 100,000 inhabitants
- A major road
- A major railway
- Any major airport

A major road is defined as any motorway, regional or national road with more than 3 million vehicle passages per year, while a major railway is any railway with more than 30,000 passages per year.

1.4.2. Action Planning Authorities

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

- For the agglomeration of Cork, Cork City Council and Cork County Council;
- For the agglomeration of Dublin, Dublin City Council and the County Councils of Dun Laoghaire/Rathdown, Fingal, and South Dublin;
- For major railways, the local authority or local authorities within whose functional area or areas the railway is located
- For major roads, the relevant local authority or local authorities within whose functional area or areas the road is located
- For major airports, the local authority or local authorities within whose functional area the airport is located.

Accordingly, Sligo County Council and Sligo Borough Councils are designated as the action planning authorities for all sections of major roads within the functional areas of the Councils which experience a volume of traffic greater than 6 million vehicle passages per year.

There are no major railways, airports or agglomerations within the functional area of the Council. The railway in County Sligo is not considered to be major as it does not have more than 30,000 passages per year.

Responsibilities

Action planning authorities are responsible for the making and approval of action plans, in consultation with the Agency and the noise-mapping body for the noise maps involved. Action plans must satisfy the minimum requirements set out in the Fourth Schedule of the Regulations.

Action planning authorities are required to ensure that:

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

1.5. Key Phases

The key phases involved in meeting the requirements of the Regulations are laid out below. The responsibility is shared between the noise-mapping bodies and action planning authorities.

1.5.1. Identification of Areas for Noise Mapping

Strategic noise maps were developed for all roadways meeting the criteria set out in Article 10(1) of the Regulations, specifically any motorway, regional or national road with more than 6 million vehicle passages per year. Road traffic volumes were obtained using the National Roads Authority's traffic counting system and the Council's own traffic count data. Traffic count figures were used to identify roadways which were eligible for mapping.

1.5.2. Preparation of Strategic Noise Maps

Purpose and Scope

According to the END a strategic noise map is "A map designed for the global assessment of noise exposure in a given area or for overall predictions for such an area." Essentially a noise map is a representation of the noise situation in a given area, presented in terms of a chosen noise indicator.

Noise maps may take several forms such as tabulated data or data in electronic form, but the most common format is a graphical representation of the noise levels in an area. Colour coded contour plots link areas of equal noise exposure.

Noise mapping techniques employ predictive software that estimates the noise level in an area from a particular source, given several governing factors e.g. speed of the traffic flow, number of light and heavy vehicles, building topology, road surface and gradient.

The maps are intended to provide a representation of the noise levels perceived within the assessment area and to identify locations where action may be needed to reduce high noise levels and protect the acoustic environment where favourably low noise levels are present.

Extent/Range

The noise maps generated by the National Roads Authority (NRA) and subsequently presented to the European Commission by the EPA are plotted in graphical form in terms of L_{den} and L_{night} . They are presented in 5dB contour bands beginning at 55-59dB and ranging up to 70-74dB. The maps also provide an indication of noise levels which are greater than 75dB. The noise levels indicated are predictions attributed only to a specific source of noise i.e. road traffic.

Noise Mapping Bodies Responsible

Under article 6(d) of the Regulations, the National Roads Authority is designated as the noise-mapping body responsible for the mapping of all major national roads within Ireland, whilst the County Council are responsible for mapping all major non-national roads within their area of control. During the noise mapping carried out in 2007, which was based on data from 2006, the NRA undertook the assessment of noise from non-national roads on behalf of the counties based upon information supplied to the NRA by the counties.

1.5.3. Development of the Noise Action Plans

Purpose and scope

Noise action plans are aimed at defining a common approach intended to avoid, prevent and reduce exposure to environmental noise and also at protecting quiet areas. They will form the basis of a long term environmental noise strategy and are not tools for dealing with nuisance noise complaints.

Extent/Range

Action plans are based on the results of the noise mapping process. The noise mitigation measures contained within action plans deal with potential issues identified during noise

mapping, with a view to reducing the number of people exposed to unacceptably high noise levels and protecting areas of perceived tranquillity.

Public Participation and the Role of the Public

Public participation and dissemination of data to the public are integral parts of the END and the Environmental Noise Regulations. The public should be consulted at all stages of policy development and implementation. The role of the public is to review and guide the formulation of strategic noise policy with a view to avoiding, preventing and reducing, where necessary, exposure to environmental noise. Their role is not to highlight individual instances of noise annoyance, but to contribute to an overall best approach to widespread environmental noise reduction.

Implementation of the Plans

Noise action plans span a 5 year time scale. They detail planned activities in each year and include a program review before the end of the action plan time frame.

1.6. Noise Indicators

In order to standardise noise measurements and assessment methods a common noise indicator is required. Various statistical indicators exist to define noise levels depending on the manner and duration of the noise in question.

The END specifies two noise indicators to be used when preparing environmental noise maps. These are the L_{den} indicator and the L_{night} which is used to assess sleep disturbance. The L_{den} is the day, evening and night time rating level, with weightings applied to noise pollution for the different periods.

L_{day} is the A-weighted long-term average sound level measured between 07.00 and 19.00

$L_{evening}$ is the A-weighted long term-average sound level measured between 19.00 and 23.00

L_{night} is the A-weighted long-term average sound level measured between 23.00 and 07.00

The average day, evening and night values are determined over all the respective periods of a year, making the L_{den} a yearly average. A 5dB weighting is added to the evening noise value and a 10dB weighting added to the night time level. This is to account for the fact that the same noise level may be more annoying at different times of the day. Consider road works in a residential area at four in the afternoon or four in the morning. The same noise level will be far more annoying during the night time period.

A-weighting of noise levels accounts for the fact that the human ear is more responsive to certain types of sound than others. The A-weighting process applies weightings to different types of noise to better approximate the perception of sounds. A-weighted sound pressure levels are measured in decibels, dB(A).

2. Existing Noise Management Legislation and Guidance

2.1. National Legislation and Guidance

2.1.1. Environmental Protection Agency Act 1992

The EPA Act identifies noise as a form of environmental pollution and contains provisions for dealing with noise “which is a nuisance, or would endanger human health or damage property or harm the environment.” The sections of the Act relevant to noise pollution are:

Section 106 – Regulations for Control of Noise

This section gives the Minister for Environment, Heritage and Local Government the power to make regulations for the purpose of preventing or limiting noise. This may include imposing noise limits, either exceedance values or emission values, controlling sources of noise and the imposition of charges for noise pollution.

Section 107 – Power of Local Authority or Agency to Prevent or Limit Noise

This section gives powers to local authorities or the Environmental Protection Agency to control and limit noise from any premises, process or work.

Section 108 – Noise as a Nuisance

This section gives provision for local authorities, the EPA or any individual to complain to the District Court regarding noise nuisance causing unreasonable annoyance. The Court may order the offending person or body to take specific measures to limit or prevent noise pollution.

The EPA Act provides a method for dealing with nuisance noise in the community. It does not however, address noise pollution in the long term. The END, enacted through the Environmental Noise Regulations, is the beginning of a framework to develop long term strategic policies to combat noise pollution and protect the public from potentially harmful effects of environmental noise exposure.

2.1.2. The Roads Act 1993

Under section 77 of the Roads Act 1993, power is given to the Minister to make regulations requiring relevant road authorities to take measures to mitigate the effects of road traffic noise. The Minister may also specify limits for road traffic noise which, if exceeded, would require mitigating action from the road authorities.

There are currently no Irish limits or standards for governing road traffic noise, or its assessment on either new or existing roads.

2.1.3. National Roads Authority Guidelines

In light of the lack of standardised methods for the assessment of road traffic noise the NRA published the “*Guidelines for the Treatment of Noise and Vibration in National Road Schemes*.” These guidelines propose design goals for noise related to both the construction and traffic flow on new road schemes. Following a review of similar guidelines in the UK and adapting methodologies in line with the requirements of the END, the Authority proposed an operational design goal of 60dB L_{den} free field value. Essentially what this means is that for any new road scheme the Environmental Impact Statement must take this target into account with regard to any existing sensitive residential property likely to be affected by the road scheme. The guidelines present an approach to mitigating the adverse effects of road construction in so far as possible through the use of measures such as alignment changes, barrier construction e.g. earth mounds, and the use of low noise road surfaces. The responsibility for considering noise mitigation policy relating to any proposed new sensitive properties in the vicinity of the road scheme lies with the relevant Planning Authority.

2.1.4. IPPC Licensing

The EPA's Integrated Pollution Prevention Control Licensing terms require that certain bodies must limit environmental pollution caused by industrial activities in order to obtain a license to operate. The criteria relating to noise pollution are outlined in the EPA publication "*Guidance Note for Noise In Relation To Scheduled Activities.*" This document recommends a "Best Available Technique" approach to the assessment and mitigation of noise pollution. This approach should take into account the nature of the noise e.g. constant, impulsive or tonal, the nature of the surrounding environment and the time and duration of noise emissions. The document Draft contains guideline values that can be applied on a general level. Noise attributed to activities on a licensed site should not exceed 55dB $L_{Ar,T}$ at any noise sensitive location during the daytime period (08:00 – 22:00). ($L_{Ar,T}$ is the equivalent continuous A-weighted sound pressure level during a specified time interval, T, plus specified adjustments for tonal character and impulsiveness of the sound). During the night time (22:00 – 08:00) the noise from on site activities should not exceed 45dB $L_{Aeq,T}$.

($L_{Aeq,T}$ is the equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period T).

In addition to these general limits, the guidance note states that "the noise from the licensed facility should not be so loud, so continuous, so repeated, of such duration or pitch and it should not occur at such times as to give reasonable grounds for annoyance."

2.1.5. Building Regulations 1997 - 2007

Part E of the Building Regulations 1997 (S.I. no. 497 of 1997) relates to the mitigation of sound transfer between dwellings and rooms within a building. The regulations simply state that walls and floors must have "reasonable resistance" to airborne and impact sound. No consideration is given to the nature or location of the building or potential noise sources. More comprehensive regulations should include façade noise insulation guidelines and appropriate standards to be met before habitation.

2.1.6. Regional and Local Legislation and Guidance

The Sligo and Environs Development Plan 2004-2010 does not include any Strategies or Objectives in relation to noise. The Sligo County Development Plan 2005-2011 sets out the following Noise control objective in Section 7.6.3:

- Seek to protect the amenity of dwellings, businesses, community facilities and other existing development, when assessing proposals for development that is likely to generate significant levels of noise.

2.2. Noise Assessment for Action Planning

At present there is no existing legislation that limits noise levels to a particular value. Several difficulties arise when attempting to choose a reasonable value for noise level limits, mainly due to the subjective nature of noise exposure and annoyance. The effects of noise exposure are highly dependent on the perception of the exposed person and the effectiveness of noise reduction can often be dependent as much on relative changes as on absolute levels. Attempting to apply the same limit value to a city centre park and rural country side may be inappropriate, despite the fact that both can be perceived as tranquil areas relative to the surroundings.

To address the lack of legislative measures and unify the approach taken by Action Planning Authorities the EPA have issued guidelines for the assessment of noise exposure and prioritising areas for noise mitigation measures. The proposed onset of assessment levels relating to road traffic noise are given below.

Onset levels for noise mitigation measures:

- 70dB L_{den}
- 57dB L_{night}

Onset levels for measures to preserve the existing noise situation:

- 55dB L_{den}
- 45dB L_{night}

These levels reflect an annual average 24 hour period.

These values were decided upon after a review of guidance values issued in other countries e.g. the UK, and the NRA guidelines for treatment of noise.

3. Description of the Action Planning Area

Sligo Local Authorities are responsible for Noise Action Planning relating only to the major roads passing through the functional area of the Councils. There are no agglomerations subject to noise mapping or action planning within the jurisdiction of the Councils.

3.1. Coverage Area

This action plan is concerned with noise in the vicinity of major roads, the levels of which are indicated by strategic noise maps. In Sligo only one section of road qualified for noise mapping and that was a 4.8km section of the N4 extending from just south of Carraroe to the N4/N15/N16 junction north of Hughes Bridge.

Accordingly it is necessary to define a boundary area, within the range of the strategic noise map results, which can be designated as being 'near' a major road. It is proposed to use the 55dB L_{den} contour supplied by the NRA to define the boundary of the coverage area for potential noise mitigation.

3.2. General Population Exposed to Traffic Noise

There is only one main population centre within County Sligo which is exposed to environmental noise from major roads. This population is located along the N4 Inner Relief Road between the Summerhill Roundabout and Hughes Bridge.

3.3. Location of Noise Sensitive Buildings

Certain locations and building types are considered to be more sensitive to noise pollution than others. The main priority of the END is to reduce noise exposure in residential areas. It is also recommended that competent authorities designate buildings such as educational and health care facilities as being noise sensitive.

In accordance with this guidance and in line with the action plan coverage area definitions given above, Sligo Local Authorities have designated the following as being noise sensitive locations in Sligo:

- Summerhill College
- St Joseph's Hospital
- Gilhooley Hall
- Nazareth House Nursing Home
- Markevicz House

It should be noted that these locations were chosen because of their proximity to the major road. The buildings have at least one façade directly exposed to the roadway or have minimal insulation. While other noise sensitive areas exist within the towns such as additional schools, places of worship etc. they are not located in the immediate vicinity of the major road and should therefore be exposed to lower levels of traffic noise pollution.

Accordingly, these additional locations will not be assessed for priority mitigation activity, but will be considered in the overall strategy for the long term management of noise pollution.

4. Responsible Authority for Action Planning

Sligo County Council and Sligo Borough Council are responsible for the production and implementation of the Noise Action Plan for County Sligo.

Name and Contact Details:

Sligo County Council
County Buildings,
Riverside,
Sligo
Telephone: 071 9111111

Sligo Borough Council
City Hall
Quay Street
Sligo
Telephone 071 9142141

For further information in relation to Draft Noise Action Plan contact Fergus Meehan or Eamonn Brennan at 071 9111111

Email: noise@sligococo.ie

5. Summary of the Results of the Noise Mapping Process

5.1. Preparation of the Noise Maps

The National Roads Authority, being designated the Noise Mapping Body for all major national roads, prepared strategic noise maps to meet the requirements of Article 10 of the Regulations. These noise maps were generated from 2006 data and were submitted to the Environmental Protection Agency in 2007 .

The EPA, being designated the National Authority for noise mapping and action planning in Ireland, subsequently delivered these maps to the European Commission in line with Article 10 of the Environmental Noise Directive.

5.1.1. Data sources

The noise mapping process requires a number of detailed data sets in order to compute noise levels. These data sets are defined using Geographical Information System (GIS) software and subsequently exported for use in predictive noise models.

The table below indicates the required data sets and associated attributes.

Road	Buildings	Contour	Topography	Walls	Embankments	Bridges
Direction Texture Depth Lane width Road width Surface Type Speed 18-hr Traffic Flow Carriageway Type Composition	Height	Contour Height	Gradient	Height Reflection properties	Height	Start/End point Height

5.1.2. Methodology

All strategic noise maps were calculated using the UK national method “Calculation of Road Traffic Noise” (CRTN), as recommended in Part II of the Second Schedule of the Environmental Noise Regulations.

The CRTN produces results in terms of the L_{10} noise indicator (noise levels exceeded for 10% of the measurement period). This does not comply with the END, which defines L_{den} and L_{night} as the indicators for noise assessment. Accordingly the method was adapted to produce results in line with the requirements of the END using a statistical relationship developed by the NRA.

Traffic Counts Obtained from AADT figures

The Annual Average Daily Traffic Count is the average number of vehicles for a given time period at a particular section of roadway. The CRTN requires 18-hour traffic counts to describe a road source. These were obtained by examining the diurnal profile for both HGV and Non-HGV traffic and calculating an 18-hour flow based on AADT figures. A backend correction was applied to account for the fact that the L_{den} is computed over 24 hours.

Exposure Statistics

During 2007, the National Roads Authority generated GIS grids of noise levels as an output of the noise modelling process. GIS polygon contour layers were generated from this data.

The creation of GIS population data provided an indication of the population living in each noise contour band. The 2006 Census Small Area Population Statistics from the Central Statistics Office and the Quarter2 2007 Geodirectory listings were used to create a layer of Electoral Districts (ED) that have an average population per household (residential points in the Geodirectory) figure for each ED polygon.

Population exposure in each noise contour band was generated by cross referencing the Geodirectory (residential) locations in each noise contour band with population data to create a set of population figures in each stretch of road.

The first step in this process was to clip each stretch of road using the county boundaries to create county-specific contours. Residences were selected from the Geodirectory (Quarter 1 2008 release) and buffered by 10m to approximate a building shape. Polygons in this buffered file were cross referenced with the noise contours to identify buildings within each noise contour polygon.

The buildings were spatially joined to the noise contours to give them a decibel level score. They were then joined to the Electoral District population layer, which gave each point an average population per household figure. Each set of buildings with its noise and average population score were queried to remove the vacant and derelict buildings. A set of results giving the location and/or road number, number of residences in each decibel band and estimated population was created for each county.

5.2. Presentation of Results

5.2.1. Noise Maps

Noise maps for major roads within the County of Sligo are presented in Appendix B. These maps are plotted in terms of L_{den} and L_{night} and are displayed in 5dB contour bands.

5.2.2. Summary Exposure Statistics for Action Planning Area

The total number of people in each 5dB band of traffic noise pollution was estimated using the methods outlined above in section 5.1.2. The following table indicates the estimated number of people exposed in each 5dB contour band, within County Sligo.

Decibel Level Contour	Estimated Population
55 - 59	457
60 - 64	23
65 - 69	33
70 - 74	0
>75	0

Estimated number of people per contour band (L_{den})

Decibel Level Contour	Estimated Population
50 - 54	83
55 - 59	81
60 - 64	65
65 - 69	0
>70	0

Estimated number of people per contour band (L_{night})

5.3. *Limitations of the Maps/Results*

The strategic noise maps are based on averaged data sets that best describe the defining parameters of the noise model. While these predictive models are extremely complex, they only provide estimates of the likely noise levels resulting from these conditions. It is possible that, in some cases, factors outside the scope of the predictive model could influence the levels of environmental noise.

The results of the noise mapping process display noise levels attributed only to a single source i.e. traffic noise. While this is by far the most predominant source of environmental noise, the maps may not always be fully representative of the noise situation.

In relation to the assessment of quiet areas in open country the maps become inapplicable. By definition these areas are undisturbed by noise from traffic, industry or recreational activity. As such, they will not be located in the vicinity of major roadways and will lie outside even the lowest contour bands of the noise maps.

In addition, the identification of quiet areas within a built up environment becomes difficult when the mapping results for the area are attributed to a single major road passing through the development. Areas identified by the noise maps as being 'quiet' may be subject to traffic noise from smaller roads within the built up area that do not qualify as major roads.

These areas may in fact experience levels of environmental noise that are higher than indicated due to traffic flows that are outside the scope of the mapping process. Nonetheless, the mitigation of noise levels from the major source will still be of benefit to these areas and will at least provide relatively perceived benefits regardless of absolute levels.

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

Strategic noise maps provide an indication of which locations are subject to undesirably high levels of environmental noise. However, not all of these noise “hotspots” require priority action. Various factors must be taken into account when deciding if noise management is necessary, such as, the type of buildings and land use in the area, the source of the noise and of course the level of noise itself. For the purpose of identifying problem areas for action planning, the EPA has proposed the use of a decision support matrix. A decision support matrix is a chart which enables identification, analysis and rating of the strength of relationships between various sets of information. It enables a number of different factors to be examined and facilitates the assessment of the relative importance of each. An example of this decision support matrix is given in Appendix A.

A total score of approximately 17 or above in this matrix indicates that the location in question should be included in a shortlist for further assessment. When combined with the guideline values for the onset of noise assessment presented in Section 2.2 the support matrix allows for a more comprehensive evaluation of the impact of noise pollution at a given location.

6.1. Confirmation of Onset of Assessment Thresholds

The guideline values presented in Section 2.2 were used as a preliminary indicator of the need for noise assessment and possible mitigation activity. The estimated population exposure figures indicate that there is no exposure to noise levels above the assessment threshold of 70dB L_{den} . The night time noise figures indicate that there may be up to 146 people subject to noise levels above the guideline threshold value of 57dB L_{night} .

The predicted exposure levels at these residences give rise to the need for further detailed noise assessment.

6.2. Protection Thresholds for Quiet Areas

Under the Regulations it is required to delimit quiet areas within agglomerations. As there is no qualifying agglomeration within Sligo County, there is no statutory requirement to identify quiet areas within Sligo city and county.

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

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

- 55 dB L_{den}
- 45 dB L_{night}

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

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

- Recreation areas
- Playing fields
- Playgrounds
- Public parks and gardens
- Cemeteries

- River banks

And possibly extend to locations such as:

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

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

6.3. Quiet Areas in Open Country

Under the Regulations it is required to delimit quiet areas in the open country as defined by “an area, delimited by an action planning authority following consultation with the Agency and approval by the Minister, that is undisturbed by noise from traffic, industry or recreational activities.”

By definition the areas covered by the strategic noise mapping will not include any areas which may be considered undisturbed by noise, and it would be more appropriate to consider recent research work undertaken on tranquillity which addresses the interaction between noise and other factors such as visual amenity, cultural, historic, ecological, landscape and presence of natural sounds.

In support of this aspect of the regulations the EPA commissioned research work undertaken by Waugh and Durucan to evaluate baseline noise levels in areas of rural Ireland.

The complex interrelationships between the various factors which build up an impression of tranquillity means that the classification of quiet areas in open countryside may not be defined on acoustic measurement alone, but should incorporate criteria which balance the various associated aspects.

It is proposed that during the implementation of the action plan a review will be undertaken of the research in this area, and the findings referenced across to the Sligo County and Borough policies set out in the Development Plans on landscape character areas, protected views and scenic routes and heritage conservation; which will need to be balanced with the projected demands for rural development, tourism and the extractive industries. As appropriate, quiet areas in open countryside would then be identified and consultation undertaken prior to any recommendation for approval by the Minister.

6.4. Application of the criteria

With the thresholds for onset of assessment and onset of preservation defined the decision support matrix could be developed to help provide a rating scheme which would initially help to identify locations beyond the assessment thresholds, but also assist in the process of ranking the locations to help develop an initial prioritisation for further investigation.

This decision matrix is then used to draw up a short list of potential areas for action, both above the onset values, and below the level for preservation to help identify Quiet Areas. The shortlists are then mapped within a GIS system to look for any clusters which could be considered “hot spots”. As necessary a second shortlist would then be drawn up to take into account the presence of any “hot spots”.

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

The decision support matrix will be used to assess all noise sensitive locations within the strategic noise mapping area during the first phase of the implementation of the action plan.

6.5. *Results of the analyses*

At present the results of the analysis using the decision support matrix are not available. The implementation plan proposes to undertake the analysis during 2010, and present the results in the annual review report.

7. Mitigation and protection measures

7.1. General Principle of Action Plan

Sligo Local Authorities' noise action plan aims to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise.

Sligo Local Authorities will adopt a strategic approach to managing environmental noise by following a balanced approach which promotes:

- Noise reduction at source
- Land use planning adapted to noise targets
- Procedures to reduce noise impact
- Operating restrictions to reduce noise emission.

Sligo Local Authorities' noise action plan will have regard to the principles of sustainable development and integrate with other strategic policy objectives of Sligo County Council and Sligo Borough Council.

7.2. Processing areas above onset of assessment criteria

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

Prior to the review of potential noise mitigation measures, and any subsequent commitment of budget to undertake any necessary actions, it is considered appropriate to confirm that the noise levels indicated by the strategic noise maps are being experienced by the population within the study area.

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

The review and possible refinement of the strategic noise model may help to reduce the uncertainty in the calculated noise levels within the area under review, and will benefit any subsequent use of the model to assess the potential level of noise reduction benefit which may be delivered to the residents by potential mitigation measures. Field survey work would help with calibration of the strategic noise map, as well as provide information on whether the properties being assessed had noise sensitive rooms exposed on the most exposed facades, or whether noise mitigation measures were already present which may not be indicated within the calculation model.

Once the extent of the existing noise impact has been confirmed for the locations under review, the potential noise mitigation measures would then be investigated, and a cost benefit analysis undertaken for each, with the aim of developing a selection matrix which leads towards a recommendation for action.

This staged approach helps to ensure that any work undertaken is cost effective, will deliver genuine benefit to the residents, and has been undertaken in a prioritised manner which is objectively based.

7.3. Overview of possible mitigation measures

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

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

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

- Vehicle noise emissions and tyre noise regulations would be set at EU level
- National planning guidance or noise regulations would be set at national level
- Transport policy objectives may be set at regional level
 - improved public transport
 - getting people out of cars
 - increasing bus, train, bicycle journeys.
- Local authorities could undertake the following:
 - Replace diesel vehicles with Compressed natural gas / electric
 - Truck routes
 - Night time delivery restrictions or limits
 - Planning permissions
 - Enforcement of speed limits
 - Road closures / traffic routing
 - New road construction (bypass)
 - Road re-surfacing
 - Smoothing broken surfaces
 - Use of low noise road surfaces on higher speed routes
 - Planning zones
 - Locating noise sources and population with consideration to potential for noise impact
 - Façade insulation requirements
 - Secondary or triple glazing as a mitigation measure
 - Building construction detailing for new developments exposed to environmental noise
 - Noise barriers
 - Public liaison groups
 - Long term targets

From the above list it is apparent that the Councils only have powers to act within a number of the possible mitigation scenarios. Research has been undertaken within EC funded projects looking into the design of noise mitigation measures, and estimates of the extent of costs and benefits. The conclusion is often that there is no single solution which provides the optimal solution, rather a range of measures, each of which may provide an incremental improvement in the situation.

These actions against noise will be considered during the assessment of possible noise mitigation for sites identified through the decision support matrix, but through the noise action plan they should be encouraged to be considered within local and regional development plans, road maintenance proposals and the planning process.

7.4. Assessment of Options

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

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

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

The best information available at present comes from an EC working group position paper from 2003 "*Working Group on Health and Socio-Economic Valuation of Noise*" which proposes a median value in noise perceived by households of €25 per dB L_{den} , per household, per year based upon the noise level change compared to the initial situation. As an example, a noise barrier benefiting 25 houses, by 5 dB L_{den} , with a 20 year design would provide an estimated benefit of €25 x 25 houses x 5 dB x 20 years = €62,500. The cost of a new noise barrier could be €200 per m², so a 100 m long, 3 m high noise barrier may cost €60,000.

7.5. Preservation of areas below protection threshold

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

7.6. Management of Areas between the Thresholds

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

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

7.7. Planning for Noise Management

The planning system has the potential to exercise a significant influence on the control of future exposure to environmental noise, and may play a key role in the improvement of

amenity. The appropriate use of the planning system can help avoid, or minimise, the adverse impacts of noise without placing unreasonable restrictions on development.

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

- Bringing people to noise
 - New housing, hospital, school, nursing home etc. developments near to existing road, rail, industrial or airport noise;
 - Noise levels outside the façade, in gardens, in public open spaces;
 - Noise levels inside the building.
- Bringing noise to people
 - New or altered roads, railways, industrial sites or airports or commercial developments which would alter the noise environment in the vicinity of noise sensitive locations.

Experience in other EU countries suggests that the guidance and/or limit values for the two types of scenarios are not necessarily the same, and that extent of change may be as relevant to the consideration of impact as the actual level of noise.

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

In the scenario where new residential properties, or other noise sensitive premises, are introduced into an existing climate of environmental noise, there is currently no clear guidance. Until specific planning guidance on noise is forthcoming from DEHLG, Sligo Local Authorities propose to develop and publish its own set of guidance on noise assessment and control which would be applicable throughout the County.

In the scenario where new, or altered, sources of noise are introduced to existing residential properties, or other noise sensitive locations, there are currently a number of guidance documents which cover some of the situations which may arise, as discussed above. Where existing guidance does not cover the situation under consideration, Sligo Local Authorities will determine the format of assessment that it would consider appropriate.

It is currently envisaged that the guidance is likely to formalise the approaches to noise impact assessment which already appear commonly within Ireland. These are frequently based upon assessment methods within the UK, such as PPG24 from England and Wales, or PAN56 from Scotland, BS 4142 for the assessment of industrial noise, or MPS2 for mineral extraction site.

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

In the scenario where new noise sensitive premises are introduced to locations already exposed to levels of long term environmental noise likely to be above the thresholds of interest within the Regulations, i.e. 55 dB L_{den} and 45 dB L_{night} , it is considered appropriate to consider aiming to achieve target internal noise levels within noise sensitive rooms, such as living rooms and bedrooms.

In the case of new development, or conversions, these targets could be introduced through the use of appropriate planning conditions, and possibly some form of pre-completion testing as used in a number of other EU countries. The choice of targets for internal noise levels could be informed by the WHO Guidelines from 2000, or BS 8233, whilst the assessment of façade noise insulation capabilities could be undertaken using the methods set out within BS 8233 or BS EN 12354-3.

8. Public Participation

8.1. Public Consultation

The Draft Noise Action Plan has been developed by Sligo Local Authorities with regard to the Regulations and the EPA document “Draft Guidance Note for Noise Action Planning for the first round of the Environmental Noise Regulations 2006”, May 2008.

The Draft Action Plan aims to meet the requirements set out within the Regulations and presents a strategic approach to the management of environmental noise within Sligo City and County. An approach to the assessment and reduction of existing noise levels, where necessary, near to major roads is presented in Section 6 based upon the results of the strategic noise mapping. The Draft Action Plan also sets out in Section 7 an approach which aims to prevent and avoid the harmful effects, including annoyance, of the long term effects of exposure to environmental noise through the appropriate control of future development within the context of sustainability.

As an important stage in the development of the Noise Action Plan, Sligo Local Authorities have now issued this Draft Noise Action Plan as a document for consultation and seek responses and feedback from stakeholders and the public alike.

Within the public consultation Sligo Local Authorities have made copies of this Draft Noise Action Plan available to access by the public at a number of locations within County Sligo, and by placing an electronic version on the Authorities’ websites.

In addition, a number of statutory bodies and stakeholder organisations have been approached directly and ask to provide review and feedback on the proposals set out within the Draft Noise Action Plan.

A copy of the Draft Noise Action Plan is available for inspection at the offices outlined below from 9.00 am to 5.00 pm from Wednesday, 4th November, 2009 to Wednesday, 6th January, 2010:

- Sligo County Council, County Hall, Riverside, Sligo
- Sligo Borough Council, City Hall, Quay Street, Sligo
- Sligo County Library, Stephen Street, Sligo
- Sligo County Council, Teach Laighne, Humbert Street, Tobercurry, Co. Sligo

For further information in relation to Draft Noise Action Plan contact Fergus Meehan or Eamonn Brennan at 071 9111111.

Responding to the public consultation

Submissions should be made in writing to:

Director of Services (Infrastructure) Sligo County Council Governor’s House St. Anne’s Place Sligo	Director of Services Sligo Borough Council City Hall Sligo
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Submissions may be made by email to noise@sligococo.ie.

Submissions should be received no later than 3.00 pm on Wednesday, 6th January, 2010.

9. Implementation Plan

This Draft Noise Action Plan sets out below a proposed approach to implementation of any requirement for the mitigation of existing levels of environmental noise due to major roads within the County.

9.1. Roles and Responsibilities

Sligo County Council and Sligo Borough Council are the designated Action Planning Authorities as set out within the Environmental Noise Regulations 2006. The Councils are responsible for developing the action plan, and ensuring that the implementation timetable set out below is progressed and reviewed.

The National Roads Authority is the key external stakeholder to the Council during the implementation of the action plan, as they developed and retain the strategic noise mapping, and they are the body responsible for the national roads network.

9.2. Objectives

It is the Council's goal to adopt a strategic approach to the management of environmental noise with a view to preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health. The Councils will aim to promote a high level of protection and environmental health.

This goal is to be considered within the context of sustainable development and relates to the strategic objectives of the Councils.

The objective of the Councils is to promote an efficient, integrated, accessible and sustainable transport system for the county.

It is the objective of Sligo County Council to bring National Roads up to appropriate standards and to continue improvements on non-national roads so as to develop a safe and comprehensive road system for the county.

9.3. Programme of Works

The Noise action Plan is to be implemented through a staged process over 5 years, such that the works undertaken within the action plan will feed into the second round of strategic noise mapping in 2012. The implementation of the action plan will be reviewed and reported within the second round noise action plan due to be completed in 2013.

Year 1 – 2009

- Public consultation for Noise Action Plan

Year 2 - 2010

- Review strategic noise maps to identify priorities
 - Decision support matrix
- Confirmation of extent of impact
- Draw up list of areas for noise mitigation review
- Noise mitigation review
- Assess all identified sites
 - In context of proposed development & maintenance
 - Feasibility study for possible mitigation measures
 - Cost benefit analysis for feasible measures
 - Draw up list of cost effective interventions
- Review County Planning development and planning guidance regarding noise control

- Publish County planning guidance on noise assessment and control

Year 3 to 5 – 2011 to 2013

- Commence implementation of the relevant actions
- Collate, capture and consolidate data required for 2012 strategic noise mapping
- Assess implementation and use of guidance on planning and noise

Year 4 – 2012

- Produce new strategic noise maps for 2011 assessment year

Year 5 - 2103

- Review impact of Action Plan and amend where appropriate
- Public consultation and finalisation of 2013 to 2018 Action Plan

Ongoing requirements

- Annual review of progress against milestones

9.4. Evaluation, Review and Corrective Action Programmes

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

In 2013 the Councils will carry out a review of the program of works implemented under this action plan. Progress and results will be evaluated using information gathered through local assessment of environmental noise exposure. This will include “before and after” evaluations of any noise mitigation measures. A review of new noise maps will also be carried out, giving an indication of the change in environmental noise levels and the numbers of people exposed.

10. Summary and Conclusions

This Draft Noise Action Plan has been prepared as required by the Environmental Noise Regulations 2006, Statutory Instrument No. 140 of 2006. These Regulations give effect to EU Directive 2002/49/EC relating to the assessment and management of environmental noise.

It aims to provide an overview of the requirements of the Regulations, a review of the results of the strategic noise mapping within Sligo City and County, and set out an approach to the strategic management and control of environmental noise over the next four to five years.

The objectives of the Sligo Local Authorities noise action plan are to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise. This will be achieved by taking a strategic approach to managing environmental noise and following a balanced approach which promotes the objectives in the context of sustainable development. This approach promotes action on environmental noise through four avenues, these being noise reduction at source, land use planning adapted to noise goals, procedures to reduce noise impact and operating restrictions to reduce noise emissions.

This Draft Noise Action Plan primarily considers the long term environmental noise impact from road traffic noise sources, and sets out an approach to review noise impact levels near to the major sources assessed during the strategic noise mapping in 2007. In the interests of equality and promotion of best practice the action plan also sets out a number of proposals for the prevention and avoidance of environmental noise levels detrimental to human health to be implemented through the planning process, these being applicable throughout County Sligo.

10.1. Summary of Actions

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

- Review County Planning development and planning guidance regarding noise control
- Publish County planning guidance on noise assessment and control
 - Require noise impact assessments of proposed developments which are below the scale associated with full EIA requirements
 - Require noise control measures to be incorporated into proposals for new developments of noise sensitive premises which attain appropriate internal noise targets
- Assess implementation and use of guidance on planning and noise

Noise reduction of existing sources of long term environmental noise, where necessary, will be considered within the area covered by the strategic noise mapping undertaken by the NRA in 2007. The approach to the assessment of relevant actions will use the following approach:

- Review strategic noise maps to identify priorities through use of a decision support matrix
- Confirm the extent of the noise impact through refined noise modelling and/or long term noise monitoring
- Draw up list of areas for noise mitigation review
- Assess all identified sites
 - In context of proposed development & maintenance
 - Feasibility study for possible mitigation measures
 - Cost benefit analysis for feasible measures
 - Draw up list of cost effective interventions

- Undertake cost effective actions for which funding is available

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

Prepare relevant information for 2012 strategic noise mapping

- Estimate extent of sources under 2012 strategic noise mapping
- Set out data requirements for 2012 strategic noise mapping
- Collate, capture and consolidate data required for 2012 strategic noise mapping

Undertake an annual review of progress on implementation of the noise action plan.

Appendix A:
Decision/Selection Matrix

Decision/Selection Matrix

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

Table E1 presents the prioritisation decision support matrix to be used to support the action planning decision making process.

Table E1: Example decision support matrix

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

Note: for Air noise the L_{DEN} column is used with the L_{Aeq,16hr} results.

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

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

Table E2: Example of use of decision support matrix

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

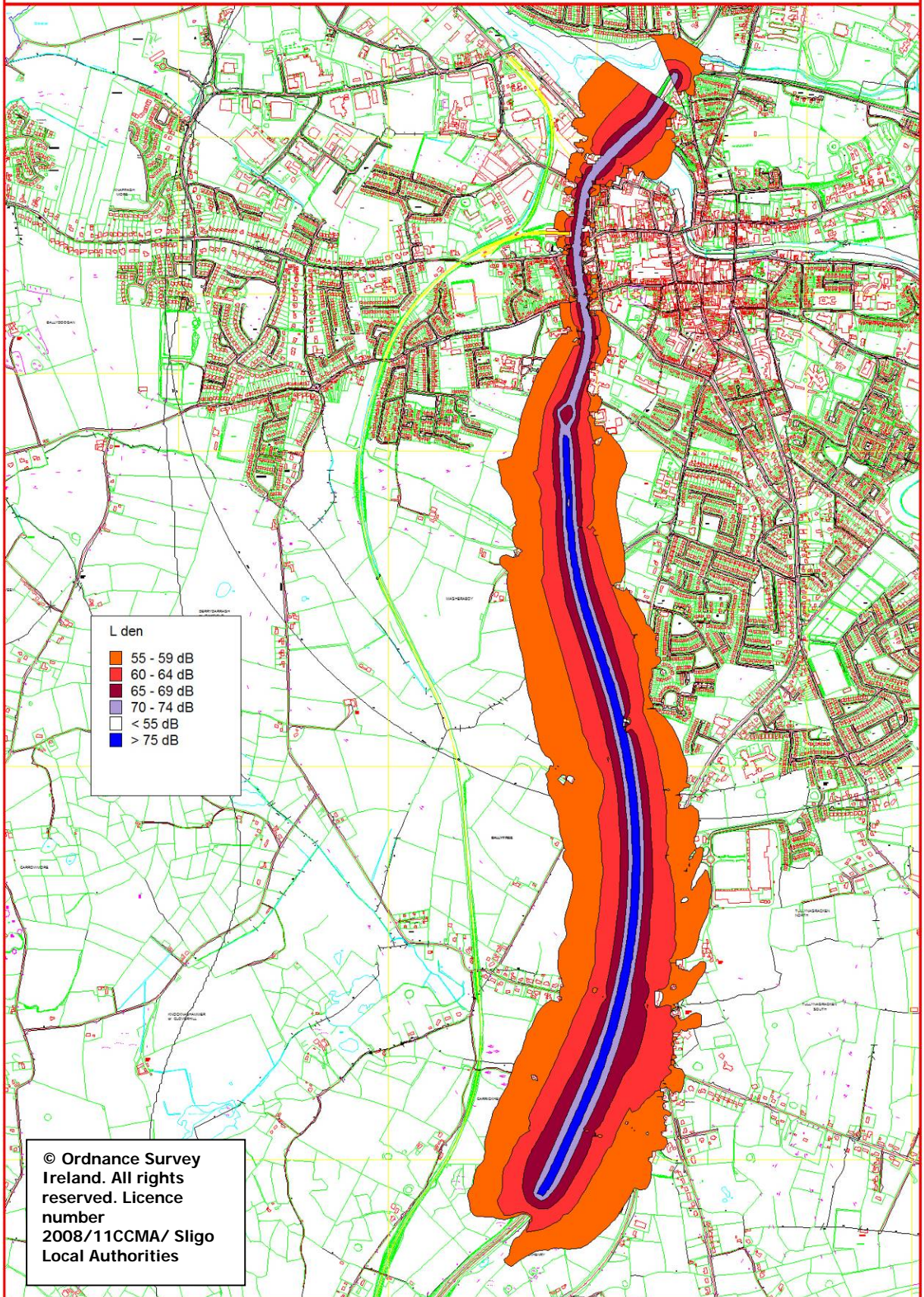
A score of approximately 17 or above indicates that the threshold levels have been exceeded and the location should be included in the shortlist for further assessment.

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

Appendix B

Strategic Noise Mapping

Sligo Strategic Noise Mapping: Day-evening-night



Sligo Strategic Noise Mapping: Night

