

Wexford County Council

Noise Action Plan 2019 - 2023



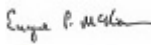


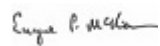
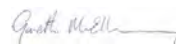
Wexford County Council

Noise Action Plan 2019 - 2023

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EXECUTIVE SUMMARY

This Noise Action Plan has been prepared as required by the Environmental Noise Regulations 2018, S.I. No. 549 of 2018. These Regulations give effect to EU Directive 2002/49/EC relating to the assessment and management of environmental noise.

The objective of the Noise Action Plan is to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise.

The Noise Action Plan is based on the strategic noise mapping prepared by TII on behalf of Wexford County Council, as the only noise source requiring assessment is generated by major roads carrying traffic in excess of the current threshold levels. The roads identified as major roads in County Wexford were the N11, M11, N25, N30, N80, R730, R733, R741 and the R769.

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 interim values proposed as onset levels for assessment of noise mitigation measures for noise due to road traffic are as follows:

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

The following highlights the main findings from the noise assessment arising from the strategic noise mapping:

- An estimated population of 6,976 and 4,771 have predicted noise levels above the onset levels for assessment of L_{den} and L_{night} respectively;
- A comparison of the figures during the period L_{den} shows that the approximate number of people exposed to road noise > 55 dB(A) decreased from 7,924 in 2013 to 6,976 in 2018 (decrease of 948 people or 12%);
- A comparison of L_{night} figures shows that the population affected by road noise > 50 dB(A) decreased from 5,318 in 2013 to 4,771 in 2018 (decrease of 547 people or 10%);
- Population exposure in the current Round 3 strategic noise mapping suggest that 5% of the total population of County Wexford are exposed to L_{den} levels in excess of 55 dB. These statistics also suggest that 3% of the total population are exposed to L_{night} levels greater than 50 dB.

The Noise Action Plan sets out the role and responsibilities of Wexford County Council as Action Planning Authority in regard to existing noise levels and the mitigation and protection measures for areas identified for treatment. The following key actions are proposed:

- The potential noise impact of future development will be adequately managed through the Planning and Licensing processes, including existing provision for Environmental Impact Assessments. Implementation of existing regulations will continue, and the County Development Plan will take cognisance of the noise action plan.

- The potential noise impact from increased traffic on major roads will be addressed by reviewing (and revising, if necessary) the Noise Action Plan every 5 years, or sooner where a material change in environmental noise in the area occurs. The noise action plan will be reviewed.
- Carry out, following consultation with the EPA, a review of the landscape assessment and characterisation process in order to identify a process to delimit Quiet areas in open country that will be complementary to the findings of the County Wexford Landscape Character Assessment Study. Identify areas for delimiting and submit proposal to EPA and Minister for approval.
- The accuracy of predicted noise levels will be confirmed, and potential noise mitigation measures identified on a priority basis. Confirmation of maps will consist of visual inspection and where appropriate, noise analysis. A cost-benefit analyses on potential actions will be carried out and a list of beneficial, achievable actions for noise mitigation drawn up.
- A budget will be identified with each relevant authority and a programme of works agreed and implemented. As with all proposed works, the delivery of any proposed actions will be contingent on funding being available.

1 INTRODUCTION

This noise action plan has been prepared in accordance with the requirements of EU Directive 2002/49/EC (known as the Environmental Noise Directive or 'END'). The main aim of this directive is to establish a common approach across the EU to avoiding, reducing or preventing the harmful effects of exposure to environmental noise.

It is the responsibility of Wexford County Council (under the Environmental Noise Regulations 2018) to act as the designated Action Planning Authority in the delivery of this Noise Action Plan.

1.1 ENVIRONMENTAL NOISE DIRECTIVE (END)

The Environmental Noise Directive (commonly referred to as END) was adopted by the EU on the 25th of June 2002 as Directive 2002/49/EC. The aim of the END is to develop a common approach amongst EU Member States in monitoring, assessing and controlling environmental noise that is deemed harmful when exposed to the population. The END focusses particularly on environmental noise to which humans are exposed in large agglomerations and open countryside, industrial areas, public parks, schools, hospitals, retail areas, major transport infrastructure etc. However, the END does not consider environmental noise produced by domestic activities, neighbours, the workplace or any transportation due to military activities. Environmental noise, as per guidelines set out in the END, can be categorised as 'unwanted or harmful outdoor sound created by human activity, such as noise emitted by means of transport, road traffic, rail traffic, air traffic and from sites of industrial activity such as those defined in Annex I to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control'.

In order to achieve the objectives of the END, the EU has set out principal guidelines to be followed by Member States, including the monitoring of environmental noise, managing environmental noise issues, public consultation and implementation of long-term strategies. Furthermore, the END requires all EU Member States to produce strategic maps highlighting the main sources of environmental noise, e.g. major roads, major railways, major airports and agglomerations. Major transport infrastructure can be defined as follows:

- Major roads – Roads with > 3 million vehicles per annum
- Major railways – Railways with > 30,000 trains per annum
- Major airports – Airports with > 50,000 movements per annum.

Agglomerations can be defined as follows:

- Urban centres with a population of 100,000 and above.

With regard to the measuring of environmental noise, the EU also encourages a homogenous approach amongst Member States through Article 6.2 of the END. The European Commission's (EC) objective is to establish standardised guidelines for the assessment of noise indicators. L_{den} (day-evening-night equivalent level) and L_{night} (night equivalent level) are the current noise indicators in use under the END.

This precedes EC Directive 2015/996 establishing common noise assessment methods, which was introduced on the 19th of May 2015, outlining common data requirements and a common assessment method for determining L_{den} and L_{night} values. The Annex to Directive 2015/996 replaces Annex II of Directive 2002/49/EC and sets out the new common noise assessment methodology (CNOSSOS) that must be implemented across member states from the 31st of December 2018. This will bring a more coherent and harmonised approach to the assessment of noise levels from the main sources of noise (road traffic, railway traffic, aircraft and industrial) which will ultimately generate more comparable noise maps across Europe. This methodology will be adopted for Round 4 of Strategic Noise Mapping which is due in 2022.

1.2 ENVIRONMENTAL NOISE REGULATIONS

The European Communities (Environmental Noise) Regulations 2018 (SI No. 549 of 2018) came into effect on the 31st of December 2018 and transpose EU Directive 2002/49/EC as amended by Commission Directive (EU) 2015/996 establishing common noise assessment methods and replacing Annex II of EU Directive 2002/49. These regulations replace the Environmental Noise Regulations 2006, SI No. 140 of 2006.

The Regulations, *“provide for the implementation in Ireland of a common approach within the European Union intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise”* (SI No. 549 of 2018).

For the purposes of these Regulations, “environmental noise” means unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity including the categories of activities specified in Annex I to Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2014 on industrial emissions (integrated pollution prevention and control).

The Regulations apply to environmental noise to which people are exposed, in line with the definition given in Section 4(2) of the regulations and 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.

1.2.1 Roles and Responsibilities of Designated Bodies

The Regulations designate noise-mapping bodies and action planning authorities for the making and reviewing of strategic noise maps and action plans. Primary responsibility for both noise mapping and action planning is assigned to local authorities. While a number of other bodies also have noise mapping functions, they will be carried out on behalf of the local authorities concerned.

1.2.1.1 National Authority

The Regulations designate the EPA as the national authority responsible for overseeing the implementation of the Regulations. The Agency's role includes supervisory, advisory and coordination functions in relation to both noise mapping and action planning, as well as reporting requirements for the purpose of the Directive.

1.2.1.2 Noise Mapping Bodies

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

- for the agglomeration of Dublin, Dublin City Council and the County Councils of Dun Laoghaire/Rathdown, Fingal and South Dublin;
- for the agglomeration of Cork, Cork City Council and Cork County Council;
- for the agglomeration of Limerick, Limerick City Council and the County Councils of Limerick and Clare;
- for major railways, Iarnród Éireann or TII (formerly undertaken by the Railway Procurement Agency), as appropriate, on behalf of the action planning authority or authorities concerned;
- For major roads:
 - I. where such roads are classified as national roads in accordance with Section 10 of the Roads Act 1993 (No. 14 of 1993), Transportation Infrastructure Ireland (TII), on behalf of the action planning authority or authorities concerned, and
 - II. other than those provided for in part (i), the relevant road authority or authorities, as appropriate; and
- For major airports: the relevant airport authority, on behalf of the action planning authority or authorities concerned.

1.2.1.3 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; and
- For major airports, the local authority or local authorities within whose functional area the airport is located.

Accordingly, Wexford County Council is designated as the Action Planning Authority for all sections of major roads within its functional area, which experience a volume of traffic greater than 3 million vehicle passages per year.

There are no major railways, airports or agglomerations within the functional area of the Council.

1.3 NOISE ACTION PLAN (NAP)

As required by the END and Environmental Noise Regulations 2018, local authorities are responsible for carrying out action planning within their own administrative areas. Four main categories have been highlighted for investigation, including agglomerations and roads, rail and airports as part of the transport infrastructure.

Under Regulation 12, Wexford County Council is required to prepare a noise action plan which is defined in the Regulations as:

“a plan designed for the purpose of managing noise issues and their effects, including noise reduction if necessary.”

The purpose of this Noise Action Plan is to provide an overview of the regulations and review the results of the latest strategic noise maps in the Wexford County Council administrative area (produced by TII in 2017). Additionally, it seeks to set out a proposed approach to strategically manage environmental noise for the period 2019-2023.

1.4 SCOPE OF NOISE ACTION PLAN

This Noise Action Plan addresses the issues laid out in the END and the corresponding transposed Environmental Noise Regulations 2018 (S.I. No. 549 of 2018). Accordingly, the Noise Action Plan addresses the following (as per the Fourth Schedule of the Regulations):

- A description of the action planning area under investigation and the noise sources taken into account;
- The responsible authorities;
- The legal context;
- Any noise limit values in place;
- A summary of the results of the strategic noise mapping for 2017;
- An evaluation of the estimated number of people exposed to noise identification of problems and situations that need to be improved;
- A record of the public consultations organised in accordance with Regulation 12(5);
- Any noise-reduction measures already in force and any projects in preparation;
- Actions which the action planning authorities intend to take in the next five years, including any measures to preserve quiet areas;
- A long-term strategy to manage noise;
- Financial information (if available): budgets, cost-effectiveness assessment cost-benefit assessment;
- Provisions envisaged for evaluating the implementation and the results of this action plan.

1.5 REVIEW OF NOISE ACTION PLANS

Regulation 12(7)(b) requires that Noise Action Plans be reviewed and, if necessary, revised:

- (i) in the event of a material change in environmental noise in the area concerned, or
- (ii) if requested by the EPA,
- (iii) not later than five years after the date on which it was made or last reviewed.

1.6 PUBLIC CONSULTATION

Public consultation on the Noise Action Plan is also required under Regulation 12(5) which states:

Action planning authorities shall ensure that:

- a. the public are consulted on action plans, reviews and revisions of action plans;*
- b. the public are given early and effective opportunities to participate in the making or revisions of action plans;*
- c. the results of public participation are taken into account in finalising action plans or revisions of action plans;*
- d. the public are informed of the decisions taken in relation to action plans and revisions of action plans;*
- e. reasonable time-frames are adopted to allow sufficient time for each stage of public participation.*

In addition, regulation 13(2) of the Regulations provides that:

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

The public consultation process involves consultation with public bodies, statutory consultees, stakeholders and the general public to provide feedback to help inform the Noise Action Plan and how the local authority can improve its noise management procedures and their subsequent implementation. Refer to **Appendix G** for the list of the organisations to be consulted.

1.7 NOISE ACTION PLAN TIMETABLE

The proposed timetable for coming into force of the Noise Action Plan is as follows:

- May 2019 – Noise Action Plan to be submitted to the Environmental Protection Agency (EPA) for review.
- 28th May 2019 – Public Consultations on the Draft Noise Action Plan (6 week duration).
- 23rd July 2019 – Draft Noise Action Plan (including comments) to be finalised.
- 1st August 2019 – Finalised plan to be submitted to the EPA including the short Summary Noise Action Plan.

2 EXISTING NOISE MANAGEMENT LEGISLATION AND GUIDANCE

2.1 NATIONAL LEGISLATION OR GUIDANCE

In addition to the Environmental Noise Regulations 2018 (S.I. No. 549 of 2018), which is discussed in **Section 1**, there are a number of other pieces of national legislation and guidance that relate to the management and control of environmental noise. These are discussed in the following sections.

2.1.1 Environmental Protection Agency Act 1992

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

- **Section 106 - Regulations for control of noise:** gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or disamenity, constitute a danger to health, or damage property. 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 require measures to be taken to prevent or limit noise:** gives powers to local authorities and the EPA to control and limit noise from any premises, process or work; and
- **Section 108 - Noise as a Nuisance:** 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.

In relation to general neighbourhood noise problems, Local Authorities may encourage complainants to exert their rights under the Environmental Protection Agency Act 1992 (Noise) Regulations 1994 which provides straightforward access to the Courts by an individual or groups concerned about excessive noise.

2.1.2 Roads Acts 1993 to 2015

The Roads Act 2015 amended the Roads Act of 1993. Prior to this amendment, guidelines of good practice were issued by the National Roads Authority (NRA) in both 2004 and 2014.

The Roads Act 2015 has consolidated all previous Acts and documents in an effort to further improve noise emission control in the future. Transport Infrastructure Ireland (TII) was established through a merger of the National Roads Authority (NRA) and the Railway Procurement Agency under the Roads Act 2015.

TII's primary function is to provide an integrated approach to the future development and operation of the national roads network and light rail infrastructure throughout Ireland. TII have recently

indicated their intention to publish updated standards documents relating to noise and vibration in the context of planning and construction of (proposed) national roads in 2019.

The NRA (now TII) published 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' in 2004. This document provided guidelines on the effective management of road noise to the relevant local and regional authorities. A further guide was issued in 2014, 'Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes'. The advice amplifies and supplements the Guidelines, and should be read in conjunction with them. This 2014 guide was essentially a follow-on from its 2004 predecessor but used findings from a study of Environmental Impact Assessments (EIAs) which were carried out to evaluate the effectiveness of the Guidelines and the design effectiveness of noise barriers.

Recommendations for the treatment of noise in both documents provide a legislative basis for use by acousticians, local authorities, etc. when informing policy changes to control noise emissions from roads. In essence, both guidance documents indicate that "where feasible" the design and construction of new national road schemes should meet a day-evening-night noise level 60 dB L_{den} . This is important during the process of carrying out EIAs on new road sites, as pre-existing noise sensitive areas in the vicinity (e.g. residential areas, schools, churches, etc.) need to be protected from excessive road noise.

2.1.3 Planning and Development Act 2000 (as amended)

The Planning and Development Act 2000 (as amended) provides the statutory basis for planning control in Ireland. Part 2 of the Act deals with Development Plans, Guidelines and Directives, aspects of which are addressed later in this section. Part 3 deals with the control of development and permits planning authorities to impose conditions on developments, acquire land for open spaces and enter into agreements regulating the development or use of land. Part 10 of the Act relates to Environmental Impact Assessment (EIA).

Directive 2014/52/EU came into force on 16 May 2017 and amended Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. The Directive requires that for specified developments an Environmental Impact Assessment Report (EIAR) must be prepared. The purpose of an EIAR is to state the effects, if any, which the proposed development, if carried out, would have on the environment.

EIA is integrated into consent processes and contributes to the environmental basis for the decision-making. Environmental factors that must be considered in the EIA include Roads and Traffic, Amenity, Population and Human Health, and Noise and Vibration. There is a well-established screening and scoping provision built into the planning system to assist with determining the likely significant environmental effects of the project. The planning control system has significant potential to deliver some of the objectives of this plan.

2.1.4 Planning and Development (Strategic Housing Development) Regulations 2017

Planning applications for housing developments of more than 100 residential units and 200 plus student bed spaces can now be made directly to An Bord Pleanála. New legislation which allows for

this type of application was enacted on 19th December 2016 and the associated regulations came into effect on 3rd July 2017.

This new type of application has been introduced as part of Rebuilding Ireland to speed up the planning application process and accelerate delivery of larger housing and student accommodation proposals. The types of housing applications which can be made direct to An Bord Pleanála are referred to as Strategic Housing Development (SHD) and allow applications for specific types of housing developments as follows:

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

The regulations have the effect that applications for this type of development will be made directly to An Bord Pleanála who is the planning authority in these cases. As such they will be the authority responsible for considering the impact of noise for those types of proposed developments in Wexford County.

2.1.5 Building Regulations

Current building guidelines are underpinned by the Building Control Acts 1990 to 2014. These regulations pertain to the safety of people within the built environment and call for constructions to offer “reasonable resistance” to both airborne and impact sound.

The Department of Housing, Planning and Local Government (DHPLG) – formerly the Department of the Environment, Community and Local (DECLG) - published regulations regarding noise in 2014 (S.I. No. 606 of 2014), with an updated *Technical Guidance Document (TGD) E - Sound*, of the Building Regulations 1997 to 2014 published in January 2015. Key amendments in the guidance included:

- Use of minimum standards of sound insulation performance to define “reasonable resistance” to sound;
- The consideration of reverberation in common integral parts of buildings as an issue; and
- Mandatory testing prior to completion to demonstrate compliance with the new regulations.

Part E does not address environmental noise through the building facade from external sources such as aircraft, trains, road traffic or industry. Additional guidance is provided in BS 8233 Sound Insulation and noise reduction for buildings Code of practice and sound control for homes. This is outlined in **Section 2.3**.

2.1.6 IPCC/WASTE LICENSING

Certain industrial, process and waste facilities are licensed by the EPA through the use of IPC, Industrial Emissions or waste licences. These licences are a single integrated licence covering all emissions from the facility and the environmental management of the facility. This licensing is sometimes subject to regulation regarding environmental noise. The EPA is the governing body for dealing with such issues, and the relevant guidance is set out in the EPA's 2016 publication "*Guidance Note for Noise: Licence Applications, Surveys and Assessments in relation to scheduled activities (NG4)*".

As part of the IPPC and Waste Licensing systems, certain scheduled activities and operations have conditions attached to their licences which effect control over emissions of noise. Suggested noise limit criteria are laid out in **Table 2-1** below:

Table 2-1: Recommended EPA Noise Limit Criteria

Time	Daytime Noise Criterion dB L _{A,T} (07:00-19:00 hrs)	Evening Noise Criterion dB L _{A,T} (19:00-23:00 hrs)	Night time Noise Criterion dB L _{A,T} (23:00-07:00 hrs)
Quiet Areas	Noise from the licenced site to be at least 10dB below the average daytime background noise level measured during the baseline survey.	Noise from the licenced site to be at least 10dB below the average evening background noise level measured during the baseline survey.	Noise from the licenced site to be at least 10dB below the average night time background noise level measured during the baseline survey.
Areas of low background noise	45dB	40dB	35dB
All other areas	55dB	50dB	45dB

2.1.7 National Planning Framework 2040

The current guidance at national level comes from the Irish government's 2018 publication 'Project Ireland 2040 National Planning Framework' (the NPF) and the accompanying 'National Development Plan 2018-2027' (the NDP). The NPF is intended to be used as a long-term strategy to help Ireland to grow and prosper in a safe and sustainable way over the next 20 years. National Policy Objective 65 (NPF, p.129) states that it is an objective of the NPF to:

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

National policy is to promote more compact and efficient forms of development within settlements, making it more important to proactively manage noise. In addressing these issues, the NPF (p.129) will support:

- **Noise Management and Action Planning:** Measures to avoid, mitigate, and minimise or promote the pro-active management of noise, where it is likely to have significant adverse impacts on health and quality of life, through strategic noise mapping, noise action plans and suitable planning conditions;
- **Noise Amenity and Privacy:** This includes but is not limited to, good acoustic design in new developments, in particular residential development, through a variety of measures such as setbacks and separation between noise sources and receptors, good acoustic design of buildings, building orientation, layout, building materials and noise barriers and buffer zones between various uses and thoroughfares; and
- **Quiet Areas:** The further enjoyment of natural resources, such as our green spaces and sea frontage, through the preservation of low sound levels or a reduction in undesirably high sound levels, is particularly important for providing respite from high levels of urban noise. As part of noise action plans, an extra value placed on these areas, in terms of environmental quality and the consequential positive impact on quality of life and health, due to low sound levels and the absence of noise, can assist in achieving this.

2.1.8 Planning Design Guidance

The following no-exhaustive list of guidance documents are relevant to sustainable development in the urban environment:

- Design Manual for Urban Road and Streets, DTTAS & DEHLG (April 2013);
- Our Sustainable Future, A Framework for Sustainable Development in Ireland, DCCAE (June 2012);
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), DHPLG (March 2018);
- Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities, DEHLG (May 2009);
- Urban Design Manual: A best practice guide. A companion document to the Draft Planning Guidelines on Sustainable Residential Development in Urban Areas, DEHLG (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 that ‘Privacy is an important element of residential amenity’. Whilst they are not mentioned specifically, it is appropriate to consider environmental noise and noise transfer between dwellings in respect of amenity and privacy.

The Urban Design Manual lists privacy and 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.

2.1.9 Wind Energy Planning Guidelines

The Department of Housing, Planning and Local Government (DHPLG) formerly the DEHLG are responsible for the regulations pertaining to wind turbine noise output. The DEHLG published Wind Energy Planning Guidelines (2006) suggests a “*lower fixed limit of 45 dB(A) or a maximum increase of*

5 dB(A) above background noise at nearby noise sensitive locations” (DEHLG, p.30). The latter requirement may be subject to a lower fixed limit in areas with low background noise. An upper fixed limit of 43dB(A) at night time is deemed appropriate as there is no requirement to protect external amenity at night. Separate noise limits are applicable for day and night-time as during the night the protection of external amenity becomes less important and the emphasis should be on preventing sleep disturbance. The fixed limit of 43db(A) will protect sleep inside properties during the night.

The DHPLG are currently undertaking a review of the 2006 Wind Energy Planning Guidelines. The review is addressing a number of key aspects including sound or noise, visual amenity setback distances, shadow flicker, community obligation, community dividend and grid connections.

When finalised, the revised Guidelines will be issued to planning authorities under Section 28 of the Planning and Development Act 2000, as amended. Planning authorities and, where applicable, An Bord Pleanála must have regard to guidelines issued under Section 28 in the performance of their functions generally under the Planning Acts. The current 2006 Wind Energy Development Guidelines remain in force until the new Guidelines are published.

2.1.10 Quarries and Ancillary Activities

The EPA has published guidelines relating to noise control in quarries in the 2004 publication ‘*Quarries and Ancillary Activities – Guidelines for Planning Authorities*’. This document outlines the recommended noise limits for such activities to prevent disturbance and health impacts upon noise sensitive areas in the vicinity.

The suggested noise limit values are 55 dB $L_{Aeq, 1hr}$ and 45 dB $L_{Aeq, 15 min}$ for daytime and night-time respectively. These values are to be used as a general guide, although in areas with lower levels of pre-existing background noise, tighter restrictions may be enforced. With regard to quarries where blasting is a regular occurrence, the EPA suggests that “*blasting should not give rise to air overpressure values at the nearest occupied dwelling in excess of 125 dB (Lin) maximum peak with a 95% confidence limit*”.

These guidelines are also in accordance with noise limits specified in the Irish Concrete Federation “Environmental Code” 2nd Edition publication (October 2005).

2.2 REGIONAL OR LOCAL LEGISLATION OR GUIDANCE

Regional guidance and legislation for the Wexford County administrative area comes primarily from two sources: the Wexford County Development Plan 2013-2019 and the Regional Planning Guidelines for the South-East Region (SERPGs) 2010-2022. These documents contain guidance with regard to projected socio-economic growth in the area, as well as infrastructural improvements to promote sustainable development and healthier lifestyles.

The SERPGs do not offer explicit guidance in the context of environmental noise control. A key component in this document is the provision of open space for urban and rural communities. The intention behind this initiative is to promote both environmental awareness and general wellbeing amongst the population. It is envisaged that environmental noise control will play an important role in providing these open space areas to the public in a safe and sustainable manner.

2.2.1 Regional Spatial and Economic Strategy

The South-East Regional Planning Guidelines 2010-2022 were adopted by the South-East Regional Authority in July 2010 to cover the counties of Wexford, Carlow, Kilkenny, the southern part of County Tipperary and Waterford (City and County). These Guidelines set out a series of recommendations to local authorities, which are clearly linked to and support national investment priorities and are designed to strengthen integrated approaches to policy making and planning at a local level, in line with regional and national planning frameworks.

The South-East Regional Authority was dissolved in 2014 and its functions and responsibilities transferred to the Southern Regional Assembly. The Southern Region is comprised of 9 counties, all 6 counties of Munster (Cork, Clare, Kerry, Limerick, Tipperary and Waterford) plus the 3 south-East counties of Carlow, Kilkenny and Wexford. The Southern Regional Assembly has prepared a draft Regional Spatial and Economic Strategy (RSES) for the whole of the Southern Region covering the period 2019-2031. The draft RSES provides a long-term regional level strategic planning and economic framework, to support the implementation of the National Planning Framework, for the future physical, economic and social developments for the Southern Region. The South-East Regional Planning Guidelines 2010-2022 shall continue to have effect until the RSES for the Southern Regions is adopted.

The overarching purpose of the RSES is to support the programme for change set out in Project Ireland 2040, the National Planning Framework (NPF) and the National Development Plan (NDP- 2018-2027), Government economic policies, and to ensure coordination of planning and development policy matters through the Development Plan and Local Enterprise and Community Plan (LECP) processes. Therefore, in support of the NPF, Regional Policy Objective 127 states:

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

The RSES supports ‘Quiet Areas’ in proactively managing noise stating that as part of noise action plans an extra value will be placed on these areas.

2.2.2 Wexford Development Plan 2013 – 2019

The Wexford County Development Plan 2013-2019 sets out Wexford County Council’s intentions for the future development of land, including measures for the improvement of the natural and physical environment and the provision of infrastructure.

There are certain key objectives which have been outlined in the Wexford County Development Plan 2013-2019 regarding environmental noise management:

- To have regard to the provisions of the Environmental Protection Agency (EPA) Acts 1992 and 2003 and the Environmental Protection Agency Act (Noise) Regulations 1994 when assessing planning applications (Objective N01);
- To regulate activities which contribute to excessive noise other than those already controlled by the EPA (Objective N02);

- To ensure new development does not cause an unacceptable increase in noise levels affecting noise-sensitive properties. Proposals for new development with the potential for excessive noise will be required to submit a construction and/or operation management plan to control such emissions (Objective N03);
- To require activities likely to give rise to excessive noise to install noise mitigations measures and monitors. The provision of a noise audit may be required where appropriate (Objective N04); and
- To ensure that relevant planning applications comply with the provisions of any Noise Action Plan or noise maps relating to the area (Objective N05).

Objective T38 of the development plan states that *“To ensure that traffic noise levels are considered in the assessment of all significant development proposals. This assessment will have regard to noise maps for national and major non-national roads to be prepared by the NRA and the Council further to Environmental Noise Regulation S.I. No. 140 of 2006”*. Regarding noise emissions arising from transport, noise mapping will be carried out by TII on national primary roads in the region, and individual local authorities will focus on non-national roads.

2.3 OTHER RELEVANT NOISE MANAGEMENT GUIDANCE

International guidance and standards that are often referred to by planning authorities for noise control include the following:

2.3.1 World Health Organisation (WHO) Guidelines

The WHO has produced three sets of noise guidelines:

- Guidelines for Community Noise (CNG 1999);
- Night Noise Guidelines for Europe (NNG 2009); and
- Environmental Noise Guidelines for the European Region (ENG 2018).

ENG 2018 introduced new recommendations for noise levels from sources including air, road and rail transport, wind turbines and leisure use. The current environmental noise guidelines for the European Region supersede the CNG from 1999. For Road traffic noise WHO recommends reducing noise levels produced by road traffic below 53 decibels (dB) L_{den} and noise levels produced by road traffic during night time below 45 dB L_{night} as road traffic noise above this level is associated with adverse health effects.

Nevertheless, the guideline development group (GDG) recommends that all CNG indoor guideline values and any values not covered by the current guidelines (such as industrial noise and shopping areas) should remain valid.

The WHO Guidelines provide robust public health advice, which is essential to drive policy action that will protect communities from the adverse effects of noise. The implementation of the WHO Guidelines is a policy matter for the various regulatory agencies involved. These noise levels have not yet been adopted nationally and are made without consideration of the economic benefit of the noise sources. Policy decisions on noise limits requires that a balance be struck in this regard.

2.3.2 Noise Exposure and Health

Long-term exposure to excessive environmental noise can have detrimental impacts upon human health. However, there are currently no national criteria in relation to noise limit values.

The WHO published a report in 2010 “Burden of disease from environmental noise” and presents findings on healthy life years lost in Europe as a result of environmental noise. This report highlighted the damaging effects of excessive environmental noise on humans over prolonged periods.

The report summarises the many reviews of evidence on the relationship between environmental noise and specific health effects, including cardiovascular disease, cognitive impairment, sleep disturbance, tinnitus and annoyance. For each perceived health effect, the environmental burden of disease methodology, based on exposure–response relationship, exposure distribution, background prevalence of disease and disability weights of the outcome, is applied to calculate the burden of disease in terms of disability-adjusted life years (DALYs). The report states that “With conservative assumptions applied to the calculation methods, it is estimated that DALYs lost from environmental noise are 61 000 years for ischaemic heart disease, 45 000 years for cognitive impairment of children, 903 000 years for sleep disturbance, 22 000 years for tinnitus and 654 000 years for annoyance in the European Union Member States and other western European countries.

It is estimated that at least one million ‘healthy life years’ are lost every year from traffic related noise in the western part of Europe. The main burden of environmental noise in Europe are sleep disturbance and annoyance, mostly related to road traffic noise.

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

2.3.3 British Standard BS 8233:2014

British Standard BS 8233 *Guidance on sound insulation and noise reduction for buildings* provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use. To be used as a guideline it suggests criteria, such as suitable sleeping/resting conditions, and proposes noise levels that normally satisfy these criteria for most people.

The standard suggests suitable internal noise levels within different types of buildings including residential dwellings for steady external noise sources. The standard requires the designer to establish the intended use, including noise activity, noise sensitivity and privacy, of the proposed rooms and other spaces. The guidelines for noise levels in a residential property are generally in accordance with WHO Guidelines for Community Noise and Night Noise Guidelines. BS 8233 also provides guidance on appropriate internal noise levels within different types of workplaces such as offices.

To achieve satisfactory sound insulation inside the building, it is necessary to know how each space is to be used so that appropriate noise criteria can be chosen. The designer can then decide which noise criteria are appropriate for the relevant parts of the proposed building, and select appropriate noise levels.

2.3.4 Professional Planning Guidance on Planning and Noise (ProPG)

ProPG: Planning & Noise Professional Practice Guidance on Planning & Noise - New Residential Development was published in the UK in 2017. It was developed jointly by the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). ProPG was produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

It encourages improvements in the consistency and quality of plan making and decision-taking in relation to acoustic matters. The context is primarily development control, although some of the content is relevant to strategic planning. The policy coverage is limited to England, however it is acknowledged the approach may be useful in other parts of the UK. Although the Foreword specifically references England, it does not have a mandatory or statutory footing. There is no national guidance in Ireland relating to noise in the Planning Process. ProPG has relevance in Ireland where it could offer some degree of standardisation if was to be considered by Irish planners and developers, however it has no legal status.

The ProPG follows a systematic, proportionate, risk based, two-stage, approach to a good acoustic design process.

The process comprises an initial site noise risk assessment to categorise the site into one of four risk categories. Based on the risk category a second stage assessment incorporating internal noise guidelines, external amenity area noise and other relevant noise issues is used to develop an Acoustic Design Statement for the development. The Acoustic Design Statement is evaluated by the planning authority in determining the application.

2.4 REVIEW OF ROUND 2 WEXFORD COUNTY COUNCIL NOISE ACTION PLAN 2013-2018

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

In accordance with the requirements of the directive and regulations, in Wexford, strategic noise maps must be prepared for major roads only. The requirements for major railways, major airports or agglomerations of greater than 100,000 do not apply.

For the second round of noise mapping, the definition of a major road in accordance with the regulations is a road with more than 3 million vehicles passages per annum. Wexford County Council identified non- national routes (regional roads) with this level of traffic within the county. As such, noise mapping for the Wexford County Council Noise Action Plan 2013-2018 was based on the road sections in **Table 2-2**.

Table 2-2: Extents of roads over 3 million vehicle passages per year - 2013

Road	Description
N11	Wexford to Wicklow border
N25	Wexford to New Ross
N30	New Ross to Enniscorthy
N80	Scarawash to Bunclody
R730	Wexford Bridge to N25 Drinagh roundabout
R733	The Talbot Hotel to N25 Whitford roundabout
R741	Wexford Bridge to Castlebridge Village
R769	Wexford Bridge to N25 Maldron roundabout

This resulted in population exposure counts as shown in Table 2-3 and

Table 2-4 extracted from the strategic noise maps produced by the TII (formerly NRA) and attached in **Appendix C**.

Table 2-3: Population exposure counts - 2012 (L_{den})

Decibels dB (A)	L_{den} number of people exposed
<55	30,065
55 – 59	3,113
60 – 64	1,867
65 – 69	1,660
70 – 74	1,284
>75	0

Table 2-4: Population exposure counts - 2012 (L_{night})

Decibels dB (A)	L_{night} number of people exposed
<50	32,671
50 – 54	2,057
55 – 59	1,725
60 – 64	1,536
65 – 69	0
>70	0

Under the 2013-2018 Noise Action Plan several mitigation measures were proposed including the completion of the New Ross and Enniscorthy Bypass schemes. The projected traffic reduction in Enniscorthy is over 50 percent resulting in a noticeable decrease in noise levels.

It was proposed to adopt an EPA policy or direction on Environmental noise. Measures included adopting best practice/guidance documents and policy in relation to environmental noise and integrating the Noise Action Plan into the planning process. It was proposed that the planning process

would be used where appropriate to ensure *‘new developments are designed and constructed in such a way as to minimise noise disturbance’*.

The Implementation Programme committed to progressing the bypass schemes and implementing relevant sections of the plan within the constraints of available funding.

2.4.1 Completed Noise Control Measures

Wexford County Council has been proactive in noise control measures during the lifetime of the 2013-2018 Noise Action Plan. The following measures have been progressed during the lifetime of the plan:

- Both the Enniscorthy and New Ross bypass schemes are now nearing completion and will relocate traffic away from two large population centres.
- Wexford County Council has invested in noise monitoring equipment to facilitate noise monitoring at potential action areas, quiet areas and for complaint investigation.
- Wexford County Council has initiated noise monitoring and investigation of noise complaints including a comprehensive monitoring and reporting programme.
- Wexford County Council initiated a major wind farm noise survey of four windfarms in 2016/2017. The survey has been one of the most comprehensive noise surveys on wind farms carried out in the country to date and the Department of Communications, Climate Action and Environment has utilised data from the study in determining future policy in terms of wind farm development. The programme included comprehensive monitoring and reporting.
- Wexford County Council initiated noise monitoring and investigation of noise complaints including a comprehensive monitoring and reporting programme on two windfarms in 2018.
- Wexford County Council have introduced designated 30km/hr speed limit zones in 254 housing estates across the county in 2019.
- The Council each year invests in traffic calming measures. In terms of traffic calming measures pedestrian crossings have been installed in the following locations, John Street New Ross, Ramsgrange village, Kilmuckridge village, Boolavogue village and Tara Hill.
- Wexford County Council implemented an Active Town Travel scheme on the R730 in 2014. The scheme provided a 2.5km cycle track and footpath along the R730 to link the business areas, leisure facilities and residential areas between Drinagh and Maudlintown in Wexford Town. The main aim of this project was to reduce car usage in this area and increase walking and cycling activities.
- Road surfacing materials are available that can reduce road traffic generated noise compared to hot rolled asphalt. These include Stone Mastic Asphalt (SMA) and Porous Asphalt. In general, Wexford County Council use SMA surfacing on all towns and village pavement schemes. On national roads, SMA surfacing works have been completed on the N11 and N30 in Enniscorthy Town in 2014 and 2015, the N30 New Ross in 2015, 2016 and 2018 and the N11 Oilgate in 2017. In general, SMA is also used in all urban areas.

3 DESCRIPTION OF NOISE ACTION PLAN AREA

As required by the END and Environmental Noise Regulations 2018, local authorities are responsible for carrying out action planning within their own administrative areas. Four main categories have been highlighted for investigation, including agglomerations and roads, rail and airports as part of the transport infrastructure. Accordingly, each of the corresponding regulatory bodies are to be consulted before producing and implementing the Noise Action Plan: Transport Infrastructure Ireland (TII), Irish rail, and the relevant airport authority.

3.1 NOISE ACTION PLAN AREA

The Noise Action Plan covers the entire area of County Wexford as shown in **Figure 3-1**. The county, which covers an area of 236,527 ha, is located in the south east of the country and borders the counties of Waterford, Kilkenny, Carlow and Wicklow. Wexford has four main towns, namely: Wexford, New Ross, Enniscorthy and Gorey. The former two towns are located in the south and west of the county, while the latter two towns support the northern part of the county. The county has a strong network of smaller towns, villages and rural settlements which support the county's rural population. Its distinctive landscape is one of rolling countryside to mountains, including Hook Peninsula on the southern coast, the Sloblands around Wexford town, the Slaney and Barrow river valleys, and the foothills of the Blackstairs Mountains in northwest of the county. Wexford is also a strong maritime county, with a coastline that extends to approximately 246 km and includes the ports of Rosslare and New Ross. Wexford is a constituent member of the Southern Region for regional spatial and economic planning and participates in the Southern Regional Assembly.

Based on the criteria set out in the Regulations, the only noise source requiring assessment relates to noise generated by major roads.

3.2 DESCRIPTION OF GENERAL POPULATION

The 2016 population of Wexford is 149,722 representing a 3% increase in population compared to 2011 levels. Regarding population demographics within the county, the '65 and over' age cohort has increased significantly since the 2011 Census. 14.7% of the population is now accountable in this category, indicating a 19.7% increase since 2011. This makes the '65 and over' age cohort one of the most pronounced demographics in the county, and regional population projections for the south-east suggest that this demographic will continue to increase by approximately 56% between 2016 and 2031.

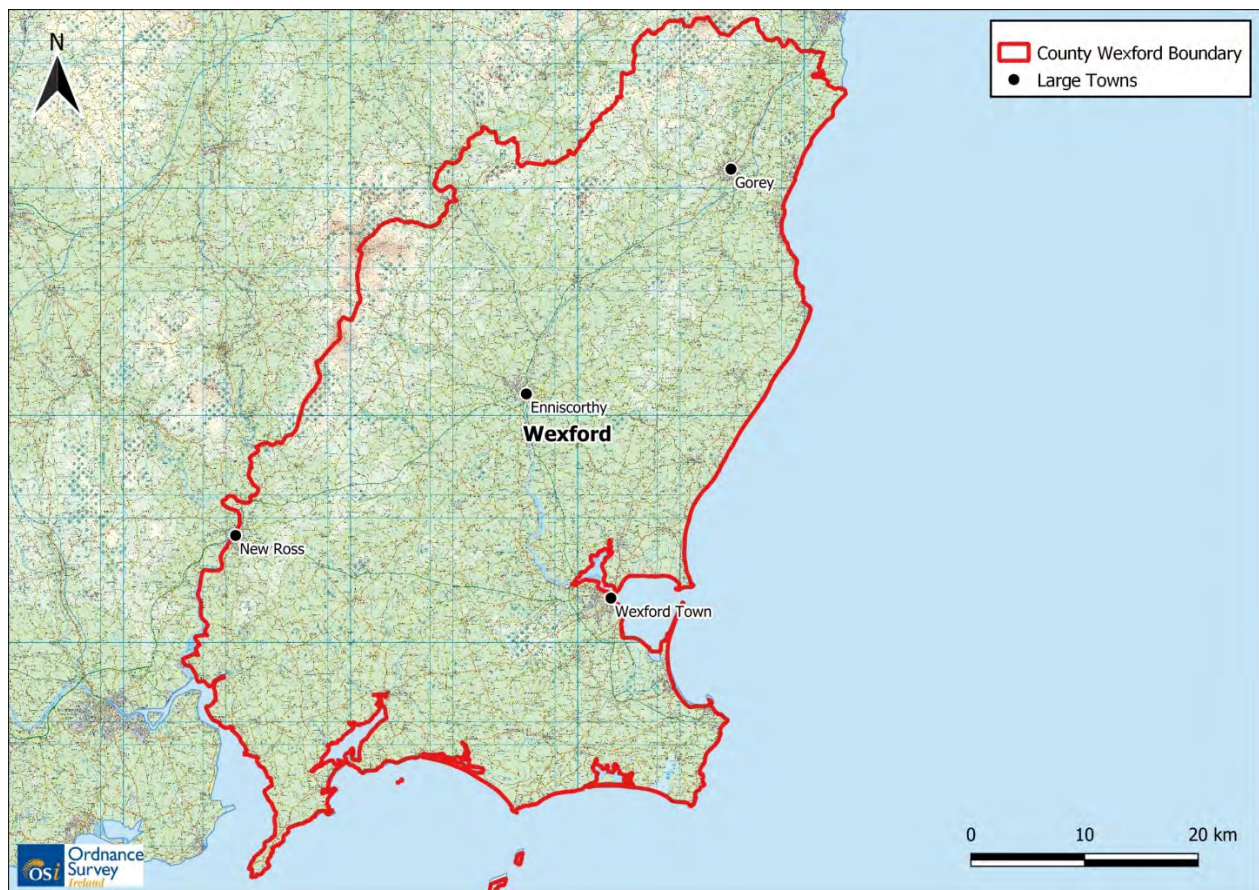


Figure 3-1: Extent of Noise Action Plan Area

3.3 NOISE SOURCES CONSIDERED IN THIS PLAN

Under the requirements of END and the Environmental Noise Regulations 2018, the designated noise mapping bodies are required to make strategic noise maps for the following:

- Major roads (> 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.

The following noise sources have been considered in this plan as part of the Round 3 Strategic Noise Mapping.

3.3.1 Roads

There are approximately 3,625 km of roads within County Wexford. The road network comprises 171 km of National Roads, 477km of Regional Roads and 2,977km of local roads within the County boundary. The majority of the road network (95%) is made up of regional and local roads. National Primary roads make up 156km of the road network. There is one National Secondary route, the N80 which is 15km in length.

The county is heavily reliant on its national roads' infrastructure for inter-county access. The National Spatial Strategy (NSS) identified the N11/M11 as a Strategic Radial Corridor and the N25 and N80 as Strategic Linking Corridors. The National Planning Framework is a replacement for the NSS 2002 - 2020. The N11/M11 (E01) and N25 (E30) are part of the Trans-European Route Network, linking Rosslare Europort with Dublin-Belfast-Larne and Waterford-Cork respectively. The Regional Planning Guidelines for the South-East Region 2010-2022, which will be in place until the RSES for the Southern Region is adopted identifies the N30 as a main access route. The enhancement of these routes is of great importance to the economic well-being of the country as a whole and in ensuring ease of access to and from Rosslare Europort.

Wexford County Council is designated as the Action Planning Authority for all sections of major roads within its functional area, which experience a volume of traffic greater than 3 million vehicle passages per year. Mapping was carried out by TII for both national roads and, at the request of Wexford County Council, non-national routes (regional roads) with this level of traffic within the county. Wexford County Council provided model-ready data to TII in order to carry out noise mapping for non-national routes (regional roads) within the county, which included the R730, R733, R741 and R769. For the third round of strategic noise mapping, all roads which exceed the 3 million vehicles passages per year threshold are identified in **Figure 3-2** and listed in **Table 3-1**.

The total length of road centrelines designated as Major Roads, with an annual traffic flow above 3 million vehicles, was 151km within County Wexford, of which 22km was motorway (M11), 111km was National road, mainly describing the N11, N25, N30 and N80 with the remaining 18km consisting of non-national routes (regional roads) which met the mapping criteria.

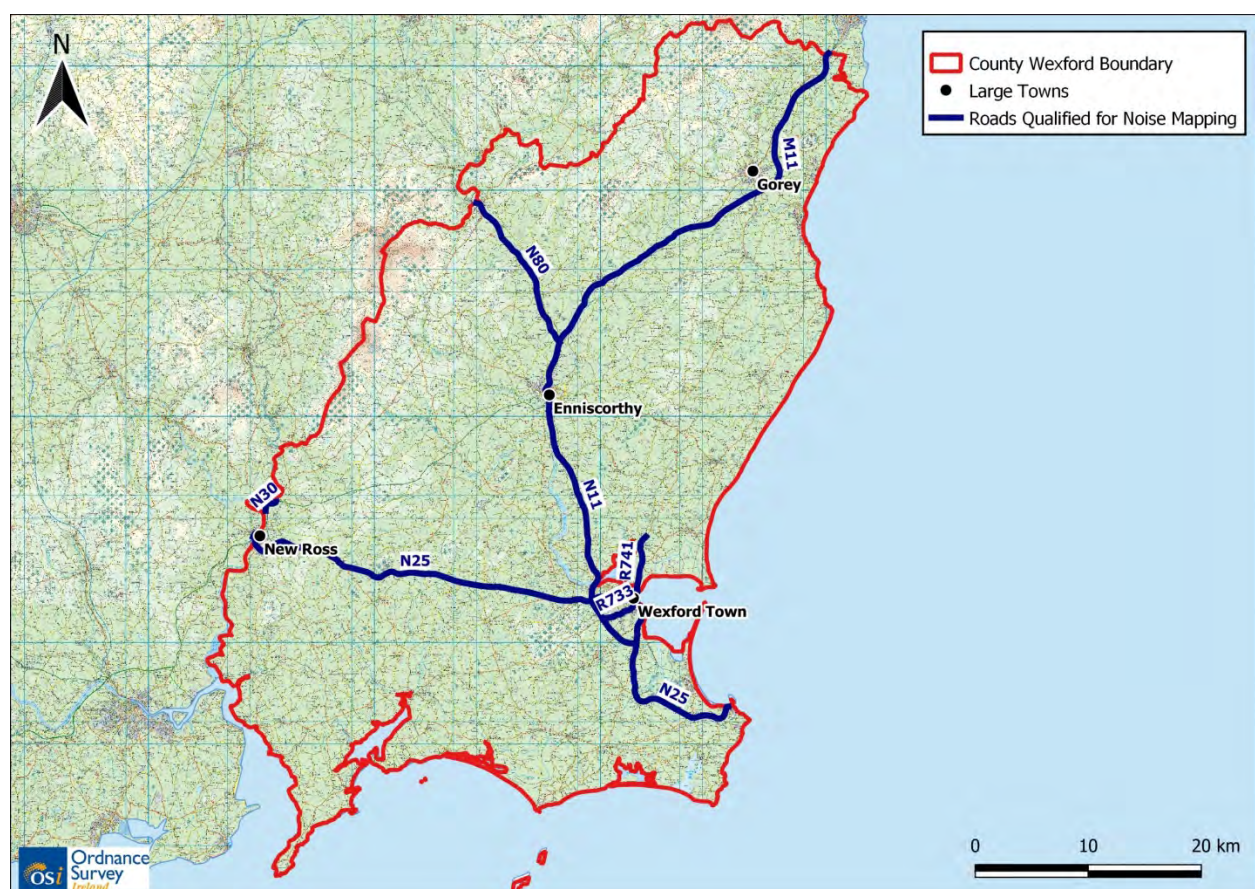


Figure 3-2: Overview of roadways in Wexford qualified for noise mapping

Table 3-1 Extents of roads over 3 million vehicle passages per year

Road	Description
N11	M11/R772 roundabout to N25 roundabout west of Wexford Town
M11	Wicklow border north of Gorey to N11/R772 roundabout
N25	Kilkenny border at New Ross to Wexford Town to Rosslare Harbour
N30	R700 junction north of New Ross to R729 junction
N80	N11 roundabout to Carlow border at Bunclody
R730	Wexford Bridge to R769 junction in Wexford Town to N25 roundabout south of Wexford Town
R733	N25 roundabout west of Wexford Town to R730 junction
R741	Ferrybank to Castlebridge
R769	Wexford Bridge to N11/N25 roundabout west of Wexford Town

3.3.2 Rail

Wexford County Council is committed to supporting and facilitating measures to increase usage of railway services. The Wexford Development Plan 2013 – 2019 states:

“The Rosslare Harbour - Dublin railway line is now the only operating rail service in the county and is designated as a Strategic Radial Corridor in the National Spatial Strategy 2002-2020 (NSS). Recent improvements to the rolling stock on this service are welcomed. The Council continues to support and encourage further enhancements to the quality, frequency and speed of the service and will facilitate the necessary infrastructure improvements, such as the provision of train passing places, in order to facilitate such enhancements”.

Furthermore, the plan actively supports measures to encourage use of rail:

“These measures include appropriately designed parking schemes, bus stops, taxi ranks, amendments to existing railway stations and appropriately sited new railway station. The Council will continue to promote enhancements to access to train services, including at stations, for people with disabilities”.

Owing to the defined threshold of 30,000 train passages per year for “major railways” the requirements for major railways do not apply within the functional area of Wexford County Council.

3.3.3 Airports

There are no major airports (national or regional airports) within the functional area of the Wexford County Council. However, the South-East Regional Airport, located to the south of Waterford city, plays an important role in providing access to and from County Wexford for commercial, tourism and social purposes. Wexford County Council will support proposals to expand the facilities at the airport, including a runway extension. Wexford County Council will also support proposals to develop access to this airport and other airports in the country including by public transport.

Owing to the defined threshold for “major airport” which means a civil airport which has more than 50,000 movements per year, the requirements for major airports do not apply.

3.3.4 Agglomerations

Owing to the defined threshold of having a population in excess of 100,000 persons for “agglomerations” the requirements for agglomerations do not apply within the functional area of Wexford County Council.

3.4 NOISE SENSITIVE AREAS

Certain locations and building uses are considered to be more sensitive to environmental noise pollution than others. The main priority of the END is to manage environmental noise such that it is managed where it is high and preserved where it falls within acceptable limits.

Aside from residential areas, there are certain buildings/locations that are also sensitive to excessive noise emissions. According to the EPA and the END, these additional locations are to be defined by the local authority that is carrying out the Noise Action Plan. Examples of such non-residential buildings include hospitals, residential care facilities, schools and churches.

Non-residential buildings and locations which are viewed as being noise sensitive near the major roads within the functional area of Wexford County Council have been identified based on a review of the strategic noise maps. Buildings including hospitals, residential care facilities and schools have been considered and are mapped.

Wexford County Council is adopting the following definition of a noise sensitive location:

Any location in which the inhabitants or a protected species¹ may be disturbed by noise from transportation or industrial sources. This includes any dwelling, habitable house, hotel or hostel, health building (providing patient services), nursing/retirement home, educational establishment, crèche/child-care centre, place of worship or entertainment, or other facility that require the absence of noise at nuisance levels for its proper use. Also includes areas of scenic quality or special recreational amenity importance designated in a Development Plan or a Noise Action Plan adopted by a planning authority.

3.4.1 Quiet Areas

Two categories of “quiet areas” are defined in the END and Environmental Noise Regulations. These are quiet areas within an agglomeration [Regulations 10(1)] and quiet areas in open countryside [Regulations 10(2)]. Under these regulations, Wexford County Council has the power to delimit quiet areas in agglomerations and in open country following consultation with the EPA and approval by the Minister for Communications, Climate Action and the Environment.

¹ Species protected under the Wildlife Act 2000 (as amended), the Habitats Directive 92/43/EEC or the Birds Directive 2009/147/EC.

In order to protect the population of the county from excessive noise Wexford County Council is treating the entire county as open country, including settlements. Under Regulation 10(2), “quiet areas in open country” means an area, delimited by an action planning authority following consultation with the Agency and approved by the Minister, that is undisturbed by noise from traffic, industry or recreational activities.

The minimum requirements for Action Plans (Annex V of the Directive) includes:

‘actions which the competent authorities intend to take in the next five years, including any measures to preserve quiet areas’

The identification of potential quiet areas throughout County Wexford are an objective of the Noise Action Plan 2019-2023. In order to ensure all parts of the county are treated equally, quiet areas in settlements will be treated equally to quiet areas in open country. Settlements are defined in the Wexford County Development Plan 2013-2019 and, categorised in accordance with the settlement hierarchy.

The settlement hierarchy centres on developing the role of Wexford Town as the hub, supported by the county’s other large towns, New Ross, Enniscorthy and Gorey. The remaining network of smaller villages and rural settlements will provide additional support for rural-based communities and their hinterlands. The comprehensive list of the settlement hierarchy in County Wexford is detailed in **Table 3-1**.

Table 3-2: County Wexford Settlement Hierarchy

Settlement Type	Settlement
Hub	Wexford Town
Larger Towns	Enniscorthy New Ross Gorey
District Towns	Bunclody Rosslare Harbour and Kilrane Castlebridge Courtown and Riverchapel Wellingtonbridge
Strong Villages	Kiltealy Taghmon Bridgetown Rosslare Strand Clonroche Campile Coolgreany Ferns Kilmuckridge
Smaller Villages and Rural Settlements	All remaining villages and rural settlements
Open Countryside	All open countryside outside of the designated settlements

The identification of potential quiet areas in County Wexford's settlements is an important objective of this Noise Action Plan. The EPA's Guidance Note for Noise Action Planning (update June 2018), states that a potential quiet area may be designated in urban areas where the noise levels are generally low and are deemed suitable using the EPA scoring matrix for noise. Noise management and mitigation are very important in an urban setting, due to the fact that these populations are likely to face increased exposure to noise pollution (e.g. rail, road traffic, industry, etc.) compared to their counterparts in a rural setting.

As such, the identification of potential quiet areas will remain an objective in the delivery of this Noise Action Plan. Urban settlements are characterised by the nature of their built environments, which can pose challenges in locating and designating communal quiet areas for residential use.

Additionally, the Wexford County Development Plan 2013-2019 has a strategic objective to protect and maintain the open nature of the county's countryside with reference to the recommendations of County Wexford's – Landscape Character Assessment (Volume 3 of the Development Plan). Four landscape character units have been identified in County Wexford. Classification of each landscape character area is based on a matrix of factors which includes tranquillity, which relates to low levels of built environment, traffic and noise. The Landscape Character Assessment (LCA) identifies 'Landscapes of Greater Sensitivity' which are identified in the Map attached at **Appendix H**.

3.5 NOISE MANAGEMENT UNDER THE CURRENT PLANNING SYSTEM

3.5.1 Wexford County Council Development Plan 2013-2019

The Wexford County Development Plan 2013-2019 contains several provisions on noise management beginning with a universal objective that applies to all roads in the county:

- To undertake traffic management schemes, which may include reductions in speed limits and/or other measures, with a view to enhancing safety for all road users, where considered appropriate to do so and as resources allow (Objective T35);
- To support and facilitate the provision of charging points for electric vehicles (Objective T37);
- To ensure that traffic noise levels are considered in the assessment of all significant development proposals. This assessment will have regard to noise maps for national and major non-national roads to be prepared by the NRA and the Council further to Environmental Noise Regulation S.I. No. 140 of 2006 (Objective T38); and
- Motorway service areas are subject to noise control conditions.

Wexford County Council is committed to the protection and enhancement of the environment through the prevention and control of water, air, noise and light pollution and by facilitating good quality waste management facilities.

3.5.1.1 Reference to Previous Noise Action Plan

The Wexford County Development Plan 2013-2019 makes specific reference to the Noise Action Plan stating:

‘The Planning Authority will have regard to any noise mapping and/or Noise Action Plan relating to the area when considering planning applications.’

The Council have set out the following planning objectives:

- To have regard to the provisions of the Environmental Protection Agency (EPA) Acts 1992 and 2003 and the Environmental Protection Agency Act (Noise) Regulations 1994 when assessing planning applications (Objective N01);
- To regulate and control activities likely to give rise to excessive noise, other than those activities which are regulated by the Environmental Protection Agency (Objective N02);
- To ensure new development does not cause an unacceptable increase in noise levels affecting noise sensitive properties. Proposals for new development with the potential to create excessive noise will be required to submit a construction and/or operation management plan to control such emissions (Objective N03);
- To require activities likely to give rise to excessive noise to install noise mitigation measures and monitors. The provision of a noise audit may be required where appropriate (Objective N04); and
- To ensure that relevant planning applications comply with the provisions of any Noise Action Plan or noise maps relating to the area (Objective N05).

The development plan further sets out design standards for residential development, nursing homes and residential care homes, while controlling and limiting noise from commercial centres, public houses and nightclubs.

3.5.2 South-East Region Planning Guidelines 2010-2022

The Regional Planning Guidelines (RPG) for the South-East Region 2010-2022 have been published by the South-East Regional Authority under the authority of the Planning and Development Act, 2000 (as amended). The region includes Waterford City and counties Carlow, Kilkenny, South Tipperary, Waterford and Wexford. The preparation of the RPG has taken account of the key issues affecting the development of the region.

Some guiding principles of the RPG include the need for a critical mass of population in the region and in the main settlements, improved access and transport linkages and an environment which is attractive for people to live in.

The guidelines include a sustainable transport policy for the region and the Development Plan Implications for Planning Authorities. There is a strong emphasis on modal shift from private means of transport to more sustainable transport modes and also on the development of rail freight, particularly to/from the region's ports. The RPGs recognise the limitations of the rail link due to the aging infrastructure and resulting slow speeds. It is unlikely that any significant change from road to rail transport will arise during the course of this noise action plan.

The Regional Planning Guidelines for the South-East Region 2010-2022 will be in place until the RSES for the Southern Region is adopted (as outlined in **Section 2.2.1**).

4 RESPONSIBLE AUTHORITY FOR ACTION PLANNING

Wexford County Council is the designated action planning authority. Wexford county does not facilitate a major airport (>50,000 movements per annum), a major railway network (>30,000 trains per annum) or agglomeration (urban centres with a population of 100,000 and above). Therefore, the only noise source to be considered relates to major roads (>3 million vehicles passages per annum). As the responsible authority for carrying out Noise Action Plans, Wexford County Council will address major roads as the primary source of excessive, environmental noise in the county.

4.1 CONTACT DETAILS FOR THE RESPONSIBLE ACTION PLANNING AUTHORITY

The following are the contact details for the responsible authority:

Wexford County Council,
County Hall,
Carricklawn,
Wexford,
Y35 WY93.

Telephone: (053) 919 6000
Fax: (053) 919 6045
Email: environment@wexfordcoco.ie

4.2 DESCRIPTION OF NOISE REDUCTION MEASURES ALREADY IN PLACE

The main source of excessive, environmental noise in County Wexford comes from vehicular traffic on national and regional roads. The county's main hub, Wexford Town, is supported by a series of other regional towns (e.g. Gorey, New Ross, Enniscorthy) and smaller towns/villages which account for a sizeable portion of the rural community. This geographically-broad settlement pattern in the county indicates the importance of road infrastructure as the primary means of transport. Therefore, as stated in the Wexford County Development Plan 2013-2019, *"the Council will continue to work to undertake, encourage and facilitate the maintenance and improvement of the road network in the county"*. The pursuit of such a strategy will enable more efficient transport capabilities for both commercial and personal road users, as well as removing disruptive noise sources (e.g. HGVs) from towns/villages and redirecting them to lesser-populated bypass routes.

In the context of a growing road network, Wexford County Council will also seek to encourage alternative means of transport to the private vehicle where possible. Accordingly, the overall objective of 'Smarter Travel' will continue to be promoted. This initiative hopes to decrease the number of private car journeys by encouraging increased use of public transport. As a result, this initiative will not only help to lower greenhouse gas emissions and improve air quality, but also lower noise emissions due to projected lower volumes of private car journeys. This initiative is in line with mitigation objective AQ05 in the Strategic Environmental Assessment of the Wexford County Development Plan 2013-2019.

5 SUMMARY OF NOISE MAPPING RESULTS

5.1 OVERVIEW OF THE PREPARATION OF NOISE MAPS

As outlined in **Section 1.1** and **Section 1.2**, the END and Regulations set out the requirements for the management of environmental noise, comprising the preparation of Strategic Noise Maps, and the development and subsequent implementation of Noise Action Plans.

In accordance with the requirements of the directive and regulations, in Wexford, 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 do not apply. For the third round of noise mapping, all roads (both national and regional roads) within County Wexford, which exceeded the 3 million vehicle passages per annum threshold were mapped.

Transport Infrastructure Ireland (TII), the designated noise mapping body for national roads, prepared strategic noise maps to meet the requirements of the Regulations during 2017. TII also undertook noise mapping of major regional roads with this level of traffic within the county at the request of Wexford County Council. Wexford County Council provided model-ready data to TII to facilitate the mapping of non-national routes (regional roads) within the county, including the R730, R733, R741 and R769.

Strategic noise mapping are one of the key inputs into the Noise Action Plan. Essentially a strategic noise map is a representation of the noise situation in a given area, presented in terms of a chosen noise indicator. Noise levels are represented by contour lines, which capture noise variation over a geographical area. The contours are colour-coded for clarity (see **Appendix A**) and are presented in 5dB contour bands.

5.2 DATA SOURCES

In order to produce the necessary data to construct a noise map, noise source variables (i.e. traffic speed, traffic volume, the proportion of Heavy Goods Vehicles (HGVs) and the type of road surface) as well as noise attenuation properties (i.e. geometric divergence, atmospheric absorption, ground attenuation and diffraction) must be considered. These variables are critical during the noise modelling phase of the project (which in this instance was carried out by TII). Once this information has been established, the resultant output can be used to create noise maps for the area in question.

5.3 CALCULATION METHODOLOGY

During the modelling phase of the project, TII followed the UK national computation method 'Calculation of Road Traffic Noise (CRTN), Department of Transport – Welsh Office, HMSO, London, 1998'. This methodology is in line with recommendations set out in paragraph 2.1 of Annex 2 of the Environmental Noise Regulations 2006.

TII generated GIS noise grids during the noise modelling process. These grids were subsequently converted into GIS polygons, which are essentially noise contour maps (divided in 5 dB bands) ranging from 55 to >75 dB for L_{den} and 50 to >70 dB for L_{night} .

The compilation of this noise action plan also requires that an estimate of the number of people living in exposed dwellings be provided to the European Commission. To fulfil this requirement, population data from the Central Statistics Office (CSO) and address data from the geo-directory were included in the analysis. Specifically, the population data used were from Census 2016 'small area population statistics' (SAPS). These small areas account for regions containing between 50 and 200 dwellings. For the purpose of the Round 3 strategic noise mapping exercise the address data used were from geo-directory Quarter 2 2016 following advice from CSO, who used this when developing the SAPS data for Census 2016. The simultaneous analysis of these datasets allows for an estimation of the average number of people living in each residence or dwelling. Ultimately, these estimates enable the collation of overall exposure levels to road noise within the county administrative area.

5.4 PRESENTATION OF RESULTS

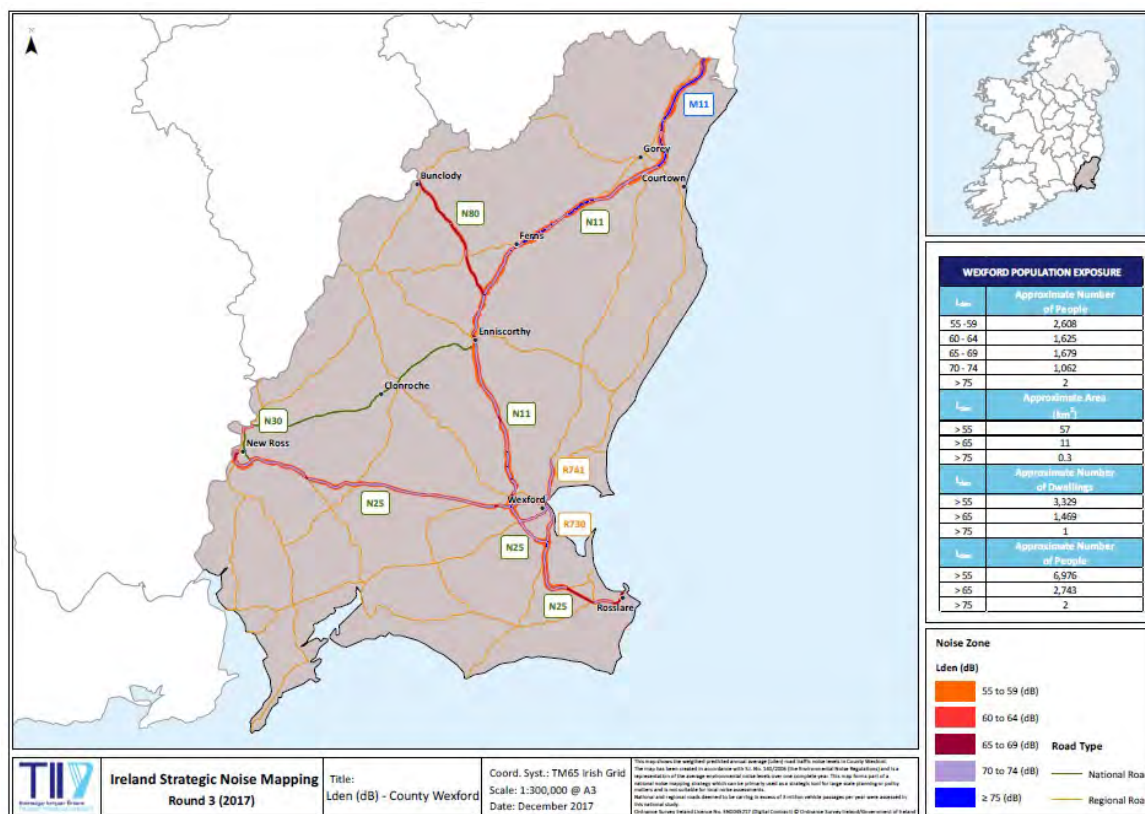
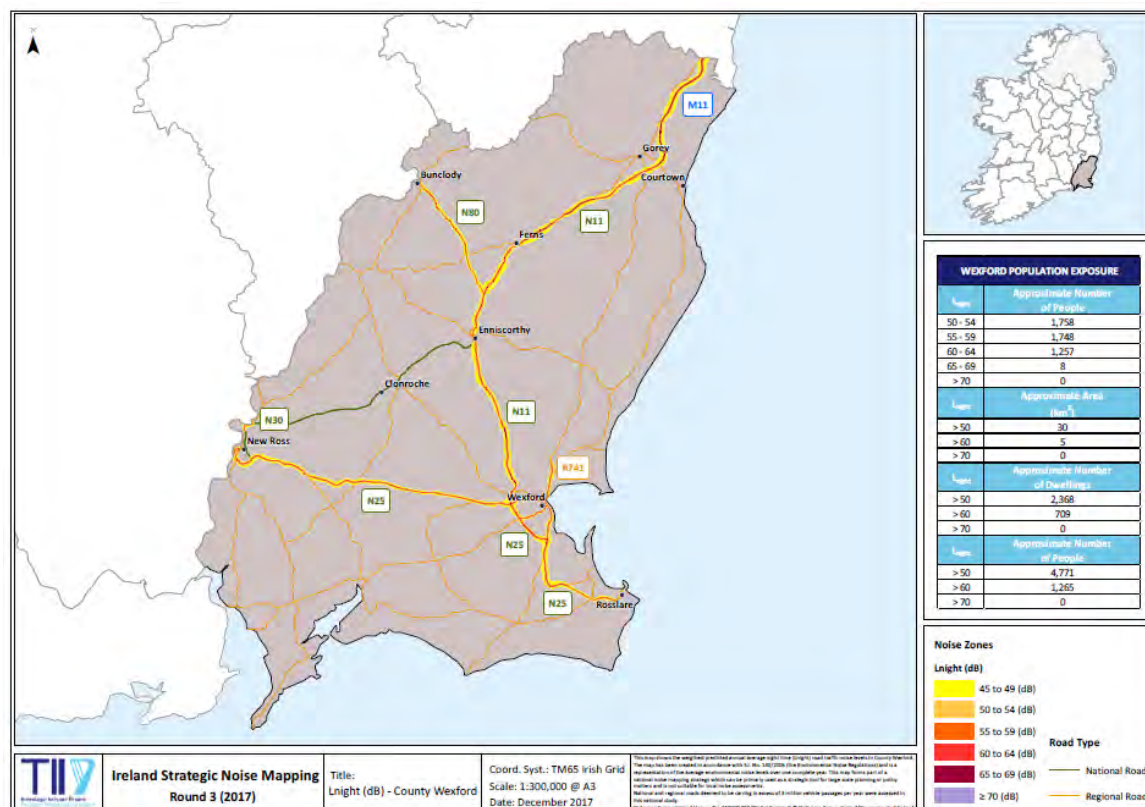
5.4.1 Strategic Noise Maps

The overview of roads which were identified during the noise modelling process that met the criteria set out in the Regulations are presented in **Appendix B**. Strategic noise maps for major roads in County Wexford are presented in **Appendix C**.

The maps are prepared for L_{den} and L_{night} and noise levels are presented in 5 dB contour bands and follow the colour coding and band intervals for noise contours (as outlined in **Appendix A**). Time periods are defined as follows:

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

The selected noise levels reflect an annual average 24-hour period. Areas with noise levels of less than 55 dB L_{den} and less than 45 dB L_{night} are not mapped because these levels are below the threshold for inclusion under the legislation.

Figure 5-1: Round 3 Strategic Noise Mapping – L_{den} Wexford CountyFigure 5-2: Round 3 Strategic Noise Mapping – L_{night} Wexford County

5.4.2 Summary Exposure Statistics for Action Planning Area

The noise action plan for County Wexford refers to road traffic noise only. Mapping was carried out by TII for both national roads and, at the request of Wexford County Council, regional roads. Wexford County Council provided model-ready data to TII to facilitate the mapping of non-national routes (regional roads) within the county, including the R730, R733, R741 and R769. All roads which have been considered exceed the 3 million vehicles per year threshold. The extents of these routes are identified on the attached noise maps in **Appendix C** and in the following list:

Table 5-1: Extents of roads over 3 million vehicle passages per year

Road	Description
N11	M11/R772 roundabout to N25 roundabout west of Wexford Town
M11	Wicklow border north of Gorey to N11/R772 roundabout
N25	Kilkenny border at New Ross to Wexford Town to Rosslare Harbour
N30	R700 junction north of New Ross to R729 junction
N80	N11 roundabout to Carlow border at Bunclody
R730	Wexford Bridge to R769 junction in Wexford Town to N25 roundabout south of Wexford Town
R733	N25 roundabout west of Wexford Town to R730 junction
R741	Ferrybank to Castlebridge
R769	Wexford Bridge to N11/N25 roundabout west of Wexford Town

In addition, TII has provided Wexford County Council with a summary report, detailing the approximate number of people who are exposed to road traffic noise within the range of 55 to ≥ 75 dB for L_{den} and 45 to ≥ 70 dB for L_{night} . As per Annex VI 1.5 of the END, population counts have been rounded to the nearest hundred. Estimated population exposure results for Wexford are shown in **Table 5-1** and **Table 5-2**.

Table 5-2: Population exposure counts (L_{den})

Decibels dB (A)	L_{den} number of people exposed
55 – 59	2,608
60 – 64	1,625
65 – 69	1,679
70 – 74	1,062
>75	2

Table 5-3 Population exposure counts (L_{night})

Decibels dB (A)	L_{night} number of people exposed
50 – 54	1,758
55 – 59	1,748
60 – 64	1,257
65 – 69	8
>70	0

The approximate number of dwellings and area (km²) are shown in **Table 5-4** and **Table 5-5**.

Table 5-4: Approximate dwellings and area (km²) exposure L_{den}

Decibels dB (A)	Approximate number of dwellings	Approximate area (km ²)
>55	3,329	57
>65	1,469	11
>75	1	0.3

Table 5-5: Approximate dwellings and area (km²) exposure L_{night}

Decibels dB (A)	Approximate number of dwellings	Approximate area (km ²)
>50	2,368	30
>60	709	5
>70	0	0

5.5 LIMITATIONS OF THE MAPS/RESULTS

The strategic noise maps for major routes (national roads) in County Wexford have been generated using data contained in the TII Roads Database. Strategic noise maps for non-national routes (regional roads) have been produced by TII using model-ready data provided by Wexford County Council. As the maps are generated by predictive computer modelling, and actual field noise data is not incorporated into the model, the maps are considered only to be an estimate of the likely noise levels. 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 mapping exercise are used as a tool to gain an understanding of the range of noise levels across the mapped area and the approximate number of people exposed to different levels of noise. It is not considered a suitable tool for the derivation of specific noise levels at individual buildings.

The results of the strategic noise mapping do not provide a clear indication of the location of areas which could be designated as “quiet areas in open country”. This is partially due to the nature of the assessed noise source, which is limited in Wexford to traffic noise, and partially due to the area of coverage of the noise maps, which is near to major sources, and therefore not locations which will be undisturbed by them.

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 having desirably low noise exposure levels may be subject to traffic noise from smaller roads within the 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.

The determination of quiet areas will be carried out by the consideration of potential candidates outside areas perceived to have high environmental noise, followed by monitoring to validate sound pressure levels.

6 IDENTIFICATION OF AREAS TO BE SUBJECTED TO NOISE MANAGEMENT ACTIVITIES

6.1 OVERVIEW

The EPA Guidelines on the Environmental Noise Regulations 2006 state that *“As the coverage of the strategic noise mapping is significant it is not considered practical to undertake a detailed assessment of need for every noise sensitive premises within the Action Planning Areas. It is therefore necessary to develop a means of identifying the most important locations via some form of decision support matrix or selection process”*. This is referred to in the EPA’s guidelines as a shortlist of locations, or a list which helps to identify hotspots or dwellings exposed to high levels of noise from major roads.

For the purpose of identifying problem areas for action planning, it is proposed to use 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.

6.2 IDENTIFICATION OF NOISE MANAGEMENT AREAS

A decision support matrix is used in this analysis to assist in the identification of noise hotspots or areas where satisfactory noise levels should be maintained. This decision support matrix has been developed based on a demonstrative matrix in the EPA’s guidance note for noise action planning.

The commencement of this process requires some form of noise level value, or values, for the onset of the process of assessment of need. With regard to major roads, which are the primary noise source for County Wexford, the onset levels, for assessment of noise mitigation measures and for assessment of noise preservation where they are good, for roads, are set out in **Section 6.2.1**. As there are no defined limits in relation to environmental noise exposure, the onset levels have been selected on the basis of current best practice as outlined in the EPA guidance Note for Noise Action Planning (2009; 2018).

The Strategic Noise Maps (**Appendix C**) provide information on the assessed noise levels at properties within the action plan areas, along with an estimate of the number of inhabitants. These databases are then used in combination with the onset of assessment noise levels to develop a noise scoring decision matrix. This decision matrix is used to draw up a short list for potential action. An example of a decision support matrix used by other action planning authorities is given in **Table 6-1**.

6.2.1 Confirmation of the Onset of Assessment Levels

There are no statutory limits in place in relation to environmental noise exposures at EU or national level. The EPA recommends in the 2009 *“Guidance Note for Noise Action Planning”* that the proposed onset levels for assessment of noise mitigation measures for noise due to road traffic should be as follows:

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

The proposed onset levels, for assessment of noise level preservation where they are good, are:

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

6.2.2 Description of the 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 such as the noise exposure level, the type of noise receptor, the type of noise source and the number of people affected. It also facilitates assessing the relative importance of each.

Table 6-1 is an adaptation of the decision support matrix suggested in the EPA's guidance note for noise action planning, and its parameters are used to inform scoring criteria for this analysis.

Table 6-1: Example of Use of Decision Support Matrix

	Decision Selection Criteria	Score Range L_{den}	Score Range L_{night}	Subtotal
Noise Band(dB(A))	<55	3	4	2 + 4
	55 - 59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	>75	4	6	
Type of Location	Residential	2	3	2 + 3
	Commercial	1	2	
	Noise Sensitive Location	3	3	
	School	3	3	
	Quiet Area	3	3	
	Recreational open space	2	2	
Type of Noise Source	Road	3	4	3 + 4
			TOTAL	18

The scoring allocation in **Table 6-1** represents an example of how the decision support matrix can be applied to a noise sensitive receptor (location) based on pre-defined criteria.

This example is representative of a residential dwelling, so automatically the receptor gets a score of 5 (3 + 2) based on Type of Location. It is also given a score of 7 (3 + 4) due to the Type of Noise Source being a road. This residential dwelling falls within the 65-69 dB for the period L_{den} and 50-54 dB for L_{night} , thereby resulting in a Noise Band score of 6 (2 + 4). The total score for this property, as per this decision support matrix, is 18.

Data obtained from the matrix tool will enable Wexford County Council 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. When combined with the guideline values for the onset of noise assessment presented in **Section 6.2.1** the

support matrix allows for a more comprehensive evaluation of the impact of environmental noise pollution at a given location.

This methodology was applied to all properties and noise sensitive areas which have been identified during the Strategic Noise Mapping process to calculate a priority rating. The scoring system in the decision support matrix has been used as one of the first steps during the implementation of the noise action plan, which has been designed to highlight areas for priority action either because of a high noise level which may need to be addressed, or a desirably low noise level which may benefit from being preserved. That is why a receptor in noise band <55 dB will score higher than a receptor in noise band 55-59 dB, for example.

6.3 APPLICATION OF THE CRITERIA AND DECISION MATRIX FOR SHORTLISTING AREAS FOR FURTHER ASSESSMENT

In order to apply the decision support matrix to all dwellings/receptors identified during the noise mapping process, additional data is required to run GIS analysis in conjunction with the noise contour shapefiles supplied by TII. This additional data includes schools, noise sensitive locations (e.g. churches) and recreational open spaces. All data for this analysis were acquired from Wexford County Council, TII, Data.gov, GeoDirectory and the Central Statistics Office (CSO).

GeoDirectory data are used to identify noise sensitive buildings categorised as 'Commercial' or 'Residential'. The GeoDirectory data also contain another categorisation of buildings called 'Both', which is made up of properties with both a commercial and residential element. These properties are allocated the same score from the decision support matrix as the residential properties, and any overlapping properties were filtered out of the analysis to avoid counting the same building twice. The same principles are applied to data regarding schools and other noise sensitive locations that are not accounted for in the GeoDirectory data.

A GIS analysis tool is used to capture the intersection between the noise contour bands from TII and the aforementioned noise sensitive receptors. The resultant output from this process provides a comprehensive table of noise sensitive receptors and which noise contour band they fall within. This facilitates the assignment of noise scores, as per the decision support matrix, to the extracted receptors. These receptors can then be ranked by value (highest to lowest), in order to see which locations have been flagged for further investigation by the decision support matrix scoring system.

Due to the nature of the scoring system in the decision support matrix, both locations with high-levels of noise pollution and low-levels of noise pollution are flagged by high scores. This indicates that not all properties with high scores require noise mitigation. Rather, they require further investigation to determine which category they fall into. This investigation is facilitated by the generation of grids across the areas under investigation within County Wexford. The grid squares measure 500 metres on each side (thereby dividing the study area into 0.25km² grids). This sub-division of the study area allows the same GIS analysis tool as previously used to calculate the intersection between noise sensitive receptors and grid squares. Effectively, this approach enables the number of receptors to be counted based on grid square location.

Each individual grid square, including the appended receptor counts and scores, are then ranked from highest to lowest. This enables the extraction of grid squares with the highest counts. In this analysis, the top 20 grid squares are chosen for further analysis based on highest scores. However, as previously discussed, the highest scoring squares do not necessarily indicate areas which require noise

mitigation. Several grid squares which score amongst the top 20 do not fall within any noise contour bands from the strategic noise mapping. These areas indicate potential locations where noise levels are desirably low and should be mitigated to remain so. For examples of each, see **Figure 6-1** and **Figure 6-2** below.

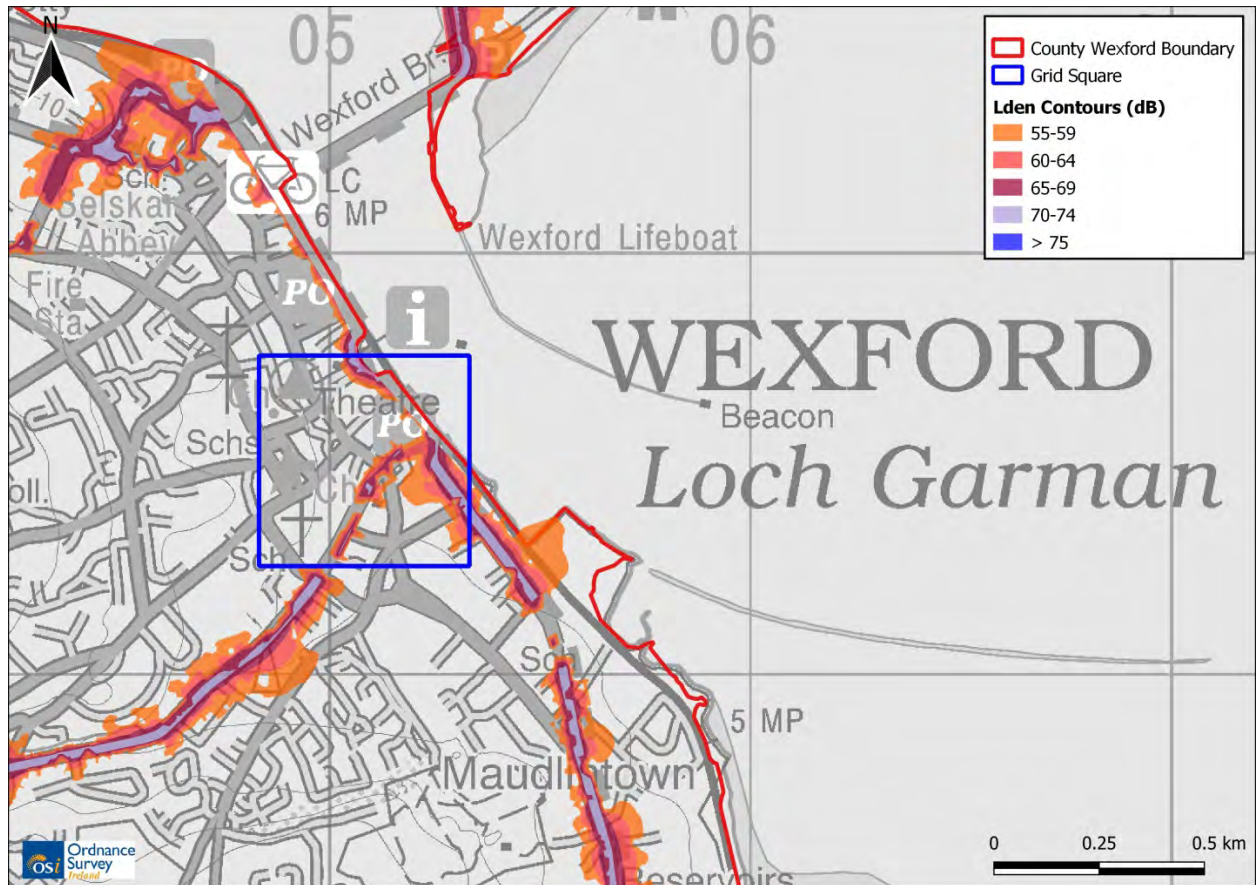


Figure 6-1: High-Scoring Grid Square within L_{den} (dB) Noise Contours

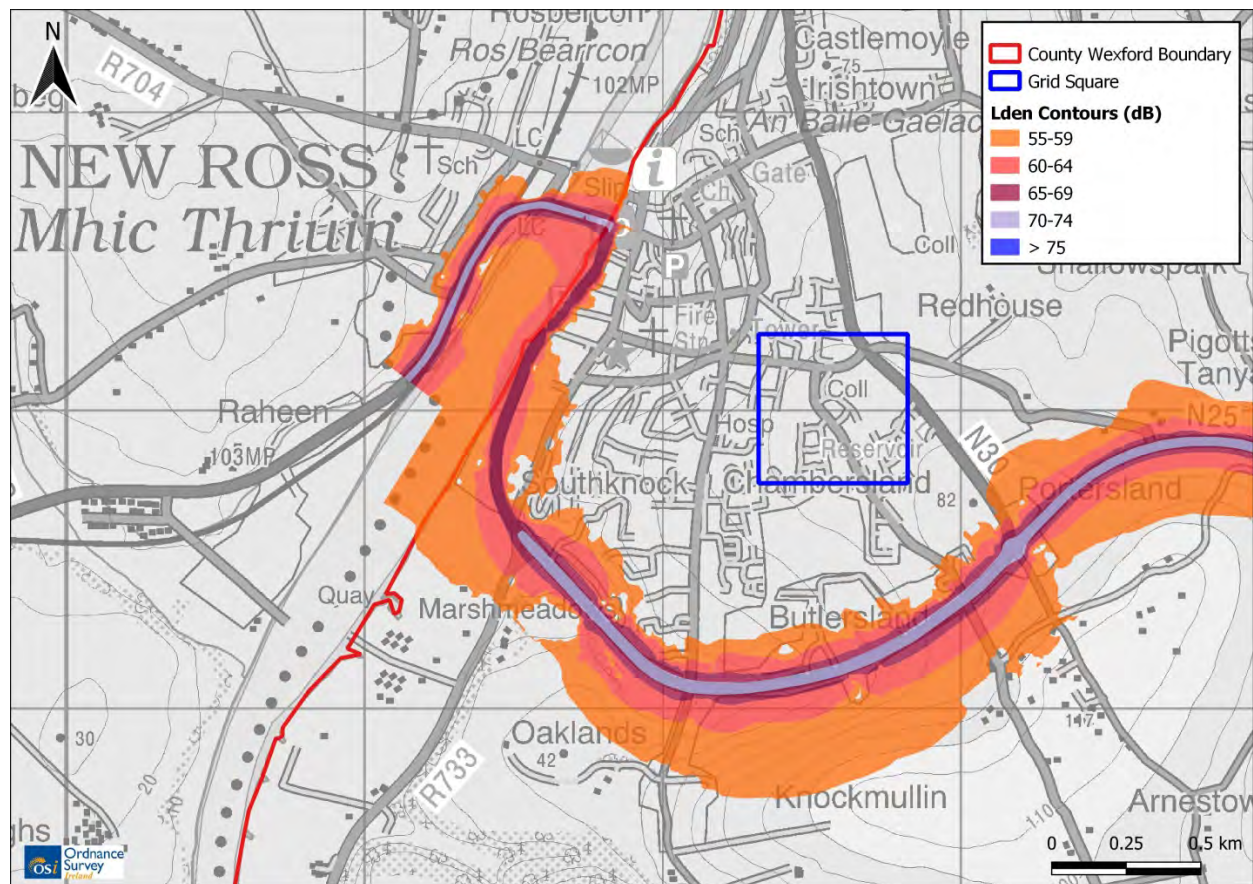


Figure 6-2: High-Scoring Grid Square outside of L_{den} (dB) Noise Contours

6.3.1 Process for Identifying Quiet Areas

Geographical Information Systems (GIS) mapping software, along with already designated parks and amenity areas in the Wexford County and larger towns development plans, will be used to identify potential quiet areas in County Wexford's urban settlements and open country.

Similar to the methodology used to identify potential noise hotspots in Wexford (Refer to **Section 6.3**) a network of 0.25km^2 grid squares is used to divide the Noise Action Plan area into equal blocks. These blocks can then be interrogated to establish their suitability for further investigation as potential quiet areas.

An initial screening process is used to exclude grid squares which show obvious intersections with noise generating infrastructure. For this analysis, noise generating infrastructure is considered to be any source of man-made noise that may increase the ambient background noise of a given location. Examples of such infrastructure include licensed waste facilities, waste-water treatment plants, active quarries, road noise contours, wind farm locations and areas of land that are marked for development as wind farms as per the Wexford County Council Wind Energy Strategy 2013-2019.

Following the exclusion of grid squares using this initial screening process, the remaining grid squares can be brought forward for further analysis. Using GeoDirectory data (including the addition of schools, churches, crèches and any other noise sensitive locations), an estimate of the number of properties in each grid square is carried out using GIS. Each of these properties is then assigned a score

based upon the EPA decision support matrix (**Appendix F**). In the interest of identifying potential quiet areas, a total score of 20 from the decision support matrix is used to flag properties of greater sensitivity to noise. This methodology provides an estimate of the noise sensitivity of each grid square and identifies the most suitable areas for further investigation as potential quiet areas.

With regard to identifying potential quiet areas in settlements, the same criteria as described above is applied but with the addition of a 2km buffer zone from the centre point of each settlement. The addition of this buffer zone excludes any 0.25 km² potential quiet areas which fall outside the buffer zone from further investigation. The rationale behind this approach seeks to only highlight potential quiet areas which are within walking distance from the centre of the settlement. A walking distance of 2km is taken from the Smarter Travel Initiatives documentation (under the National Transport Authority), which is the maximum distance that most people are willing to walk to/from their destination. This ensures that any designated quiet areas are easily accessible to all demographics living within the settlement.

6.4 RESULTS OF THE ANALYSIS

6.4.1 Potential Noise Hotspots

To identify hotspots grids have been generated across the functional areas of Wexford County, the dimensions of them being 0.5 km by 0.5 km (0.25 km²). The number of dwellings, with a score of 17 or above, has been calculated within each grid in order to identify hotspots.

The grid squares were then intersected by all noise sensitive locations within the scope of the analysis, and scores assigned to each. The resulting grid was filtered to only show the top 20 grid squares, highlighting areas that require further investigation. From the top 20 grid squares, the following potential noise hotspots were identified as part of the analysis:

- R769 – Newtown Road, Wexford Town
- R769 – Hill Street/Spawell Road area, Wexford Town
- R730 – The Faythe junction to R733 Junction, Wexford Town
- R733 – Distillery Road to R730 Junction, Wexford Town
- N25 – Hospital Road junction to the R733 Junction, south of New Ross
- N25 – Marsh Ln junction to River Barrow bridge, New Ross
- N11 – 500m south of River Slaney bridge to Irish St Junction, Enniscorthy.

A total of 7 potential noise hotspots are identified in the above list and their locations are presented via illustrative maps in **Appendix D**.

The potential noise hotspots listed above have been selected for further investigation due to their intersection with road noise contours as defined by the TII strategic noise modelling.

As this action plan is concerned with noise levels in the vicinity of major roads, only grid squares from the original shortlist of 20 that intersect the road noise contours have been marked for potential mitigation measures. The remaining 13 grid squares do not intersect with the inner (high-noise) contours and are only counted in the top 20 due to the nature of the scoring system i.e. receptors with low and high scores are similarly weighted to identify potential quiet areas as well as noise hotspots.

6.4.2 Potential Quiet Areas

To identify potential quiet areas grids have been generated across the functional areas of Wexford County, the dimensions of them being 0.5 km by 0.5 km (0.25 km²). In the interest of identifying potential quiet areas, a total score of 20 from the decision support matrix is used to flag properties of greater sensitivity to noise.

The following locations have been identified for further investigation as potential quiet areas:

Quiet Areas in Open Country

- The North Slob (River Slaney estuary)
- Annagh Hill (Annagh)
- Mount Leinster/Black Rock Mountain (Blackstairs Mountains)
- Blackstairs Commons (Blackstairs Mountains)
- Bantry Commons (Blackstairs Commons)
- Drinagh Intake (west of Rosslare)
- Tacumshin Lake (Ballyhealy)
- Kilbride Wood (Kilbride)
- Coolatrindle/Ruanmore (Court)
- Croghan Mountain (Croghan Upper)

Quiet Areas in Settlements

- Gorey Town and District Park (Gorey)
- Vinegar Hill (Enniscorthy)
- Mount Carmel/New Ross Youth Centre (New Ross)

Illustrative maps displaying these potential quiet areas are attached at **Appendix I**.

Wexford County Council will endeavour to investigate further the potential quiet areas listed above. The EPA will be consulted during the current Noise Action plan with a proposal for delimiting potential quiet areas in open country and settlements.

6.4.3 Exposure Statistics

The approximate population exposure statistics for County Wexford are listed in **Table 5-2** and **Table 5-3** in **Section 5.4.1** in this Noise Action Plan. The same statistics from the 2013 Round 2 strategic noise mapping are available in Table 2-3 and Table 2-4 outlined in **Section 2.4** in this Noise Action Plan. A comparison of these figures during the period L_{den} shows that the approximate number of people exposed to road noise > 55 dB(A) decreased from 7,924 in 2013 to 6,976 in 2018 (decrease of 948 people or 12%). A comparison of L_{night} figures shows that the population affected by road noise > 50 dB(A) decreased from 5,318 in 2013 to 4,771 in 2018 (decrease of 547 people or 10%).

The 2016 total population of County Wexford is 149,722 (CSO). Population exposure in the current Round 3 strategic noise mapping (statistics from preceding paragraph) suggest that 5% of the total population of County Wexford are exposed to L_{den} levels in excess of 55 dB. These statistics also suggest that 3% of the total population are exposed to L_{night} levels greater than 50 dB. These noise

thresholds are in line with targets set down by the END for preserving favourable conditions and, mitigating areas where excessive noise pollution may impact on human health in the county. As recommended by the WHO in the 2009 publication 'Night Noise Guidelines for Europe', an ideal target for L_{night} noise levels is 40 dB(A). However, in recognising that this is an ideal yet difficult target to accomplish in the short-term, an interim target of 50 dB(A) is used for L_{night} noise levels. Similarly, L_{den} levels below 55 dB(A) are considered desirable in this noise action plan, and levels greater than 70 dB(A) are considered to be undesirable.

There are some differences in the road extents which underwent noise mapping between the two periods. Under the 2013 strategic mapping, a larger extent of the N30 was included in the modelling process (New Ross to Enniscorthy) compared to 2018 (roughly 2 km stretch of the N30 north of New Ross). However, this disparity is somewhat compensated by the inclusion of the M11 south of Gorey to the Wicklow border under the 2018 Round 3 mapping, which was not included in the 2013 Round 2 noise mapping.

Additionally, changes were made to parameters in the noise modelling process between Round 2 noise mapping for 2013 and Round 3 noise mapping for 2018. The PRIME2 datasets, as used by Ordnance Survey Ireland (OSI), have been updated to new polygon datasets compared to those used in Round 2 noise mapping. These updates signify changes in how the models represent building footprints, road centrelines and barriers/bridges. The EPA has also since made available CORINE 2012 land cover data to replace CORINE 2006 data used in Round 2 noise mapping. It is important to be aware of these changes to road extents and the noise model calibration when drawing conclusions about whether road noise levels have improved or disimproved within the county.

7 MITIGATION AND PROTECTION MEASURES

A number of measures are proposed as part of this plan to avoid, prevent and reduce, where necessary, on a prioritised basis the harmful effects, including annoyance, due to long term exposure to environmental noise. These measures focus on road traffic noise emissions, as the strategic noise maps in Wexford apply for major roads only. The requirements for major railways, major airports or agglomerations of greater than 100,000 do not apply.

7.1 PROCESSING & MANAGEMENT OF AREAS ABOVE ONSET OF ASSESSMENT CRITERIA

The list of potential action areas established (Section 6.2.4) using the decision support matrix (Section 6.2.2) will be further interrogated in this part of the analysis. The next stage is to confirm that the noise levels assessed by the mapping exercise are accurate. This will be done by reviewing and refining the noise models, if appropriate, and by undertaking field survey work to measure noise levels.

Once the extent of the noise impact has been confirmed for the locations under review, the potential noise mitigation measures will be investigated, and a cost benefit analysis undertaken for each, with the aim of developing a selection matrix leading to a recommendation for action.

7.2 PRESERVATION OF AREAS BELOW PROTECTION THRESHOLD

Where areas are identified as being below the onset of preservation threshold, they will be considered for review for areas requiring preservation or “quiet areas”.

Mapping the significant noise sources such as industrial development and road traffic noise sources, overlaying the map with designated areas and zoning from the development plan will be used to identify potential quiet areas. This methodology is proposed as the strategic noise maps (**Appendix C**) only account for noise resulting from vehicular road traffic.

In order to identify potential quiet areas, a more comprehensive array of noise sources will need to be considered. Locations of waste treatment plants, wind farms, quarries, commercial/residential dwellings and any other potential noise generating infrastructure will be used to identify locations for quiet areas within the county. 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.

7.3 PRESERVATION OF AREAS BETWEEN THE THRESHOLDS

There is a risk that a large proportion of households or other sensitive locations, which sit between the categories of areas above onset of assessment criteria (most exposed) and areas below protection threshold (quiet areas and least exposed area) 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 long term noise exposure. To this effect, Wexford County Council acknowledge that a key part of noise management and control is regulated through planning and the development of planning guidance which is county based and considers all areas including those which may not be considered as part of this Noise Action Plan.

The potential noise impact of future development can be adequately managed through the planning and licensing processes (outlined in Section 7.5) including existing provision for Environmental Impact Assessments.

The potential noise impact from increased traffic on major roads can be adequately addressed by reviewing (and revising, if necessary) the Noise Action Plan every 5 years, or sooner where a material change in environmental noise in the area occurs. These reviews shall take cognisance of noise monitoring conducted in the intervening periods.

7.4 CONFIRMING THE EXTENT OF NOISE IMPACT

The strategic noise mapping prepared by TII has identified the primary areas affected by environmental noise under the revised thresholds established under this the third phase. It should be noted that the third-round noise mapping model generally indicates that the overall number of persons affected has reduced in comparison to the second round mapping. This is encouraging but further assessment of the model may be considered to determine the specific reason(s) for this positive change.

This will be done by reviewing and refining the noise models, if appropriate, and by undertaking field survey work to measure noise levels. The field survey work will also ascertain whether the property being assessed has noise sensitive rooms on the most exposed facades, or whether noise mitigation measures were already present which may not have been taken into account by the noise mapping model.

7.5 REVIEW OF POSSIBLE MITIGATION MEASURES

In the case of Wexford County Council, the source of noise, which this action plan is based, relates to road traffic, hence mitigation measures have been focused on reducing the exposure to this noise source.

7.5.1 The Planning System

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

The EPA's Guidance Note for Noise Action Planning (July 2009) recommend that the Noise Action Plans contain a review of the use of the planning system to help manage the effects of environmental noise within the area covered. It is also recommended any evaluation criteria to be used are specified, or relevant documents referenced.

In order to successfully use the planning process to help avoid, or minimise, noise exposure in a consistent manner it is considered appropriate for assessments and relevant guidance on noise exposure levels be considered for proposed development (within the proposal and design stage of any relevant planning applications). It is within the remit of the action planning authority to determine that any approach to controlling environmental noise through the use of planning policy set out within the Noise Action Plan, may be made relevant to the whole area under the control of the action planning authority, if considered appropriate, and not restricted solely to the area covered by the

strategic noise mapping. There are two scenarios to consider in development where noise could be considered as being a material issue.

Firstly, the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. Pending the introduction of such guidance, the EPA recommends that Action Planning Authorities take under consideration the following:

- The Scottish Office (The Scottish Office, Planning Advice Note PAN 1/2011: Planning and Noise & Technical Advice Note: Assessment of Noise) – which provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise.

In the second scenario, where new, or altered, sources of noise are introduced to existing residential or other noise sensitive locations; there are currently a number of guidance documents, which cover some of these situations (as outlined in **Section 2**). Where existing guidance does not cover the situation under consideration, the following UK Guidelines shall be taken into consideration:

- The Scottish Office (The Scottish Office, Planning Advice Note PAN 1/2011: Planning and Noise & Technical Advice Note: Assessment of Noise)
- BS 4142:2014 Method for Rating Industrial and Commercial Sound, British Standards Institution (BSI), London 2014
- ProPG: Planning and Noise Guidance, “Professional Practice Guidance on Planning & Noise: New Residential Developments” (May 2017)

Regional Planning Guidelines (to be replaced by the RSES), County Development Plans, Local Area Plans and Environmental Impact Assessments must have regard to sustainable transport and sustainable urban mobility strategies. A key element of such strategy is to encourage modal shift away from the private car to more sustainable forms of transport such as public transport, cycling and walking.

7.5.2 Noise Control Measures

The scale of the noise problem is such that action is required at EU, National and Local level.

7.5.2.1 Action at EU and National Level

Some of the key options for noise reduction from road traffic noise are governed by EU and National policies for example setting of engine and tyre noise limits are controlled at EU level and adopted nationally. Directive 2007/46/EC 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. These limits began to take effect in November 2012 with all new tyres and vehicles being required to meet the limits by 2016.

EU Regulation 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles sets out sound-level limit values for type approval for 12 categories of two, three or four wheel powered cycles, and also makes it illegal to defeat the on-board sound abatement devices,

which includes replacement of the exhaust system with one which would increase the noise level above the approval level.

EC Regulation 540/2014 on the sound level of motor vehicles and of replacement silencing systems repeals Directive 70/157/EC and has also amended that Regulation within the overall EU Framework Directive (2007/46/EC) for the type approval of motor vehicles. It places tighter controls and tighter test standards on vehicle noise, with more emphasis on the test parameters reflecting actual real life road conditions. It came into force from July 2016 and phases in tighter noise limits over 10 years. The regulation also introduced the requirements for all new electric vehicles to be fitted with an Acoustic Vehicle Altering System (AVAS) from April 2019.

7.5.2.2 Action at Local Level

National and Regional policies such as setting national noise limits for road traffic noise and setting national and regional transport policies fall outside the scope of the Wexford County Council.

An effective overall environmental noise management plan will include several measures combined into a consolidated approach. The most effective measures for the reduction of road traffic noise which available at a local level to Wexford County Council are those at the planning level, such as:

- Traffic avoidance plans that combine walking, cycling and public transport;
- Investment in dedicated cycle routes;
- Reduction of speed limits;
- Traffic flow control, through diversion or smoothing,
- Mitigation of environmental noise hotspots through optimising traffic management;
- Traffic congestion management;
- Road surface improvements and road maintenance; and
- Promotion of electric vehicles through measures such as; installing infrastructure such as charging points.

7.5.2.3 Noise Reduction/Abatement Measures

The key basis for noise management and mitigation is based on the following approaches:

- Reduction of noise source;
- Reduction of noise across its propagation path; and
- Reduction of noise at the receiver.

For example, treating the noise path between receiver and source by inserting a barrier could mitigate noise from traffic on a roadway. By reducing the traffic numbers on the road, the source noise levels could be reduced. A house façade exposed to high noise levels could be treated with dual glazing or a new house could be located further away from the source.

Noise barriers can be an effective method of reducing the noise of traffic. Roadside noise barriers maybe considered for new construction projects and schemes that are located close to major roads.

In such instances they would need to be constructed in consultation with TII and follow the TII Guidelines for the Treatment of Noise and Vibration in National Road Schemes. The design of noise barriers is very important to their acceptance by residents. It would be impractical to place noise barriers along streets, which are crossed by pedestrians along their entire lengths. However, they could be erected at the boundaries of private properties or public institutions to protect noise sensitive buildings or areas (e.g. hospitals, schools and public parks).

Soundproofing with dual or triple glazing or equivalent products are a possibility for further protection against noise, if no other measures can be applied or if the effect of other measures is insufficient. However, windows must be kept closed to be effective. Many people have trouble adjusting to this restriction on their normal behaviour. New housing stock is now regularly provided with mechanical ventilation due to higher energy efficiency requirements.

Renewing road surfaces or replacing paving with a low noise surface is another action that can be taken to reduce sound levels and noise impact. This option may not be suitable in all cases, depending on the nature of traffic on the road. Measures need to be taken to ensure that vehicle speeds do not increase following the resurfacing of the road. Any increase in speed will lead to an increase in noise and negate possible gains due to the smoother road surface. Therefore each situation will have to be assessed as to whether the option is suited to the circumstances under consideration. For new schemes, low noise surfaces will be considered as part of the overall design and in keeping with current design guidelines.

7.6 ASSESSING EFFECTIVENESS OF POTENTIAL MEASURES

Once the extent of the noise impact has been confirmed for the prioritised locations, as previously outlined in this report, the potential noise mitigations measures will be investigated, and a cost benefit analysis undertaken for each. The estimation of the number of people to benefit from any noise reduction measures can then be achieved.

A cost benefit analysis on the potential actions being considered will be carried out in order to develop a prioritised list of actions to be undertaken. This is necessary 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.

In 2017, the Conference of European Directors of Roads (CEDR) published a report entitled “State of the art in managing road traffic noise: cost benefit analysis and cost-effective analysis (Technical Report 2017-03)”. This report presents an introduction to economical assessment methods regarding the decision-making process of noise impact assessments. The report provides guidance into the assessment of noise mitigation measures from several perspectives, including the cost of mitigation. Examples of noise mitigation measures outlined in the report include reducing speed limits on sections of road, construction of noise barriers and the use of low noise surfaces. These measures can then be assessed in terms of value for money (or cost-benefit). The report outlines methods by which value can be placed on noise mitigation measures, such as through a “euro per dB per person per year” model, and suggested monetary values are available from surveys carried out in Germany, Hungary, Norway, Spain, Sweden and the UK. These monetary values provide a proxy to which cost benefit can be weighted and will be consulted in the aftermath of this Noise Action Plan to enable decisions on noise mitigation measures in the highlighted areas of County Wexford.

Further information available at present in relation to monetary assessment comes from a European Commission working group position paper from December 2003 “Working Group on Health and Socio-Economic Valuation of Noise” which proposes a median value in noise perceived by households from road traffic of €25 per dB L_{den} per household, per year based upon the noise level change compared to the initial situation.

A health impact assessment would be a useful means for humanizing the noise results but it would be difficult to undertake this assessment in the absence of EPA guidance. New research on noise and health funded by the EPA research programme may provide guidance in this regard. A health assessment will be considered in Round 4 in accordance with any guidance from the EPA.

It should be noted that any work proposed, by the Noise Action Plan for Wexford will be contingent on finances being available.

7.7 BUDGET AND COST BENEFIT ANALYSIS

The cost-benefit analysis should address lifetime construction and maintenance costs against noise reduction benefit. The benefit of noise reduction may be viewed in terms of decibels / people / time and may be considered using an assessment of changes in estimated levels of annoyance or sleep disturbance or could be monetised to fully process the analysis. However, it is important to note that monetary assessments of noise levels studies tend to take two different approaches, either based on impact upon property market value or the willingness of affected residents exposed to noise to contribute to/pay for noise reductions. As may be expected these tend to result in somewhat differing levels of financial benefit.

Guidance documents such as Public Spending Code D-03 Guide to Economic Appraisal CBA, 2012² are considered acceptable reference standards for undertaking cost benefit analysis of this nature.

Prior to establishing the appropriate cost benefit analysis to be adopted, it is considered appropriate that consultation is carried out with the primary authorities with a direct input in relation to the particular noise source. In the case of County Wexford, where the primary noise source is generated from roads, the appropriate authorities are Wexford County Council, EPA and TII.

Following the cost-benefit analysis, the locations being reviewed will be prioritised to give a list of beneficial, achievable actions for noise mitigation. This will be done in consultation with the relevant authorities and once agreed an identified budget will be implemented.

² <https://publicspendingcode.per.gov.ie/wp-content/uploads/2012/08/D03-Guide-to-economic-appraisal-CBA-16-July.pdf>

7.8 PROPOSED APPROACH TO NOISE MITIGATION

7.8.1 Areas Above Onset of Assessment Levels

Areas with predicted noise levels above the onset of assessment criteria will be prioritised using a standardized decision support matrix. This follows a review to confirm that the predicted noise levels are accurate, which will include field noise surveys to establish baseline field data.

Mitigation measures such as those discussed elsewhere will be assessed for each area and following a cost-benefit analysis, a list of achievable actions for noise mitigation will be agreed with the relevant authorities.

7.8.2 Intermediate and Below Preservation Threshold Areas

The implementation of existing planning and licensing regulations is considered adequate to address new development in areas both below the protection threshold and between the thresholds.

7.8.3 Noise in the Planning Process

As outlined in **Section 7.5.1**, the planning system has the potential to have a major influence on the control of future exposure to environmental noise.

Wexford County Council will consider developing noise control pre planning guidance to aid developers on planning applications issues in relation to noise.

The pre planning process provides for developers to liaise with the local authority in advance of submitting planning applications. It is possible that this process can provide opportunities to discuss measures that will limit the impacts of noise from nearby roads. In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that action planning authorities should examine the planning policy guidance notes issued in England titled, 'ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise'.

Wexford County Council will endeavour to utilise the planning process as necessary:

- a) 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.
- b) 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 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).
- c) To ensure that future developments are designed and constructed in accordance with best Irish practice to minimise noise disturbances through good acoustic design.

8 PUBLIC PARTICIPATION

8.1 OVERVIEW

The Regulations require the action planning authority to consult the public when drawing up and revising Noise Action Plans.

A formal public consultation will be undertaken on the Draft Action Plan, as detailed below. This will give the public an early and effective opportunity to participate in the preparation of the plan.

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

- Consultation with citizens must be genuine, meaningful, timely, balanced and with the ultimate objective of leading to better outcomes and greater understanding by all involved of the benefits and consequences of proceeding with a particular policy or legislation proposals.
- Consultation should be targeted at and easily accessible to those with a clear interest in the policy in question.

8.2 REQUIREMENT FOR STRATEGIC ENVIRONMENTAL ASSESSMENT

The Strategic Environmental Assessment (SEA) Directive (2001/42/EC) requires that certain plans and programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, be subject to the SEA process. Screening is the process for deciding whether a particular plan, other than those for which SEA is mandatory, would be likely to have significant environmental effects, and would thus warrant SEA. The purpose is to ensure that the environmental consequences of plans and programmes are assessed both during their preparation and prior to adoption.

Under Article 3 of the Directive, an environmental assessment shall be carried out for plans and programmes covering a range of sectors with those of direct relevance to the Wexford Noise Action Plan being transport, as it is noted that Noise Action Plans are a form of “Transport” sectoral plan. As such, if an SEA is required for NAPs, they fall under the remit of S.I. No. 435 of 2011. As a result, SEA Screening must be undertaken on the Draft Noise Action Plan in order to establish whether the plan would be likely to result in significant effects on the environment and would necessitate full SEA.

In accordance with the EPA’s Guidance Note for Noise Action Planning (update June 2018), a Strategic Environmental Assessment (SEA) Screening Report for the Draft County Wexford Noise Action Plan 2019-2023 was undertaken. The conclusion that arises from the SEA screening analysis is that the Draft Noise Action Plan would not be likely to result in significant environmental effects and does not require full Strategic Environmental Assessment.

8.3 APPROACH TO PUBLIC CONSULTATION

A formal public consultation shall be undertaken on the Round 3 Draft Noise Action Plan 2019-2023, as detailed below. This will give the public an early and effective opportunity to participate in the preparation of the plan.

The Draft Noise Action Plan 2019-2023 and associated maps will be placed on public display for a period not less than 6 weeks, during which, written submissions will be accepted. Notification shall be placed in the local papers in advance advising the public of the locations where the plan was on display and the relevant times and dates. A copy of the Draft Action Plan will be displayed in the following locations:

- Wexford County Council, County Hall, Carricklawn, Wexford, Y35 WY93 (during opening hours 9am - 1pm and 2pm - 5pm)
- Wexford Town Library, Mallin St., Wexford
- Gorey Library, Gorey Civic Square, The Avenue, Gorey
- Enniscorthy Library, Lymington Rd., Enniscorthy
- Bunclody Library, Millwood, Carrigduff, Bunclody
- New Ross Library, Barrack Lane, New Ross

The plan may also be accessed on the Council website: www.wexfordcoco.ie

8.4 TIMETABLE FOR PUBLIC CONSULTATION

The following is the timetable of work to be achieved in developing the Noise Action Plan.

28 th May – 9 th July 2019	Public consultation on the Draft Noise Action Plan (6 week duration) and written submissions.
23 rd July 2019	Draft Noise Action Plan (including comments) to be finalised.
1 st August 2019	Finalised plan to be submitted to the EPA for review including the short Summary Noise Action Plan.

In addition, a number of statutory bodies and stakeholder organisations will be contacted and requested to provide a review and feedback on the proposals set out within the Draft Noise Action Plan 2019-2023. Refer to **Appendix G** for the list of these organisations.

8.5 RESULTS OF CONSULTATIONS

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

Any information collected will be treated in line with Wexford County Council's Data Protection Policy.

8.6 NOTIFICATION OF PLAN

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

9 IMPLEMENTATION PROGRAMME

9.1 ROLES AND RESPONSIBILITIES

Wexford County Council is the designated action planning authority. As such, they are responsible for the 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. The continuing implementation of the planning and licensing regulations is a matter for the appropriate statutory body including, Wexford County Council, the EPA and An Bord Pleanála.

9.2 PROGRAMME OF WORKS

It is proposed that the Noise Action Plan will be implemented through a staged process over five years with Wexford County Council endeavouring to follow the time frame set out below in relation to the implementation of the Noise Action Plan culminating in the preparation of the Round 4 Noise Action Plan to be completed in 2023.

9.2.1 YEAR 1 (2019)

- Apply the decision support matrix method (described in **Section 6.2.2**) to identify priority areas for which further assessment may be warranted (i.e. where noise monitoring verification studies can be undertaken).
- Wexford County Council will carry out site visits and visual assessment of these areas.
- Confirm financial funding for procurement of network of permanent sound level monitoring stations.
- Carry out attended noise assessment (noise monitoring verification studies) to support noise mapping levels in priority areas.
- Establish a network of permanent sound level monitoring stations. Initial locations proposed are at the existing air monitoring sites in New Ross, Wexford Town, Enniscorthy and Gorey. These locations are chosen to existing give a good sample of sound levels within the county.
- Carry out traffic counts on identified routes with an excess of three million vehicles per annum.

9.2.2 YEAR 2 (2020)

- Noise Monitoring to continue at the newly established network of sound level monitoring stations.
- Make available to the public the real time data from the ambient sound monitoring network.
- Confirm financial funding for procurement of field studies.
- Engage and procure external noise resources and equipment where required.
- Identify potential quiet areas and carry out a soundscape evaluation and objective measurements on selected sites.

9.2.3 YEAR 3 (2021)

- Consult with relevant road authorities in respect of identifying mitigation measures and to determine the feasibility of implementation.
- Identify areas for noise mitigation and confirm financial funding.
- Agree appropriate mitigation measures with relevant road authorities, including timetable for implementation and evaluation. Allow time in programme for obtaining planning permission if required.
- Identify sections of all roads (both national and regional roads) within County Wexford, which exceeded the >3 million vehicle passages per annum threshold for Round 4 Strategic Noise Mapping.
- Undertake traffic counts along roads that are expected to be included within Round 4 of the strategic noise mapping, such as National, Regional and Primary Local roads or any other main roads relevant to the strategic noise mapping.
- Consult with the EPA on process for delimiting Quiet Areas and commence monitoring of potential quiet areas to establish existing noise levels in dB(A).

9.2.4 YEAR 4 (2022)

- Subject to funding availability, continue with implementation of appropriate noise management actions, where necessary.
- Ensure capture of data (traffic data and road datasets) for the Phase 4 noise mapping and action plan.
- Consult & engage with TII in relation to completion of Round 4 noise maps for Major Roads in accordance with EPA guidance.
- Continue assessment of potential quiet areas and propose appropriate areas for designation as “Quiet Areas”.

9.2.5 YEAR 5 (2023)

- Identify Quiet Areas for delimiting and submit proposal to EPA and Minister.
- Review impact and success of Noise Action Plan and amend where appropriate to prepare the Noise Action Plan for 2023 in accordance with EPA guidance.
- Commence preparation of Round 4 Noise Action Plan.

9.3 EVALUATION AND REVIEW

A review of the programme will be carried out annually by Wexford County Council. There are a number of risk factors associated with the delivery of the programme. These include financial, procedural and possibly planning risks. It should be noted that some critical elements are outside the control of Wexford County Council and will require the approval of other statutory bodies. Also the

financial resources required to deliver the programme has yet to be determined and the delivery of the noise action plan will be contingent on adequate funding being available.

In view of these uncertainties, it is important that the programme is subject to an ongoing review to alert all relevant parties to any change in circumstances. Wexford County Council will review the programme on an annual basis and will prepare an annual interim summary report. This report will advise all relevant bodies on progress in implementation of action plan measures, identify areas where corrective action is required or where the proposed measures must be modified for presently unforeseen reasons.

9.4 END OF PROGRAM REVIEW

The lifetime of this Noise Action Plan will be five-years. At the end of this period, Wexford County Council will conduct a review of the programme of works drawn up in the Noise Action Plan. The review will assess the effectiveness of the measures adopted and determine if the measures were cost effective and value for money. This process will be refined and developed over the following phases at 5 year intervals.

10 FINANCIAL PROVISIONS

10.1 BUDGETARY PROVISIONS

Wexford County Council directly funds and provides resources for the preparation of the Noise Action Plan. Financial provisions have not been made available at national level to fund implementation of the END and 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 departments e.g. Environmental Services, Housing Services, Roads Services and Development Management Services (Planning).

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 considerably³. 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 European Commission working group – “Working Group on Health and Socio-Economic Valuation of Noise” recommends the following in relation to road noise:

- For road transport, the (interim) use of the median value change in noise perceived by households of €25 per dB (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, Wexford County Council propose to assign the monetary benefit to noise mitigation measures as recommended above (i.e. €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.

³ HEATCO, Developing Harmonised European Approaches for Transport Costing and Project Assessment, Final Technical Report, December 2006

GLOSSARY OF ACOUSTICAL AND TECHNICAL TERMS

Term	Definition
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	Major Continuous Urban Area as set out within the Regulations A dense urbanised area having a population of greater than 100,000 persons.
Attribute Data	A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height
Attributing (Data)	The linking of attribute data to spatial geometric data
CRN	The Calculation of Railway Noise 1995. The railway prediction methodology published by the UK Department of Transport.
CRTN	The Calculation of Road Traffic Noise 1988. The road traffic prediction methodology published by the UK Department of Transport.
Data	Data comprises information required to generate the outputs specified, and the results specified
Daytime	Between the hours of 7am and 7pm
dB	Decibel
DB(Lin)max peak	Instantaneous Maximum Peak sound pressure measured in decibels on a sound level meter, without the use of a frequency weighting system. Used to measure air overpressure levels from blasting.
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 (e.g. 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.
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
EC	European Commission
END	Environmental Noise Directive (2002/49/EC)

Term	Definition
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.
ESRI	Environmental Systems Research Institute
EU	European Union
Evening time	Between the hours of 7pm and 11pm
GIS	Geographic Information System
Hertz	Unit of frequency of sound.
INM	Integrated Noise Model
IPPC Licence	Integrated Pollution Prevention and Control Licence (obtained from EPA).
Irish National Grid (ING)	The official spatial referencing system of Ireland
ISO	International Standards Organisation
L _{day}	(day-noise indicator) shall mean the noise indicator for annoyance during the day period. This is the average value in decibels for the daytime period
L _{den}	(day-evening-night noise 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 _{evening}	(evening-noise indicator) shall mean the noise indicator for annoyance during the evening period. This is the average value in decibels for the evening time period.
L _{night}	(night-time noise indicator) shall mean the noise indicator for sleep disturbance. This is the average value in decibels for the nighttime period
Major 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.
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.
Metadata	Descriptive information summarising data
NA	Not Applicable
Night time	Between the hours of 11pm and 7am
Noise	Noise is defined as unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity.
Noise Bands	Areas lying between contours of the following levels (dB): L _{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L _d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L _e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L _n <50, 50 – 54, 55 – 59, 60 – 64, 65 – 69, >70

Terms	Definition
Noise Levels	Free-field values of L_{den} , L_d , L_e , L_n , and $L_{A10,18h}$ at a height of 4m above local ground level
Noise Level - L_d - Day time	L_d (or L_{day}) = $L_{Aeq,12h}$ (07:00 to 19:00)
Noise Level - L_e - Evening	L_e (or $L_{evening}$) = $L_{Aeq,4h}$ (19:00 to 23:00)
Noise Level - L_n - Night	L_n (or L_{night}) = $L_{Aeq,8h}$ (23:00 to 07:00)
Noise Level - L_{den} – Day/Evening/Night	A combination of L_d , L_e and L_n as follows: $L_{den} = 10 * \log \frac{1}{24} \{ 12 * 10^{((L_{day})/10)} + 4 * 10^{((L_{evening}+5)/10)} + 8 * 10^{((L_{night}+10)/10)} \}$
Noise Level – $L_{A10,18h}$	$L_{A10,18h} = L_{A10,18h}$ (06:00 to 24:00)
Noise Level – $L_{Ar,T}$	$L_{Ar,T}$ = The equivalent continuous A- weighted sound pressure level during a specified time interval, T, plus specified adjustments for tonal character and impulsiveness of the sound.
Noise Level – $L_{eq,T}$	The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T.
Noise Level – $L_{Aeq,T}$	The A-weighted equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. It is used to describe many different types of noise and can be measured directly with an integrating sound level meter.
Noise Mapping (Input) Data	Two broad categories: (1) Spatial (e.g. road centrelines, building outlines). (2) Attribute (e.g. vehicle flow, building height – assigned to specific spatial data)
Noise Mapping Software	Computer program that calculates required noise levels based on relevant input data
Noise Model	All the input data collated and held within a computer program to enable noise levels to be calculated.
Noise Model File	The (proprietary software specific) project file(s) comprising the noise model

Terms	Definition
Output Data	The noise outputs generated by the noise model
OSI	Ordnance Survey for Ireland
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.
Processing Data	Any form of manipulation, correction, adjustment factoring, correcting, or other adjustment of data to make it fit for purpose. (Includes operations sometimes referred to as 'cleaning' of data)
QA	Quality Assurance
RMR	The railway noise calculation method published in the Netherlands in 'Reken- en Meetvoorschrift Railverkeerslawaa' '96, Ministerie Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer, 20 November 1996'.
Spatial (Input) Data	Information about the location, shape, and relationships among geographic features, for example road centre lines and buildings.
WG - AEN	Working Group – Assessment of Exposure to Noise
XPS	The French road traffic noise calculation method published in 'NMPB-Routes-96 (SETRA-CERTULCPC-CSTB)', referred to in 'Arrêté du 5 mai 1995 relatif au bruit des infrastructures routières, Journal Officiel du 10 mai 1995, Article 6' and in the French standard 'XPS 31-133'.

The table below gives examples of the relationship between the subjective valuation of noise and the actual objective levels:

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

BIBLIOGRAPHY AND REFERENCES

EU Legislation:

EU Directive 2015/996 establishing common noise assessment methods

EU Directive 2007/46/EC establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles

EU Directive 2002/49/EC relating to the assessment and management of environmental noise (END)

EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)

EU Regulation 540/2014 on the sound level of motor vehicles and of replacement silencing systems

EU Regulation 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles

Irish Legislation:

Building Regulations (1997-2012)

Building Regulations (Part E Amendment) Regulations, S.I. No. 606 of 2014

Environmental Noise Regulations, S.I. No. 549 of 2018

Environmental Noise Regulations, S.I. No. 140 of 2006

Environmental Protection Agency Act 1992

European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004

Planning and Development (Strategic Environmental Assessment) Regulations 2004, as amended (S.I. No. 436 of 2004 & S.I. No. 201 of 2011)

Planning and Development (Strategic Housing Development) Regulations 2017, S.I. No. 271 of 2017

Planning and Development Act, 2000

Roads Acts 1993 to 2015

Publications

Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH) (2017), ProPG: Planning & Noise Professional Practice Guidance on Planning & Noise - New Residential Development

British Standards Institution (BSI) (2014), BS 4142:2014 *Method for Rating Industrial and Commercial Sound*

British Standards Institution (BSI) (2014), BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings*

Conference of European Directors of Roads (CEDR), *State of the art in managing road traffic noise: cost benefit analysis and cost-effective analysis* (Technical Report 2017-03)

Department of Public Expenditure and Reform (November 2016), Consultation Principles & Guidance

Department of the Environment, Heritage and Local Government (September 2015), Sustainable Urban Housing: Design Standards for new Apartments – Guidelines for Planning Authorities

Department of the Environment, Heritage and Local Government (May 2013), European Communities (Access to Information on the Environment) Regulations 2007 to 2011– Guidance for Public Authorities and others in relation to implementation of the Regulations

Department of the Environment, Community and Local Government, Building Regulations 1997, Technical Guidance Document E – Sound, 2014

Department of the Environment, Heritage and Local Government (May 2009), Best Practice Urban Design Manual: Part 1 & 2. A companion document to Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas

Department of the Environment, Heritage and Local Government (May 2009), Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages

Department of the Environment, Heritage and Local Government (2006), Wind Energy Planning Guidelines

Department of the Environment, Heritage and Local Government (April 2004), Quarries and Ancillary Activities – Guidelines for Planning Authorities

Department of Housing, Planning and Local Government (2018), Project Ireland 2040 - National Planning Framework

Department of Transport – Welsh Office, HMSO, London (1998), Calculation of Road Traffic Noise (CRTN)

Department of Public Expenditure and Reform (2017), The National Development Plan 2018—2027

Department of Public Expenditure and Reform (2016, Consultation Principles & Guidelines

Department of Public Expenditure and Reform (2012), Public Spending Code D-03 Guide to Economic Appraisal CBA

Environmental Protection Agency (June 2018), Guidance Note for Noise Action Planning

Environmental Protection Agency (2012), Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

Environmental Protection Agency (2011), Guidance Note on Noise Assessment of Wind Turbine Operations at EPA Licensed Sites (NG3)

Environmental Protection Agency (August 2011), Guidance Note for Strategic Noise Mapping for the Environmental Noise Regulations 2006, Version 2

Environmental Protection Agency (July 2009), Guidance Note for Noise Action Planning

Environmental Protection Agency (2003), Environmental Quality Objectives - Noise in Quiet Areas, (2000-MS-14-M1), Synthesis Report

European Commission (December 2003), working group position paper from December 2003 “Working Group on Health and Socio-Economic Valuation of Noise”

HEATCO (December 2006), Developing Harmonised European Approaches for Transport Costing and Project Assessment, Final Technical Report

Irish Concrete Federation (October 2005), “Environmental Code” 2nd Edition

National Roads Authority (2004), Guidelines for the Treatment of Noise and Vibration in National Road Schemes

National Roads Authority (2014), Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes

South-East Regional Authority (2010), Regional Planning Guidelines for the South-East Region 2010-2022

Southern Regional Assembly (2018), Draft Regional Spatial & Economic Strategy for the Southern Region

The Scottish Office (2011), Planning Advice Note PAN 1/2011: Planning and Noise & Technical Advice Note: Assessment of Noise

Wexford County Council, Wexford County Development Plan 2013-2019

Wexford County Council, Wexford County Noise Action Plan 2013-2019

World Health Organisation (2018), Environmental Noise Guidelines for the European Region

World Health Organisation (2010), Burden of disease from environmental noise

World Health Organisation (2009), Night Noise Guidelines for Europe

World Health Organisation (1999), Guidelines for Community Noise

Websites






Central Statistics Office (CSO), www.cso.ie

APPENDIX A







Colour-coding and dB(A) intervals for noise contours

Extract from the EPA “Guidance Note For Strategic Noise Mapping - Version 2” (August 2001). The colour bands below are recommended for use in the production of noise level contour maps. The colour bands are based upon those set out within ISO 1996-2 (1987).

Recommended Noise Level Bands for Maps of L_{den}

Noise Zone dB	Colour		Code	Red	Green	Blue
< 55	Transparent					
55 to 59	Orange		# FF 66 00	255	102	0
60 to 64	Cinnabar		# FF 33 33	255	51	51
65 to 69	Carmine		# 99 00 33	153	0	51
70 to 74	Lilac Red		# AD 9A D6	173	154	214
≥ 75	Blue		# 00 00 FF	0	0	255

Recommended Noise Level Bands for Maps of L_{night}

Noise Zone dB	Colour		Code	Red	Green	Blue
< 45	Transparent					
45 to 49	Yellow		# FF FF 00	255	255	0
50 to 54	Ochre		# FF C7 4A	255	199	74
55 to 59	Orange		# FF 66 00	255	102	0
60 to 64	Cinnabar		# FF 33 33	255	51	51
65 to 69	Carmine		# 99 00 33	153	0	51
>70	Lilac Red		# AD 9A D6	173	154	214

APPENDIX B

Roadways Qualified for Noise Mapping

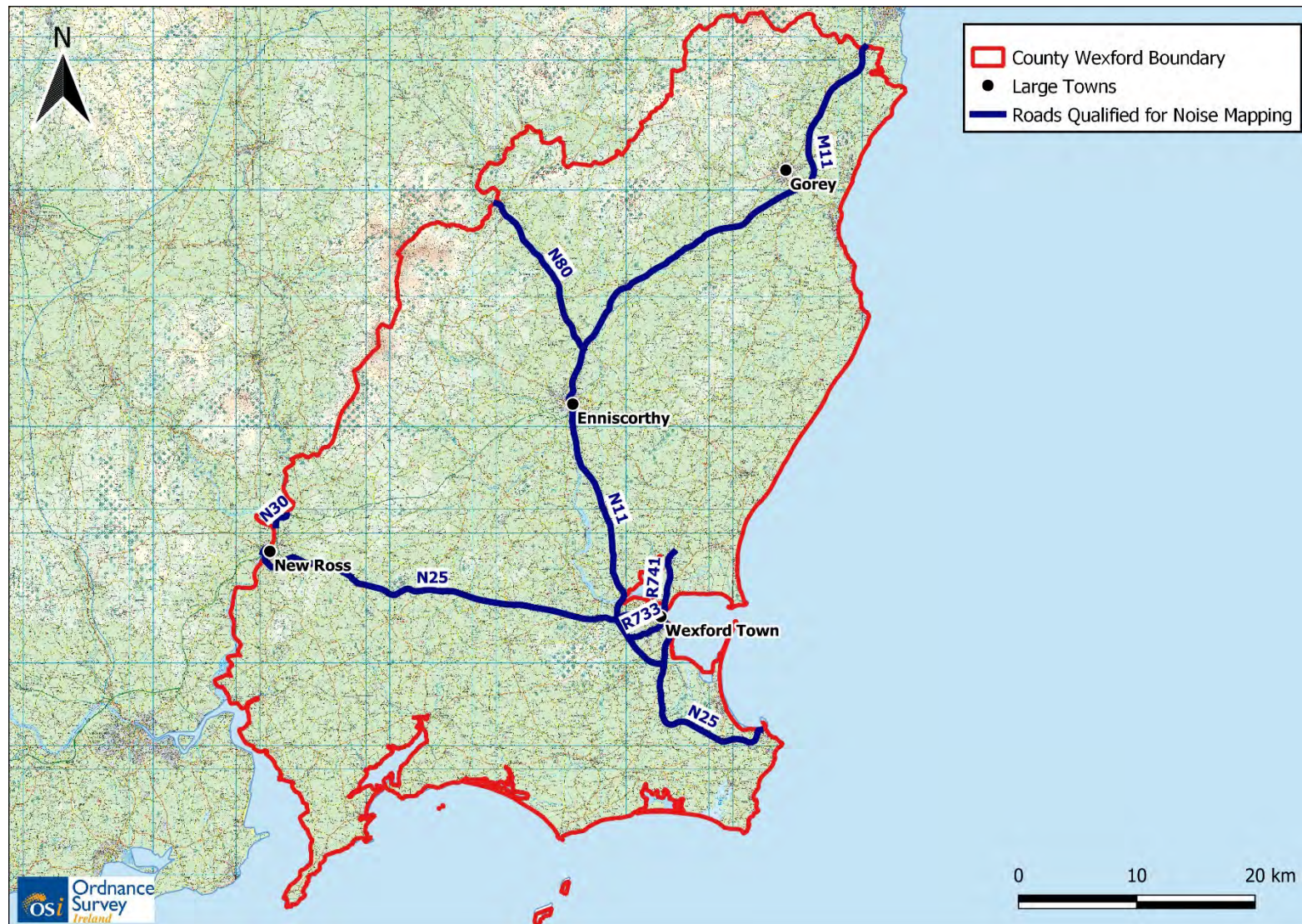


Figure B - 1: Overview of Roadways in Wexford County Qualified for Noise Mapping

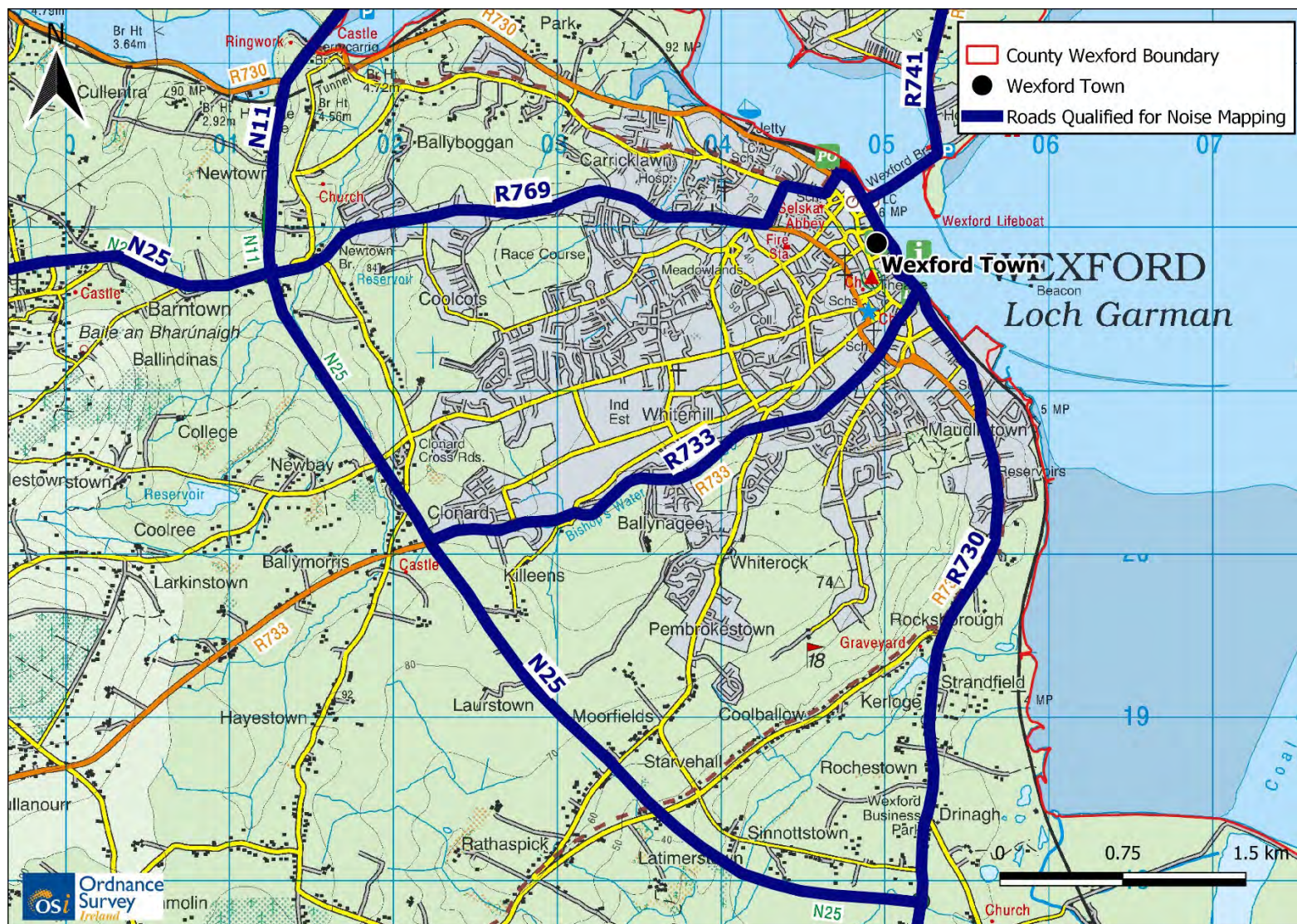


Figure B - 2: Overview of Roadways in Wexford Town Qualified for Noise Mapping

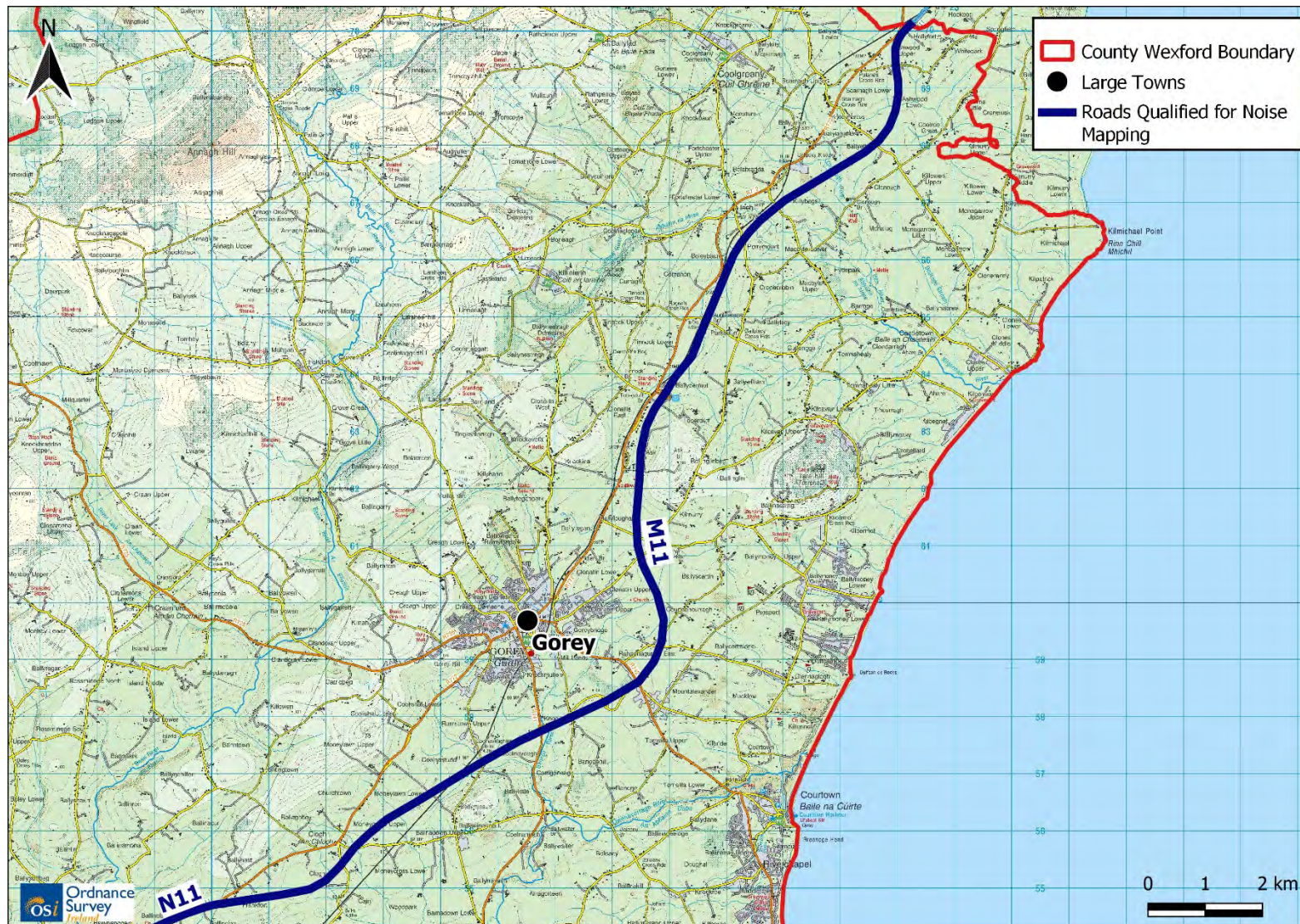


Figure B - 3: M11 – Wicklow Border to N11 Roundabout southwest of Gorey

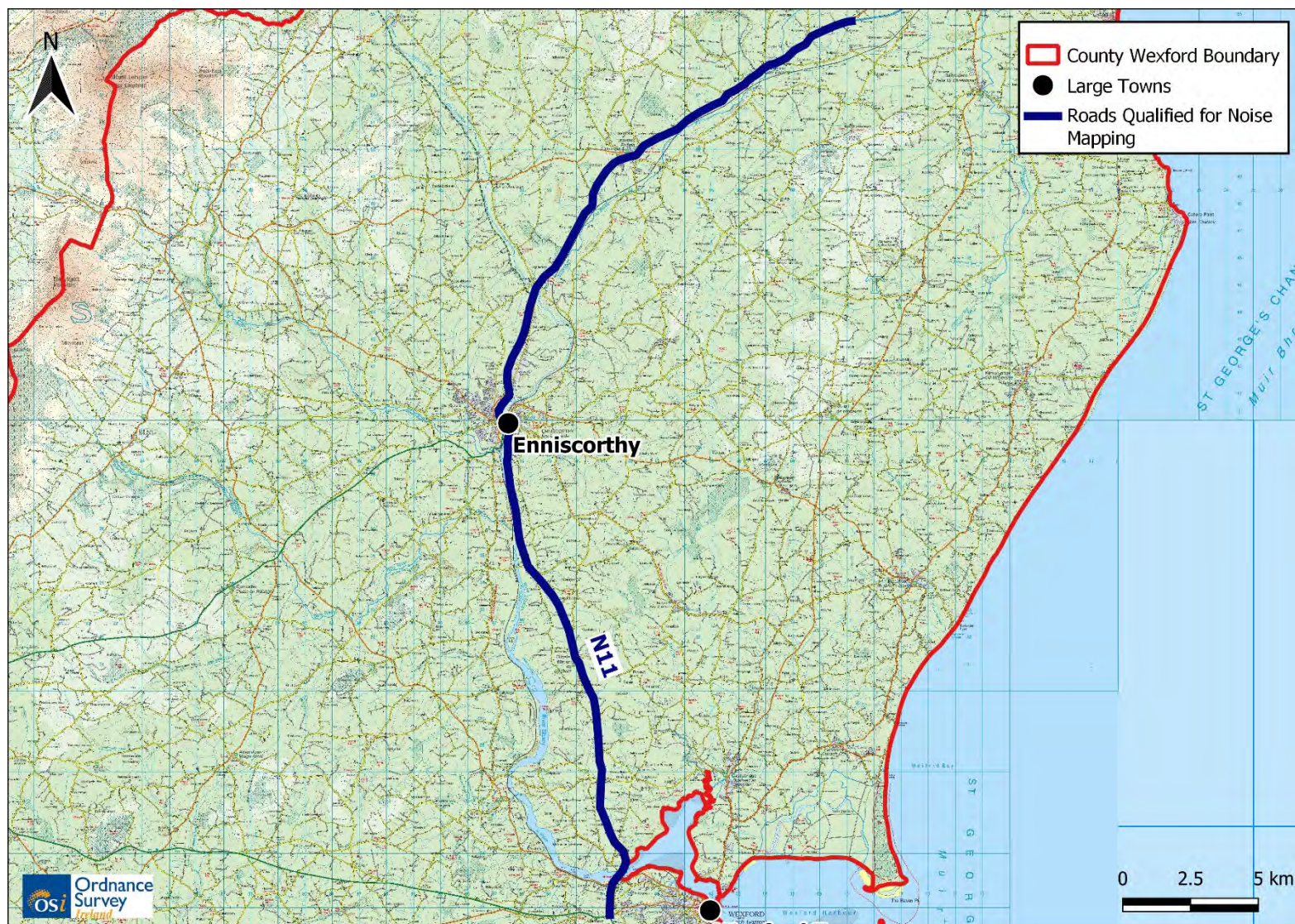


Figure B - 4: N11 – M11 Roundabout Southwest of Gorey to N25 Roundabout West of Wexford Town

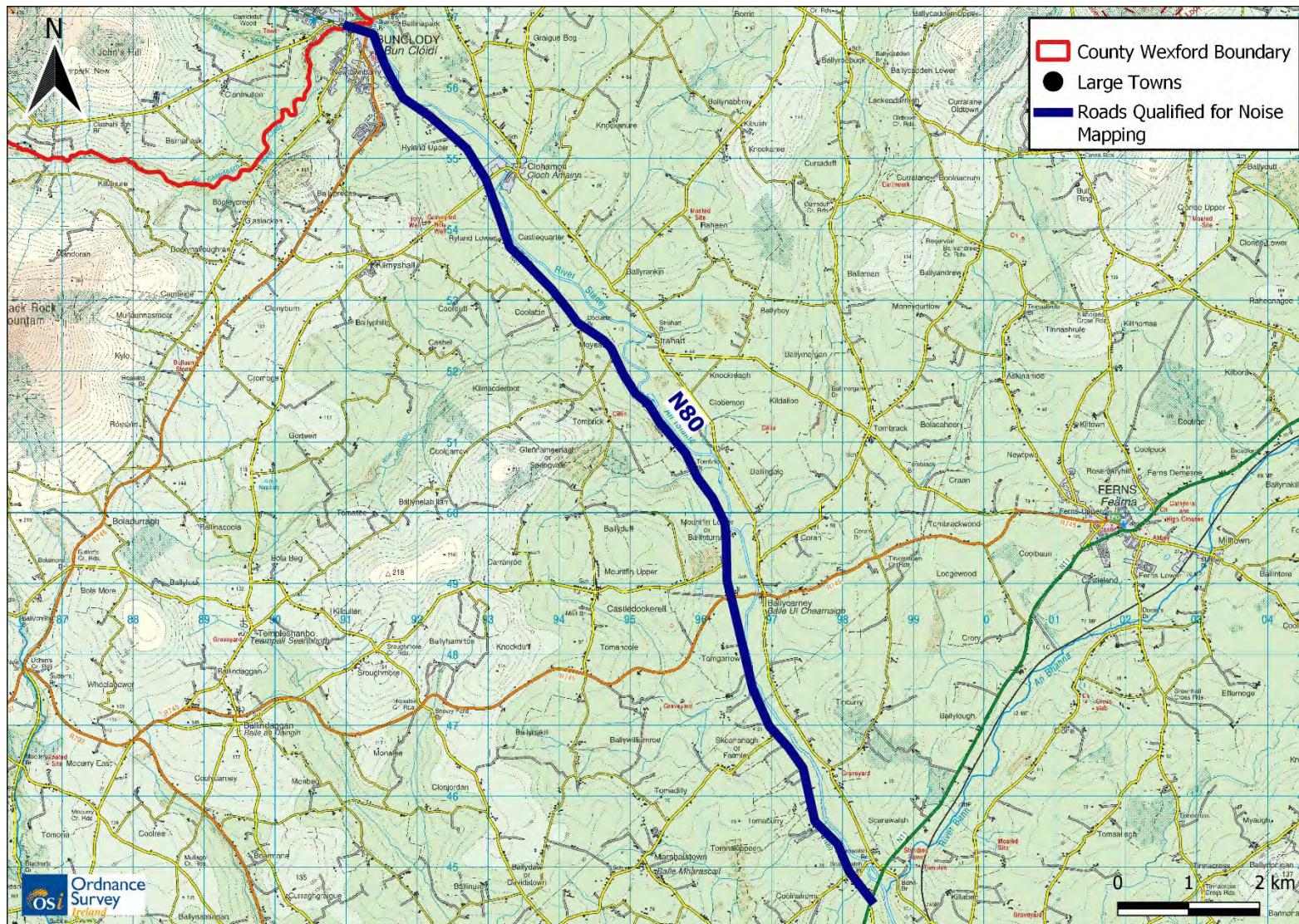


Figure B - 5: N80 – N11 Roundabout to Carlow Border at Bunclody

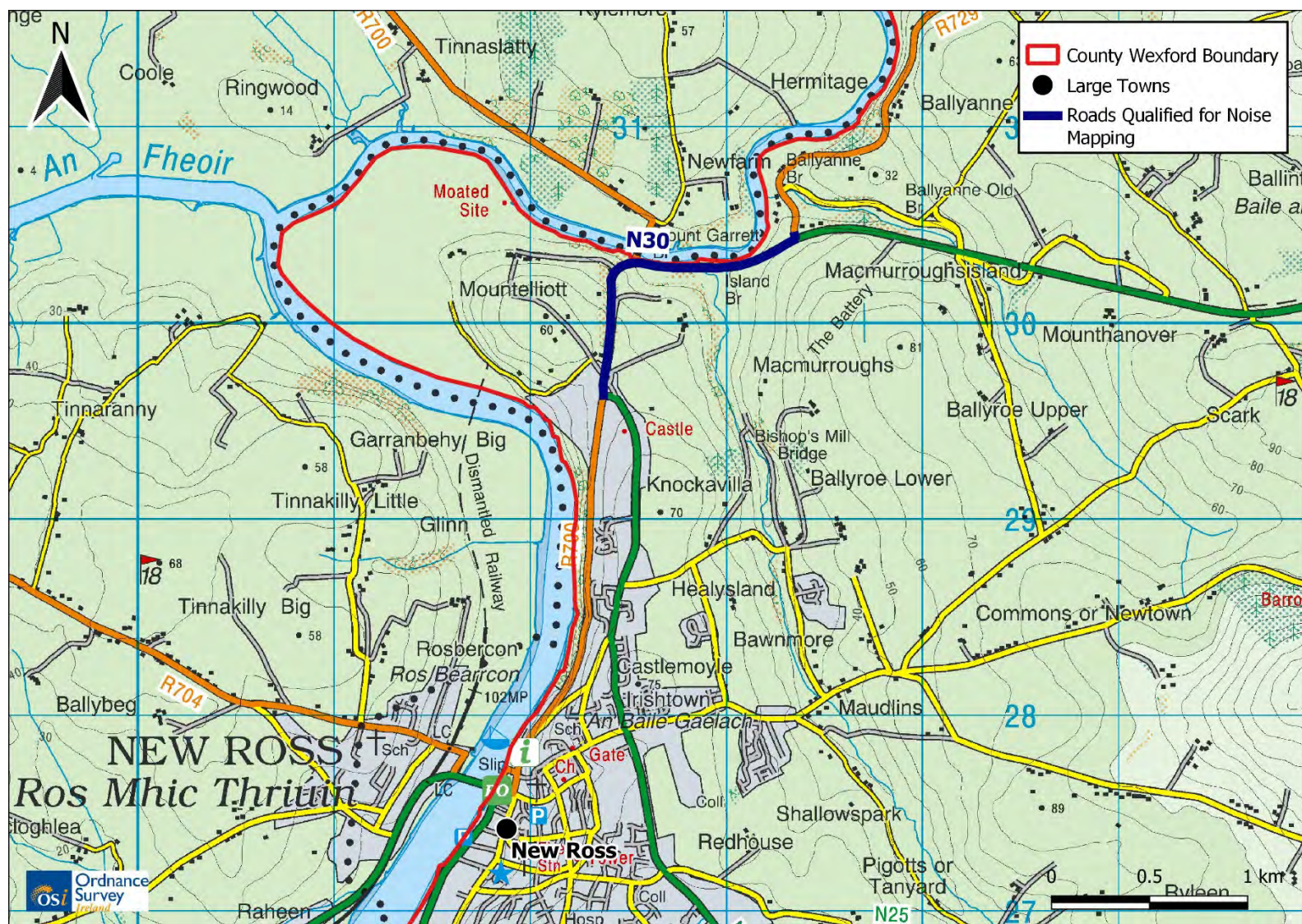


Figure B - 6: N30 – N25 Junction Southeast of New Ross to Enniscorthy

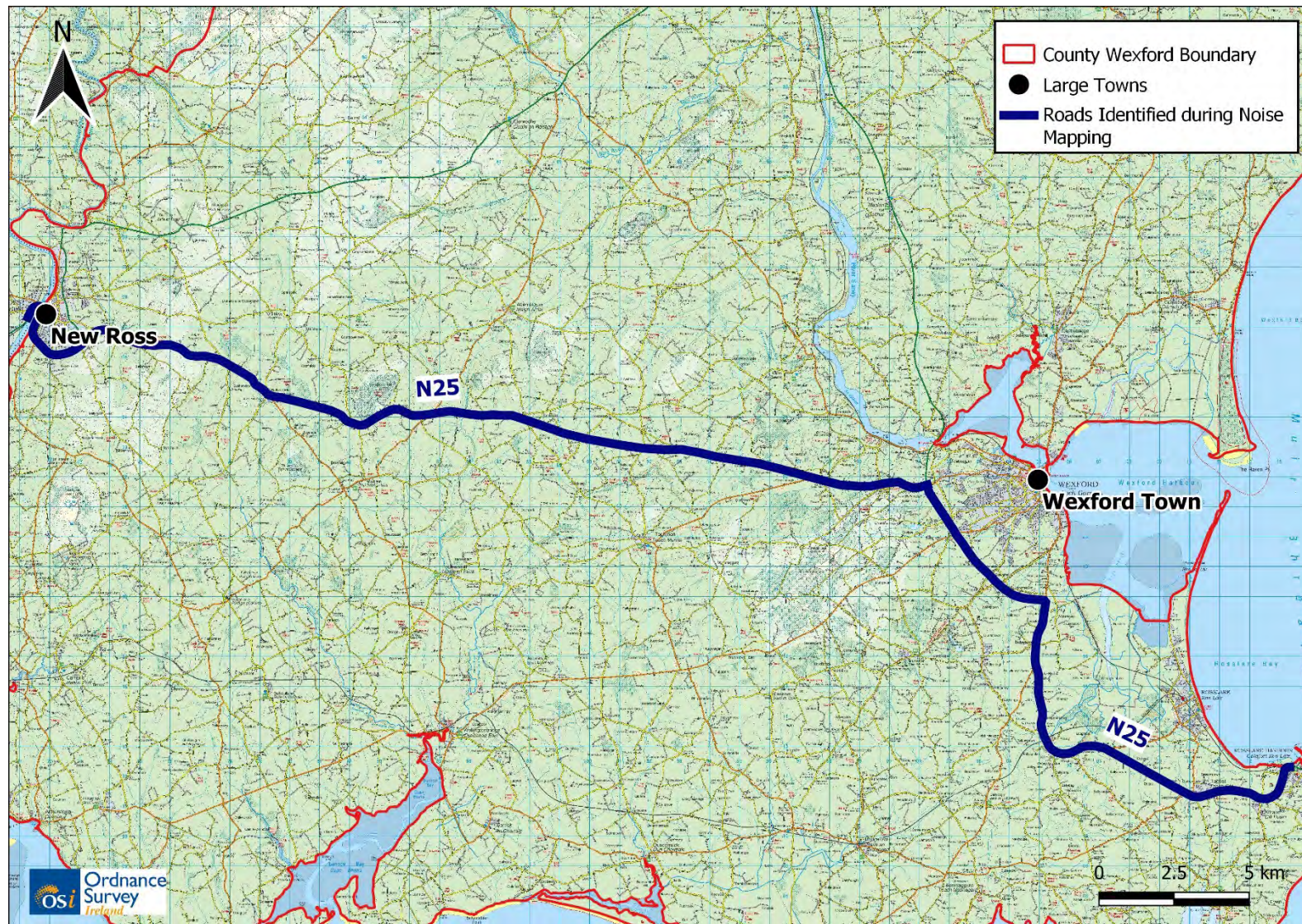


Figure B - 7: N25 – Kilkenny Border at New Ross to Rosslare Harbour

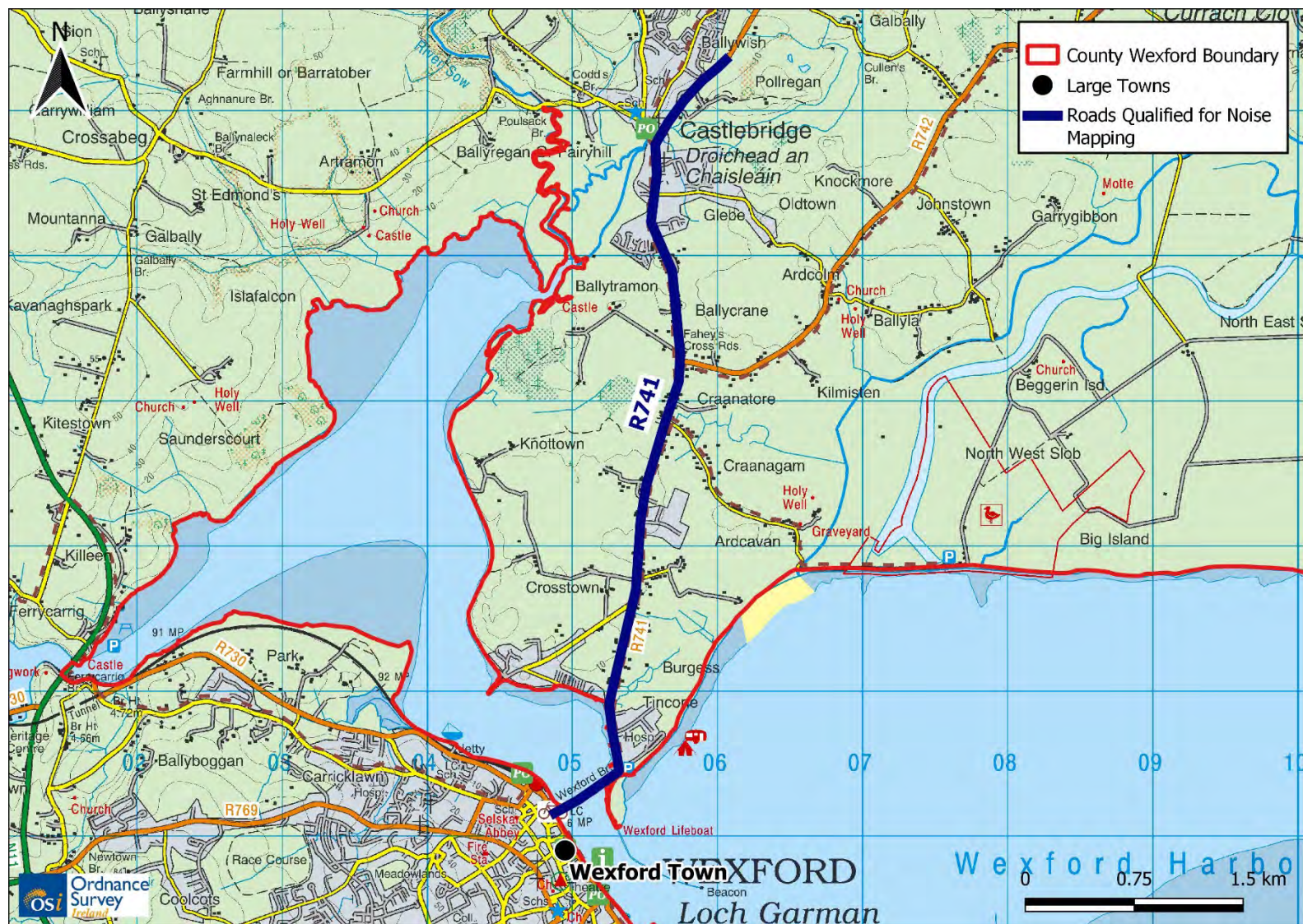


Figure B - 8: R741 – Ferrybank to Castlebridge

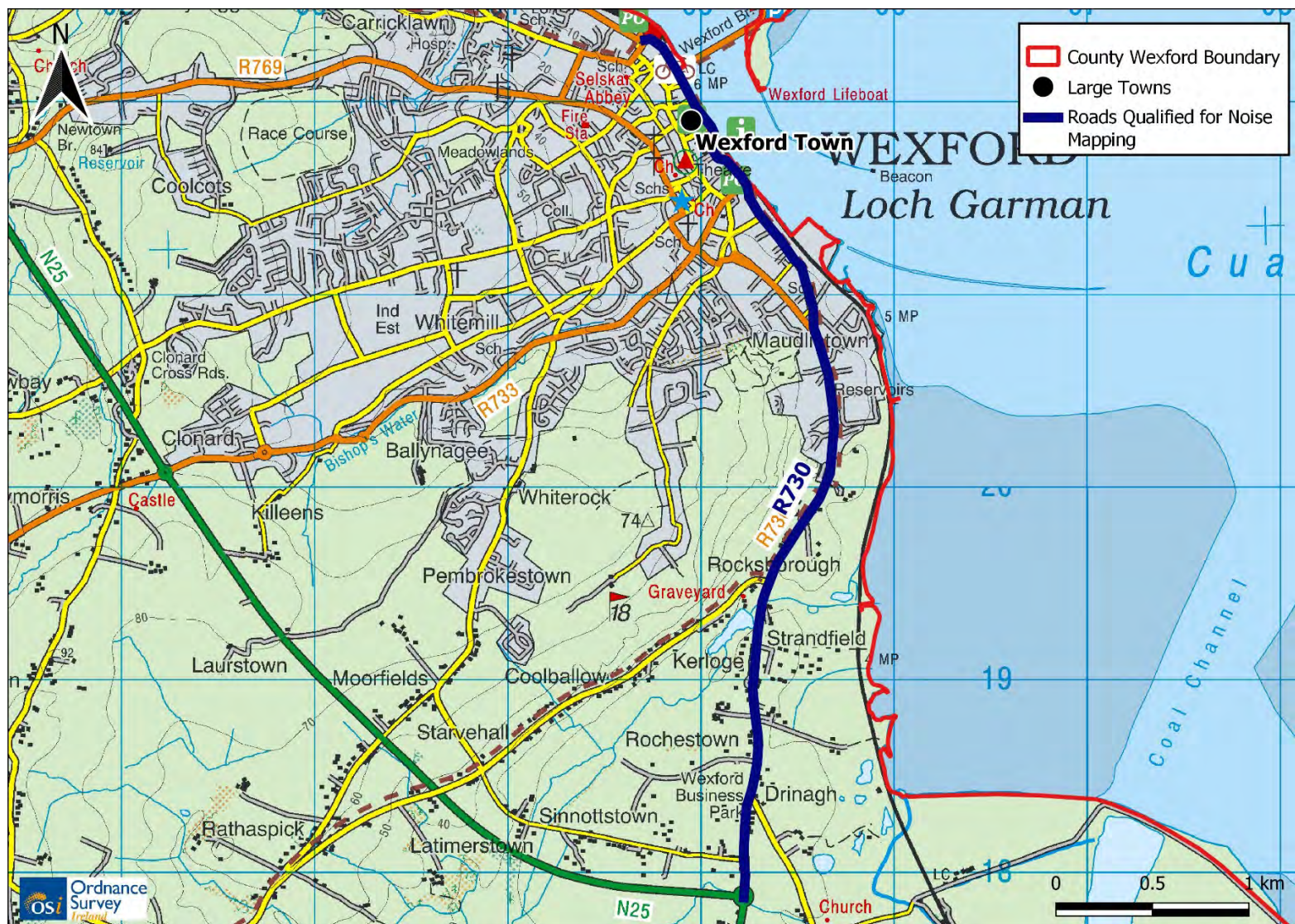


Figure B - 9: R730 – N11 Junction at Ferrycarrig to N25 Roundabout South of Wexford Town

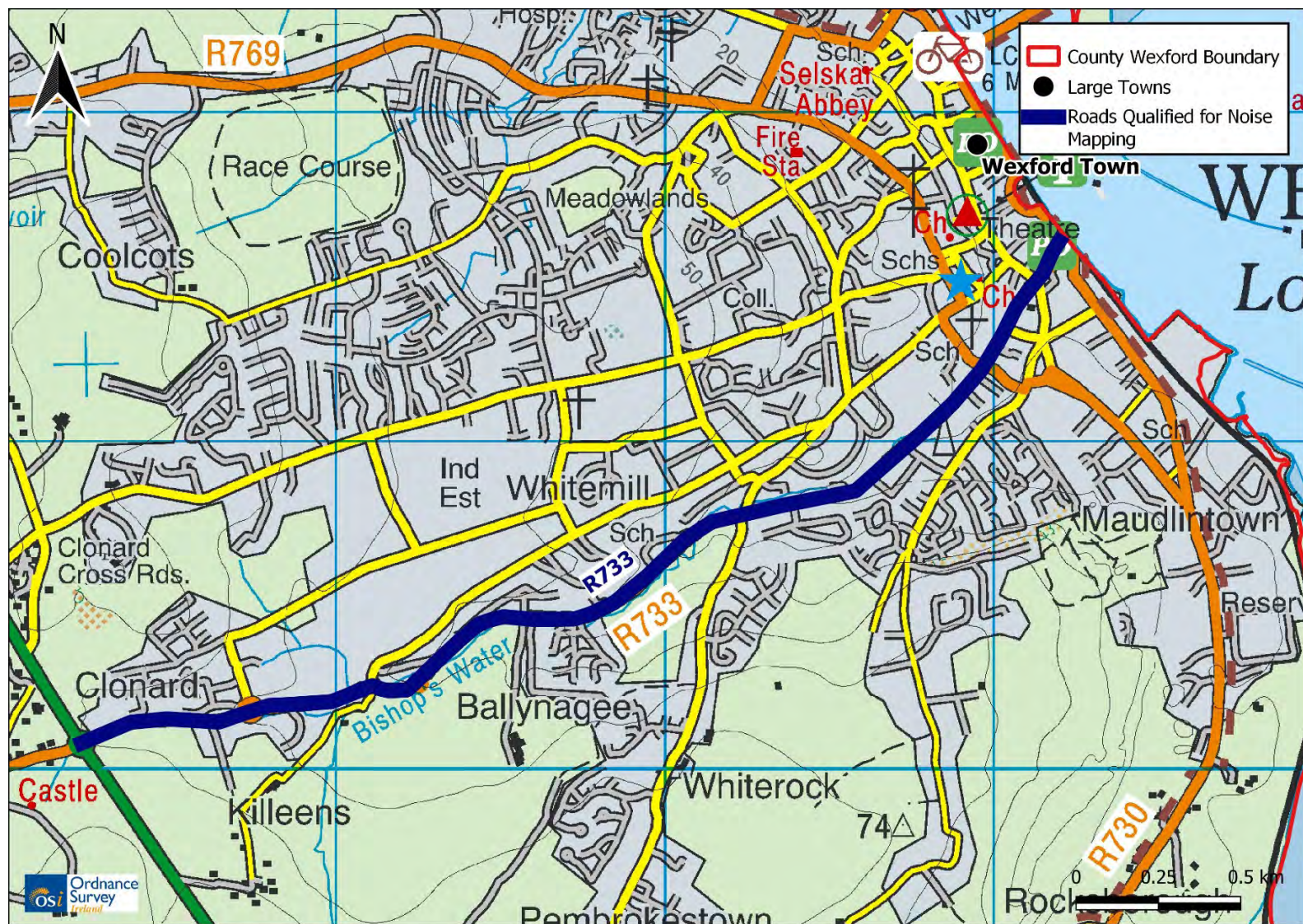


Figure B - 10: R733 – N25 Roundabout West of Wexford Town to R730 Junction

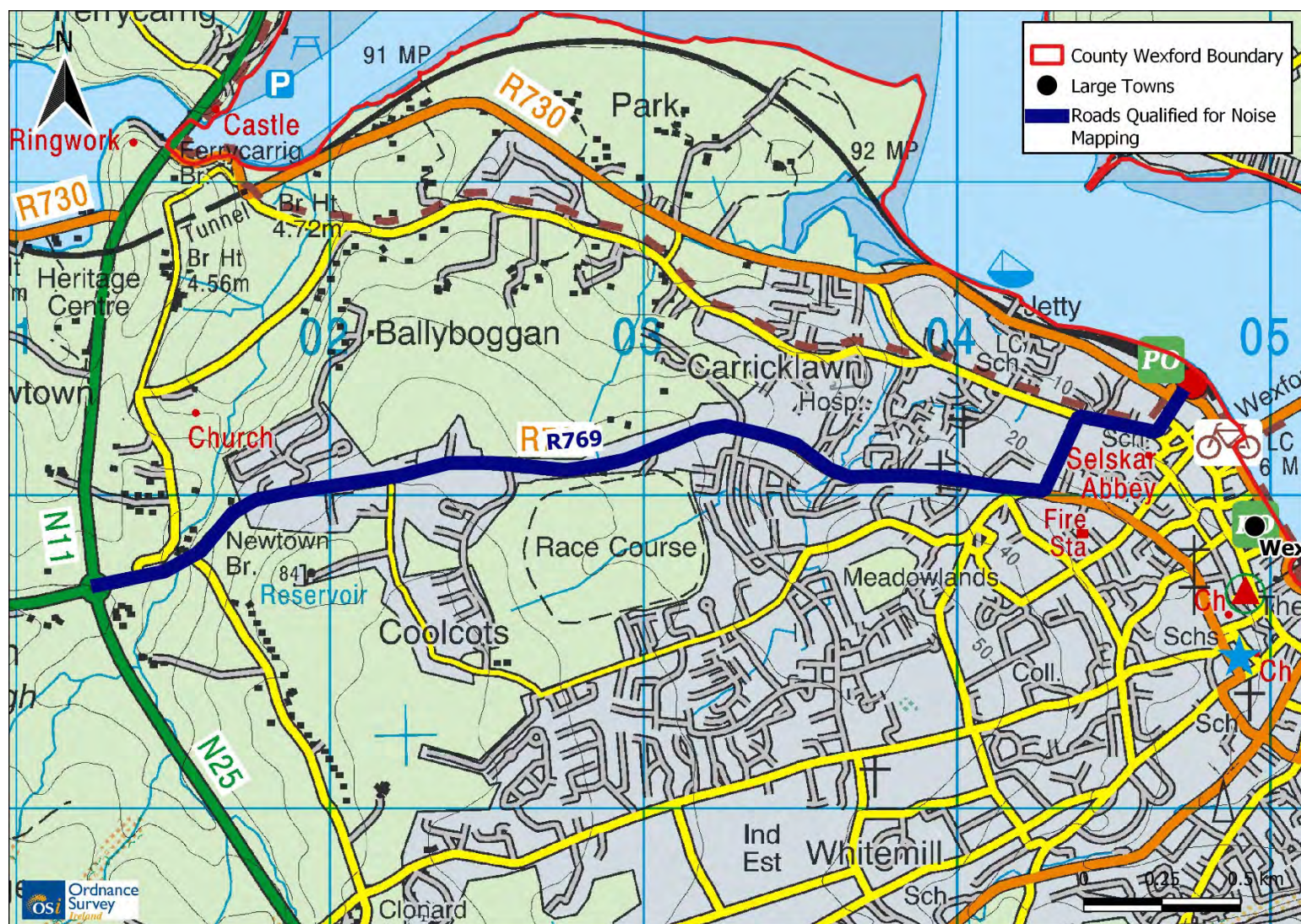


Figure B - 11: R769 – N11/N25 Roundabout West of Wexford Town to R730 Junction in Wexford Town

APPENDIX C

Strategic Noise Maps

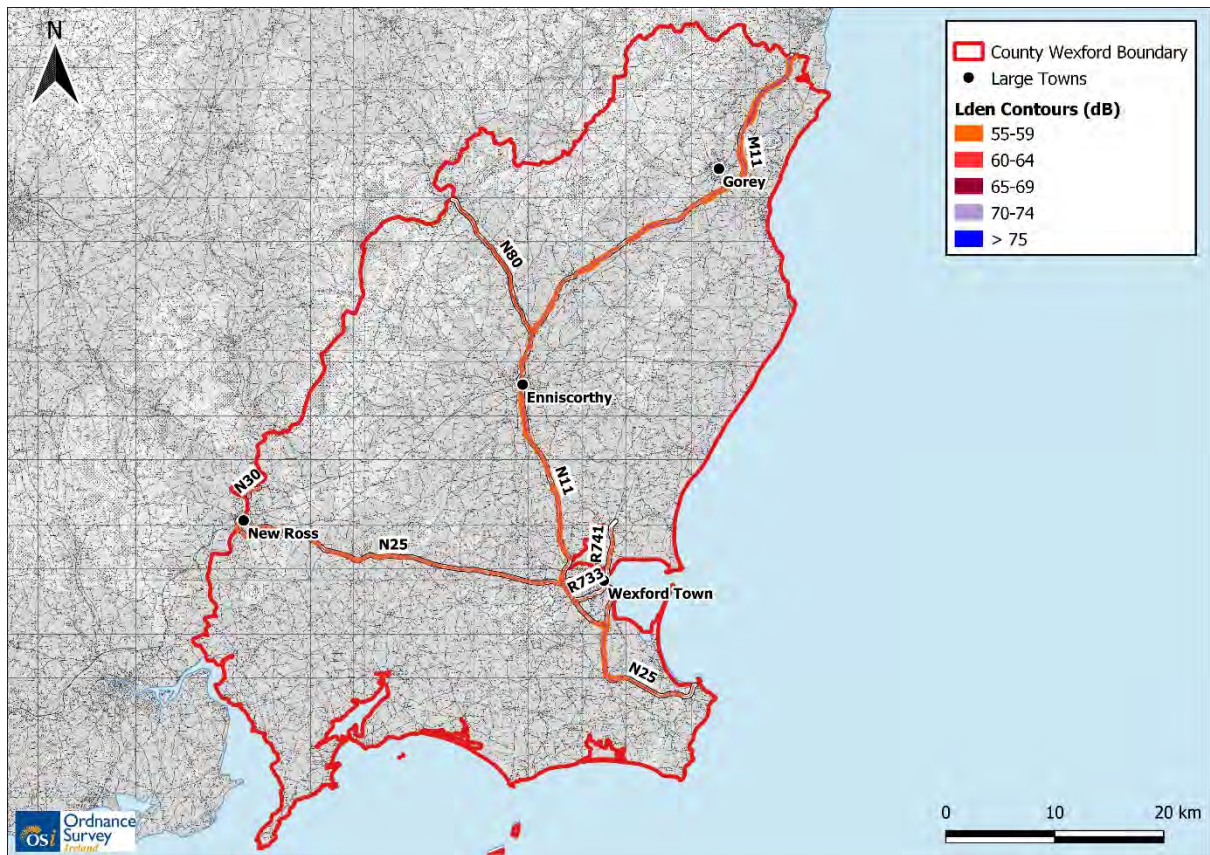


Figure C - 1: Summary of L_{den} (dB) in County Wexford

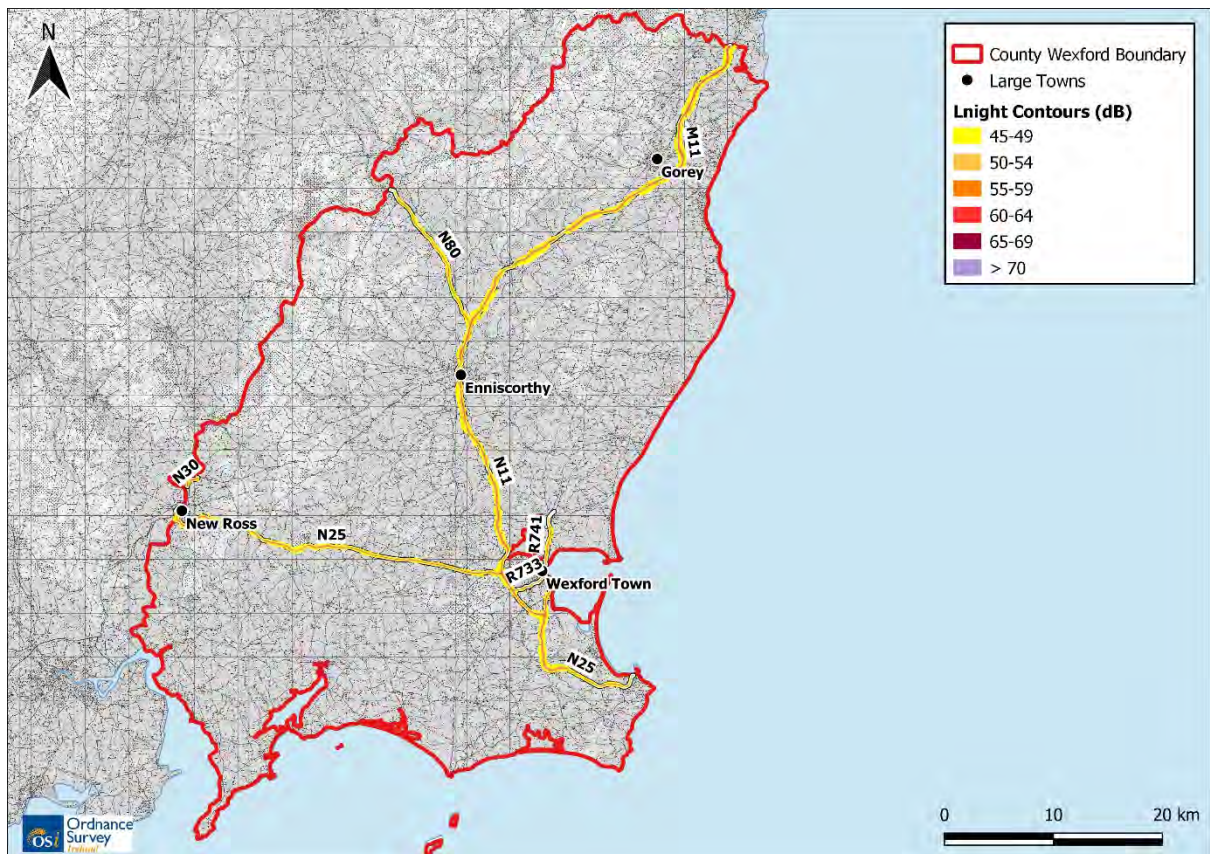


Figure C - 2: Summary of L_{night} (dB) in County Wexford

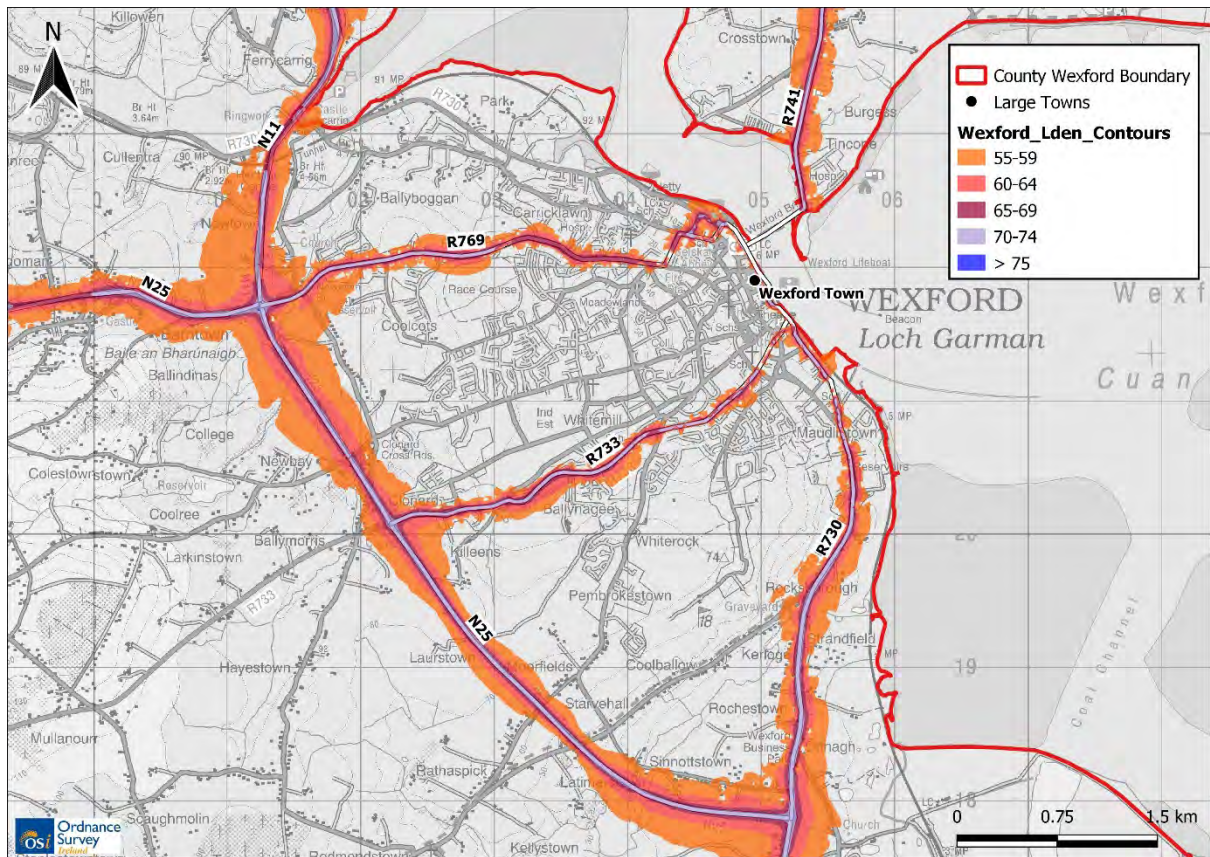


Figure C - 3: Summary of L_{den} in Wexford Town

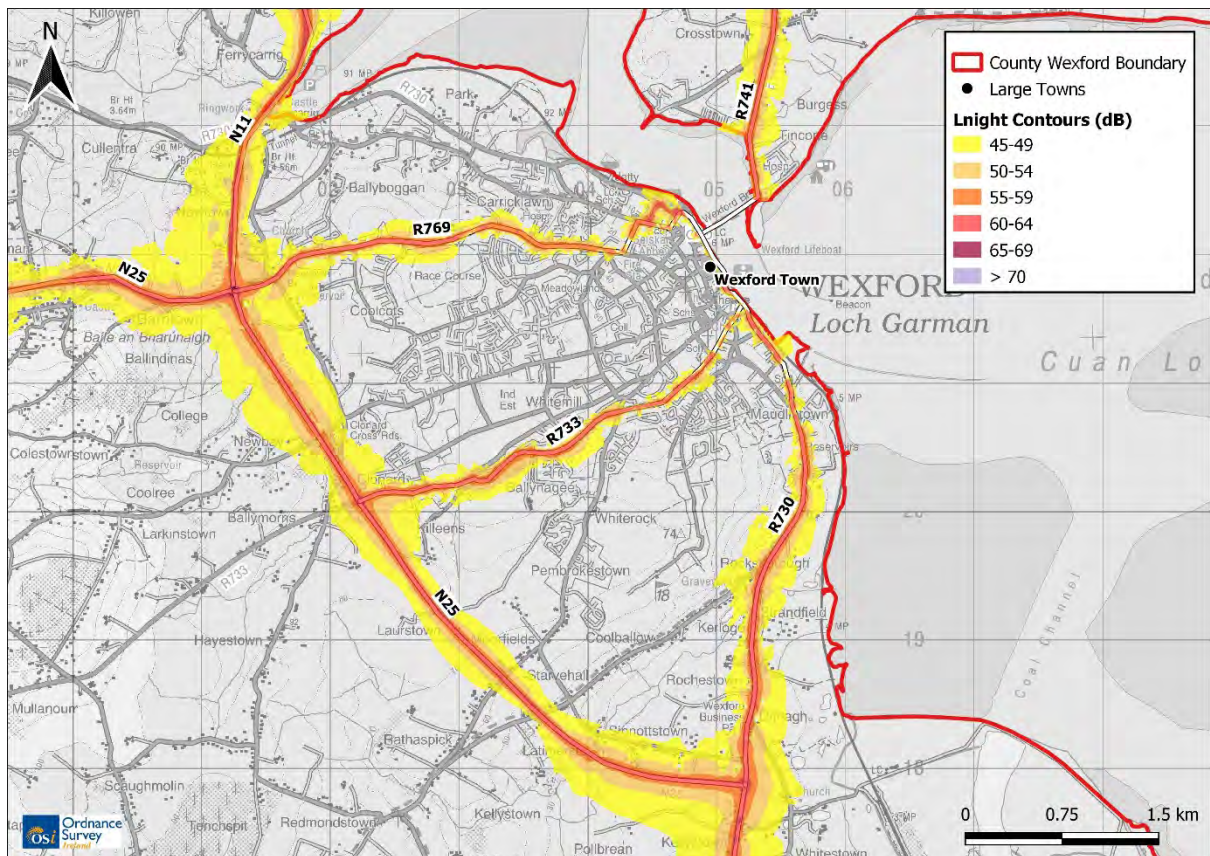


Figure C - 4: Summary of L_{night} in Wexford Town

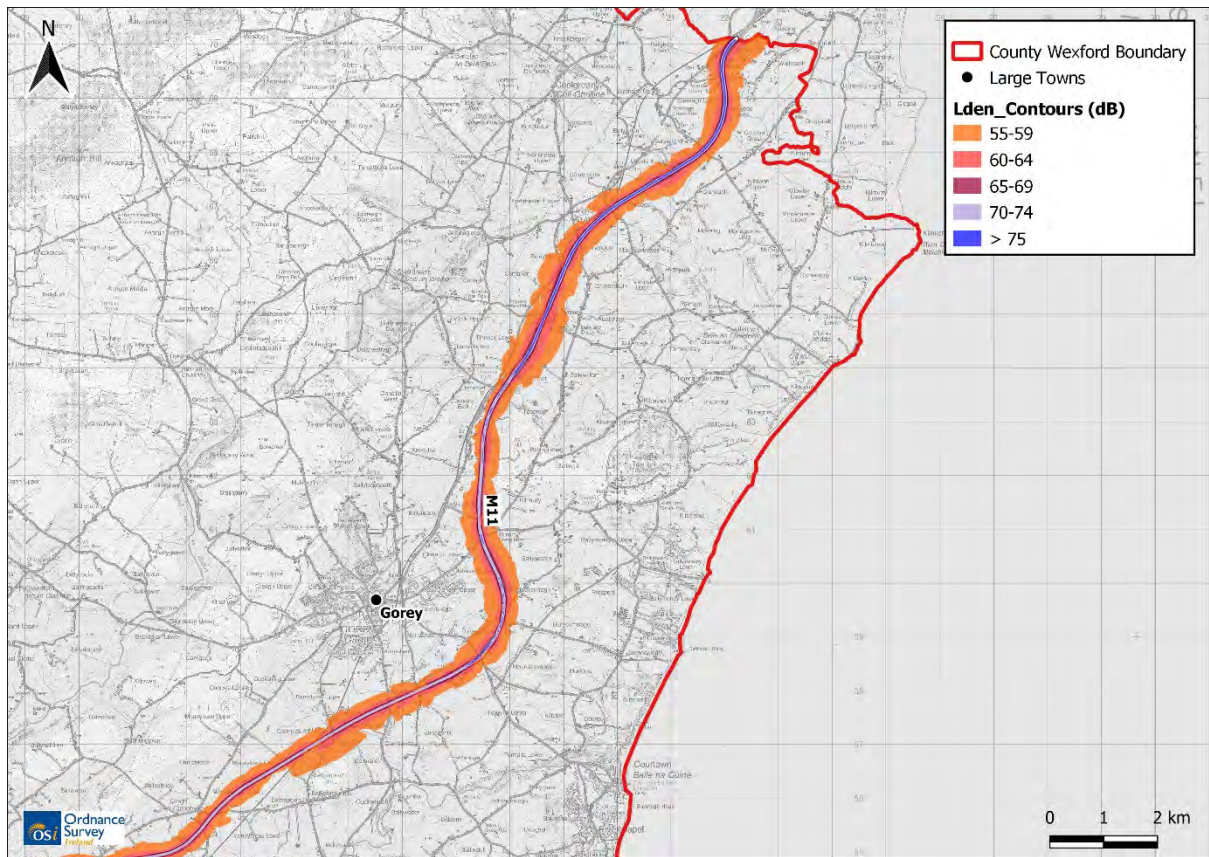


Figure C - 5: L_{den} (dB) M11 – Wicklow Border to M11 Roundabout

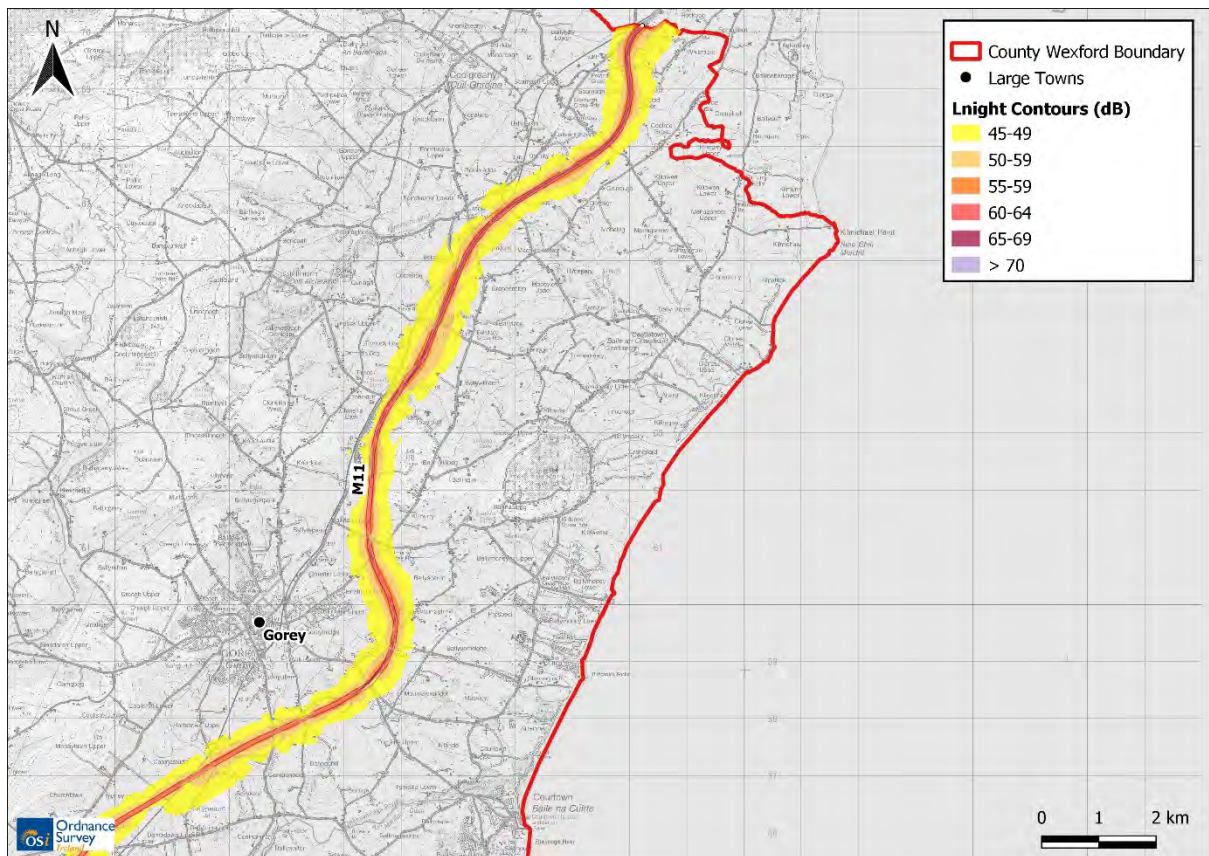


Figure C - 6: L_{night} (dB) M11 – Wicklow Border to M11 Roundabout

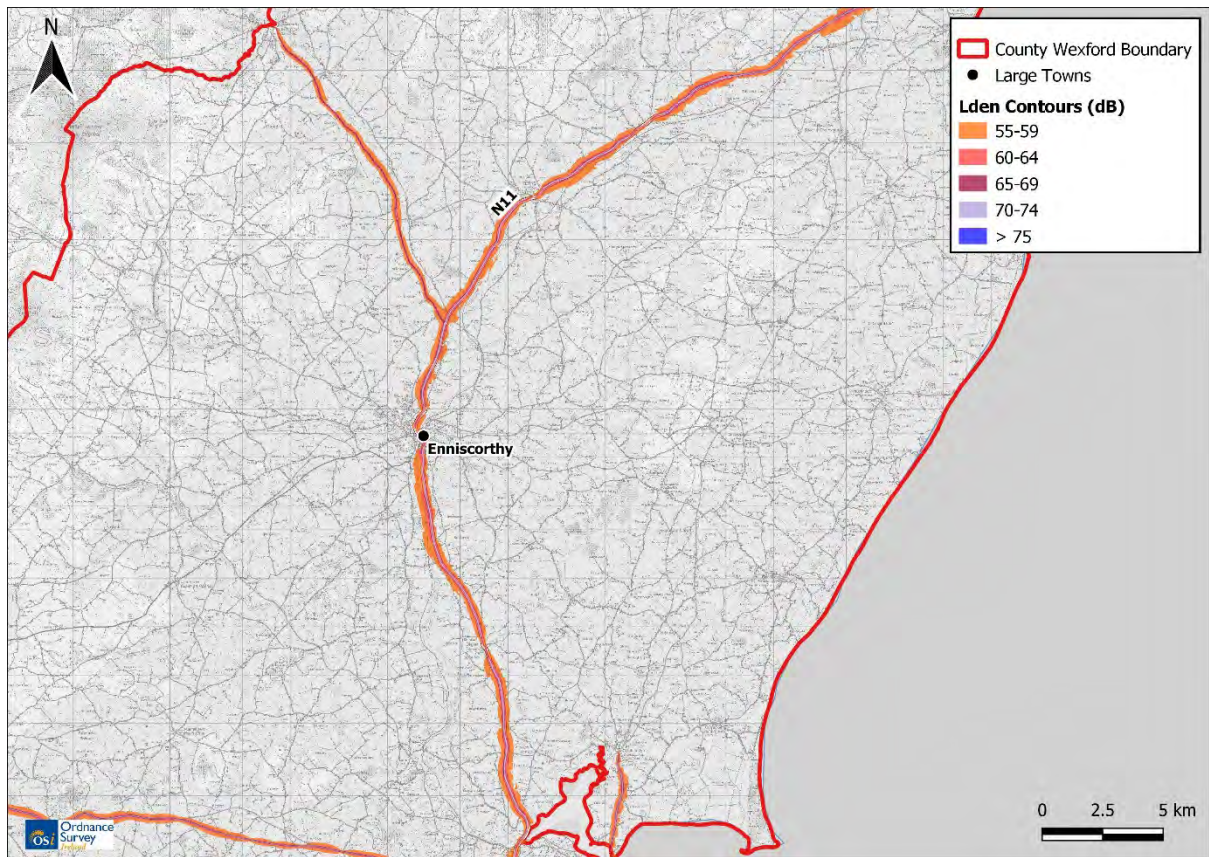


Figure C - 7: L_{den} (dB) N11 – M11 Roundabout to N25 Roundabout

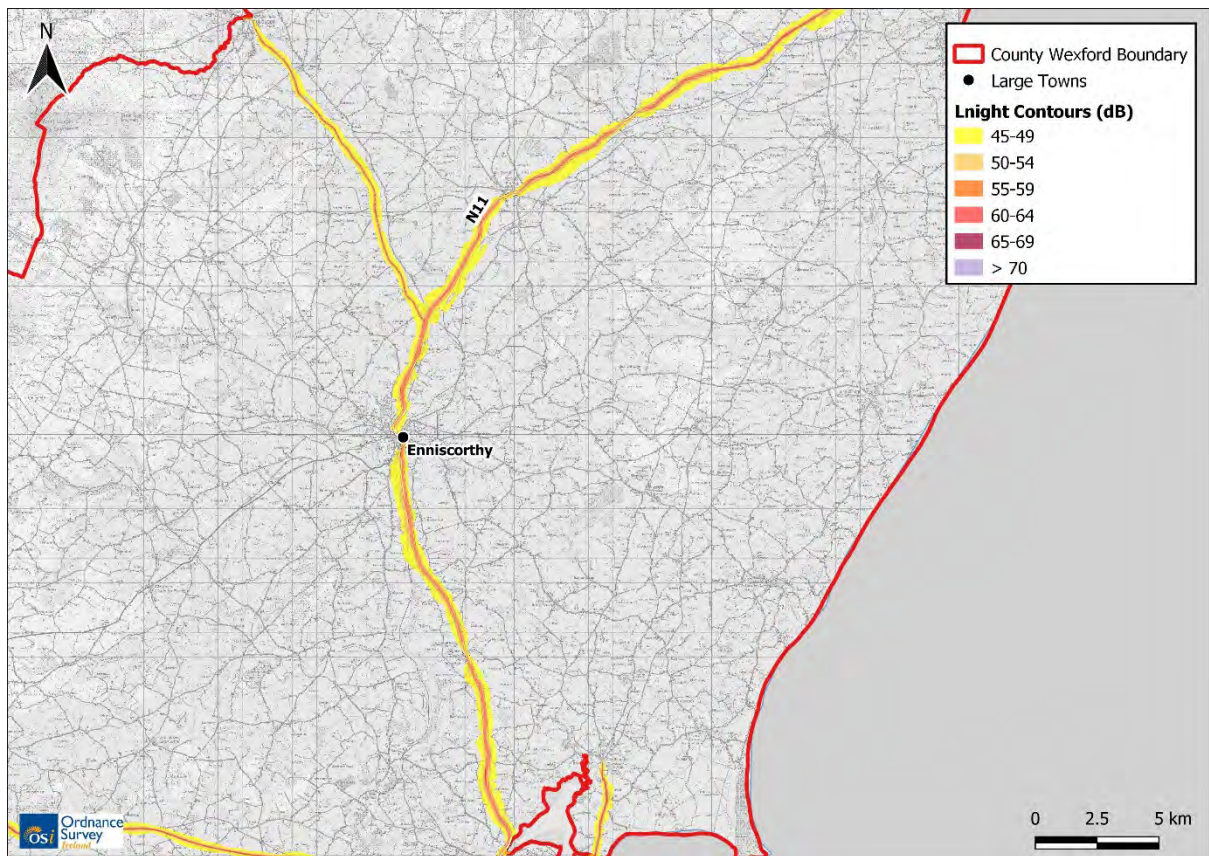


Figure C - 8: L_{night} (dB) N11 – M11 Roundabout to N25 Roundabout

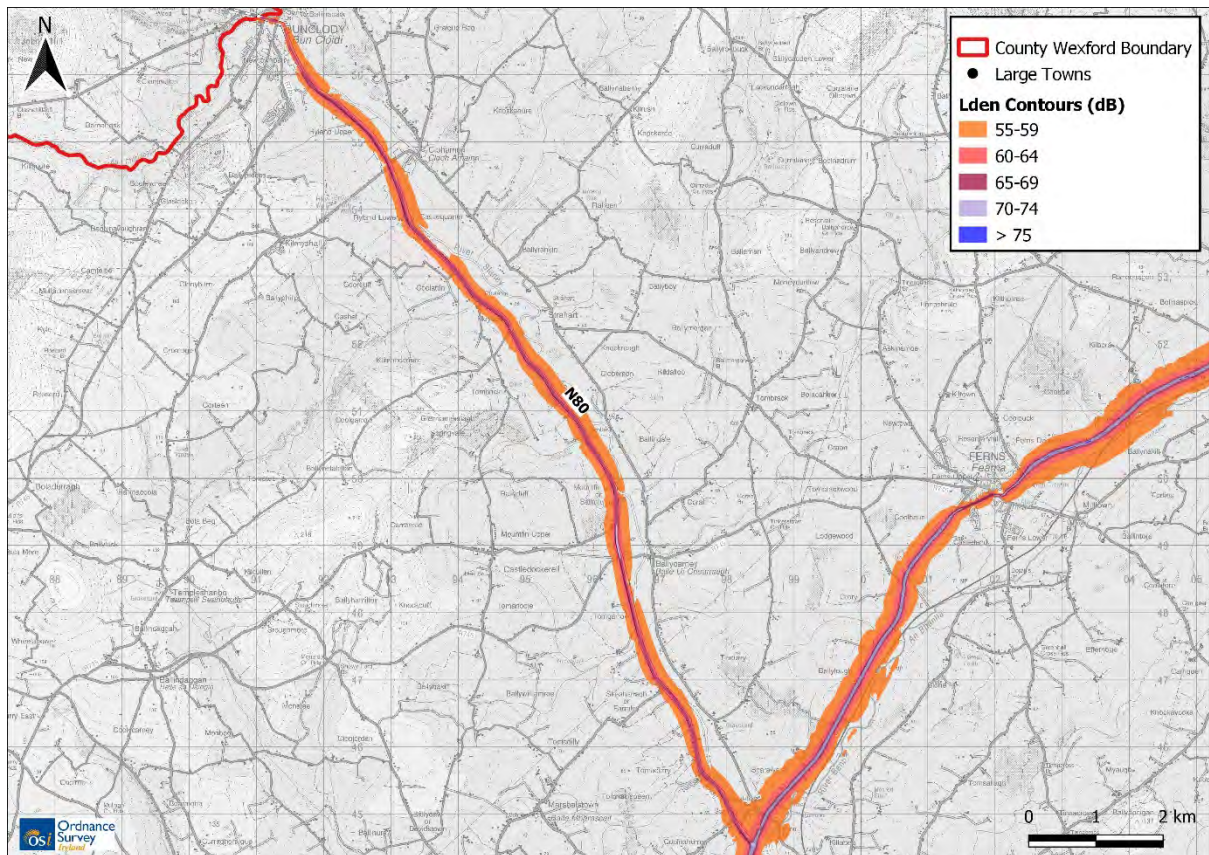


Figure C - 9: L_{den} (dB) N80 - N11 Roundabout to Bunclody

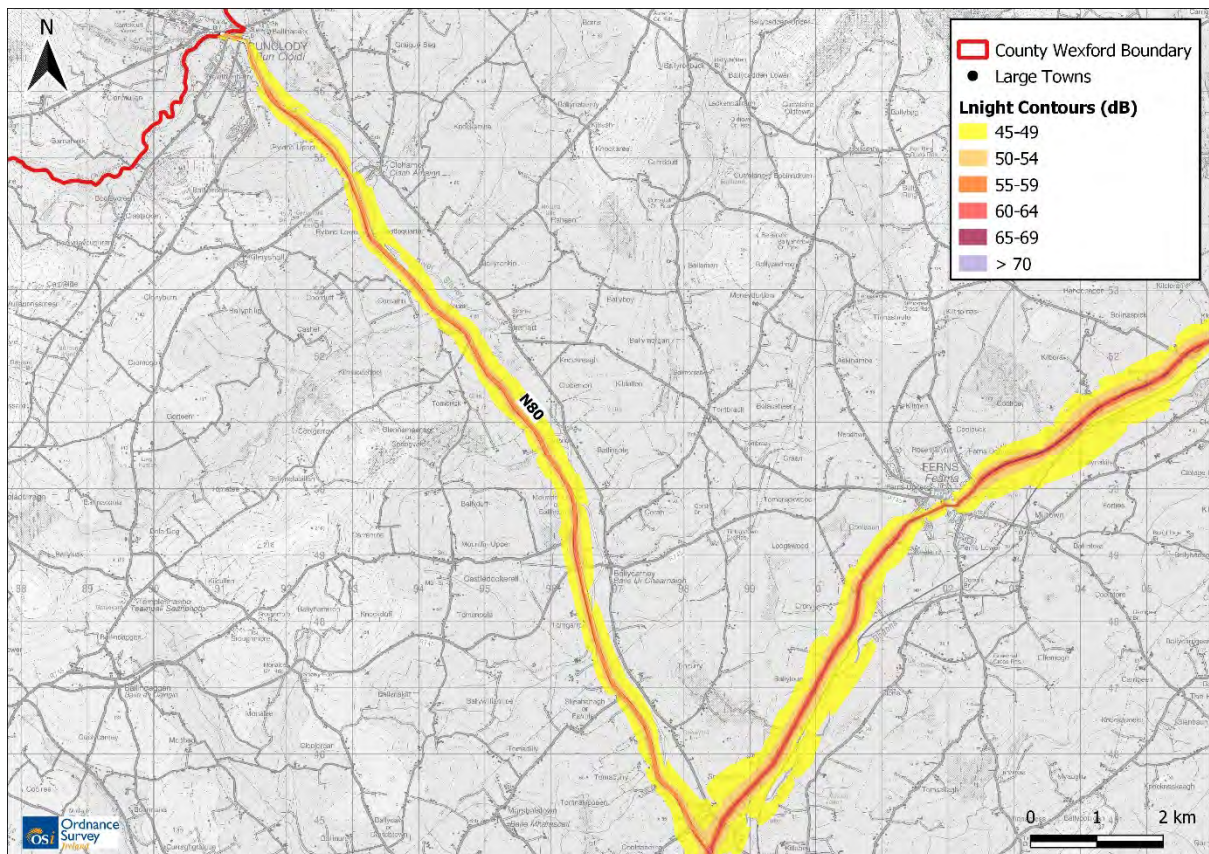
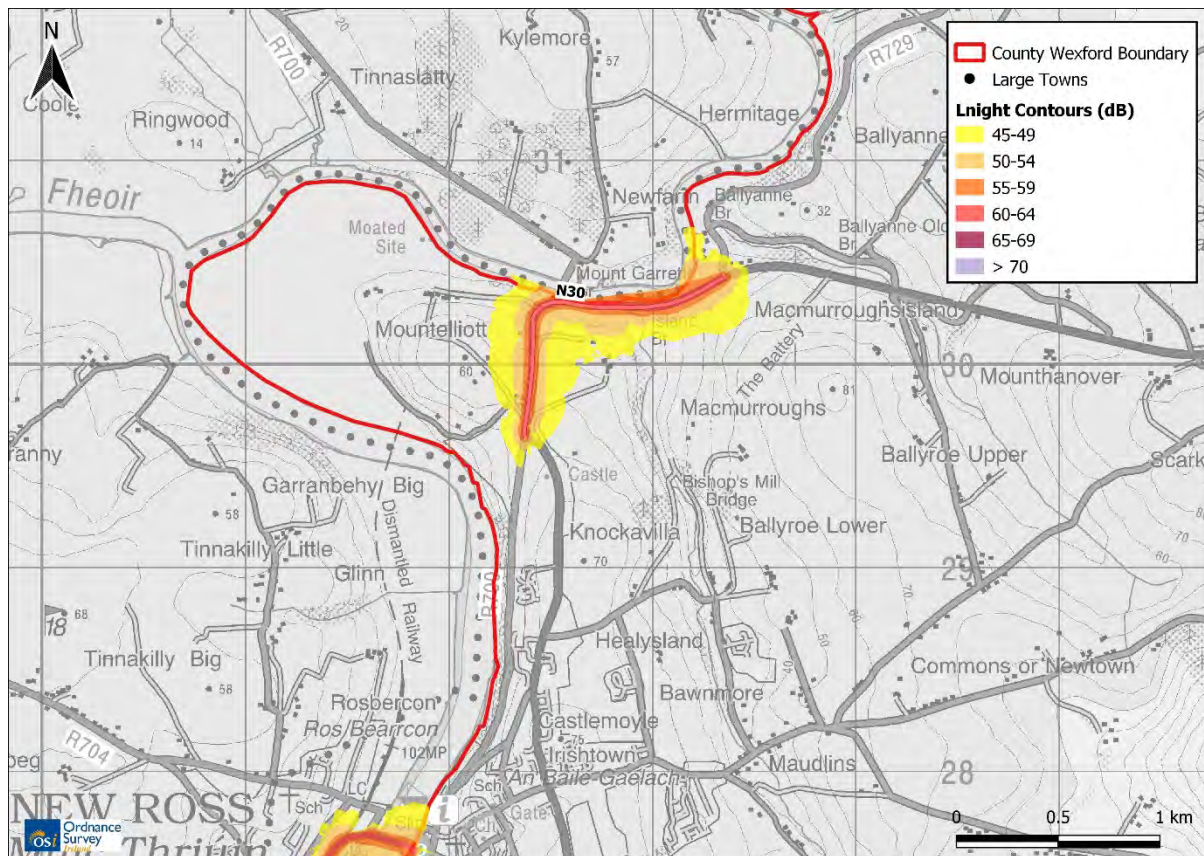
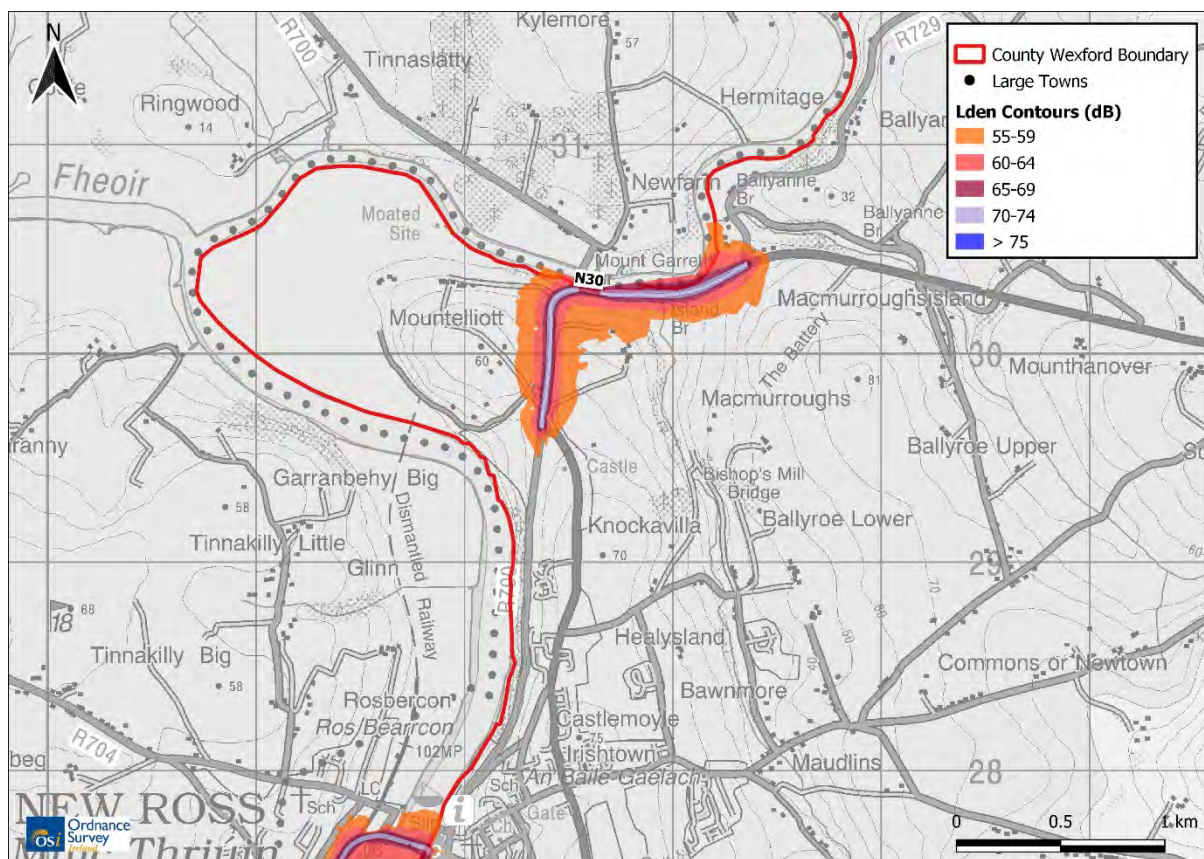


Figure C - 10: L_{night} (dB) N80 - N11 Roundabout to Bunclody



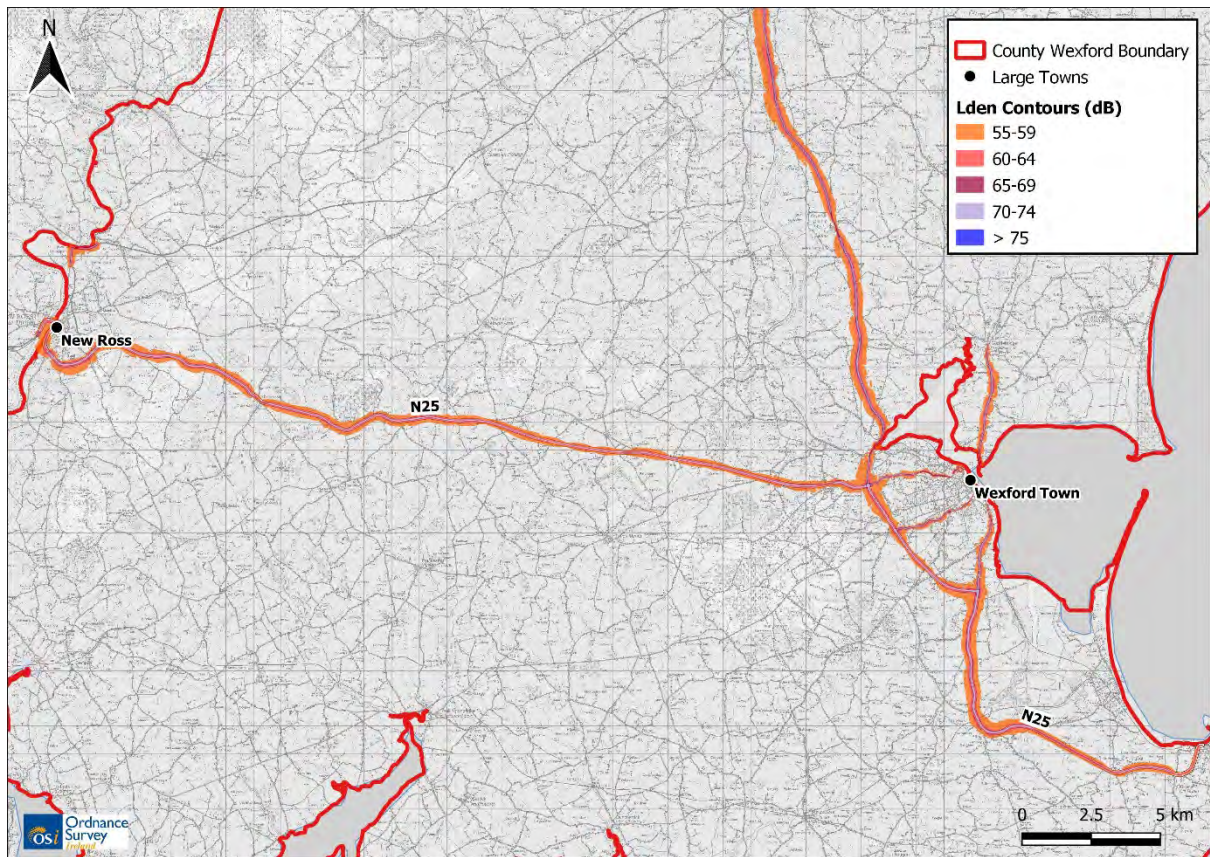


Figure C - 13: L_{den} (dB) N25 – Kilkenny border at New Ross to Rosslare Harbour

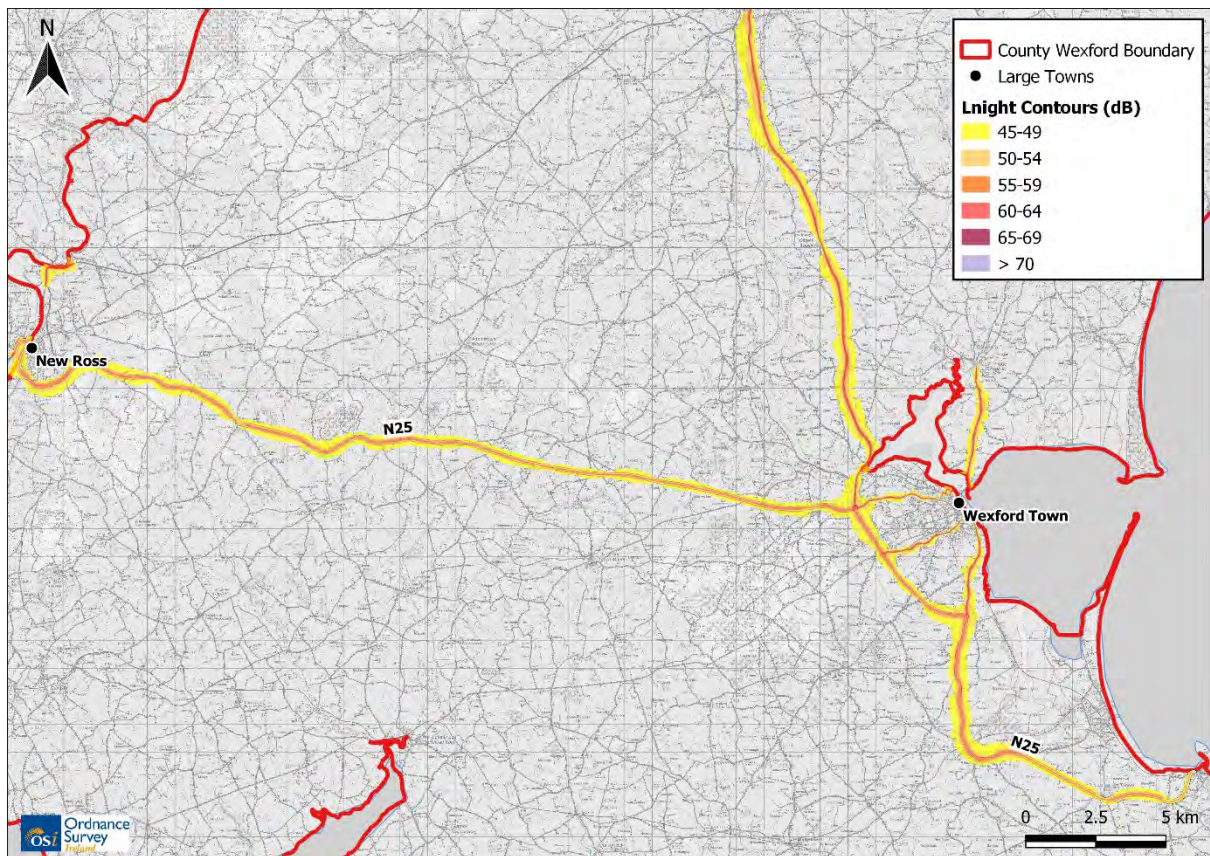


Figure C - 14: L_{night} (dB) N25 – Kilkenny border at New Ross to Rosslare Harbour

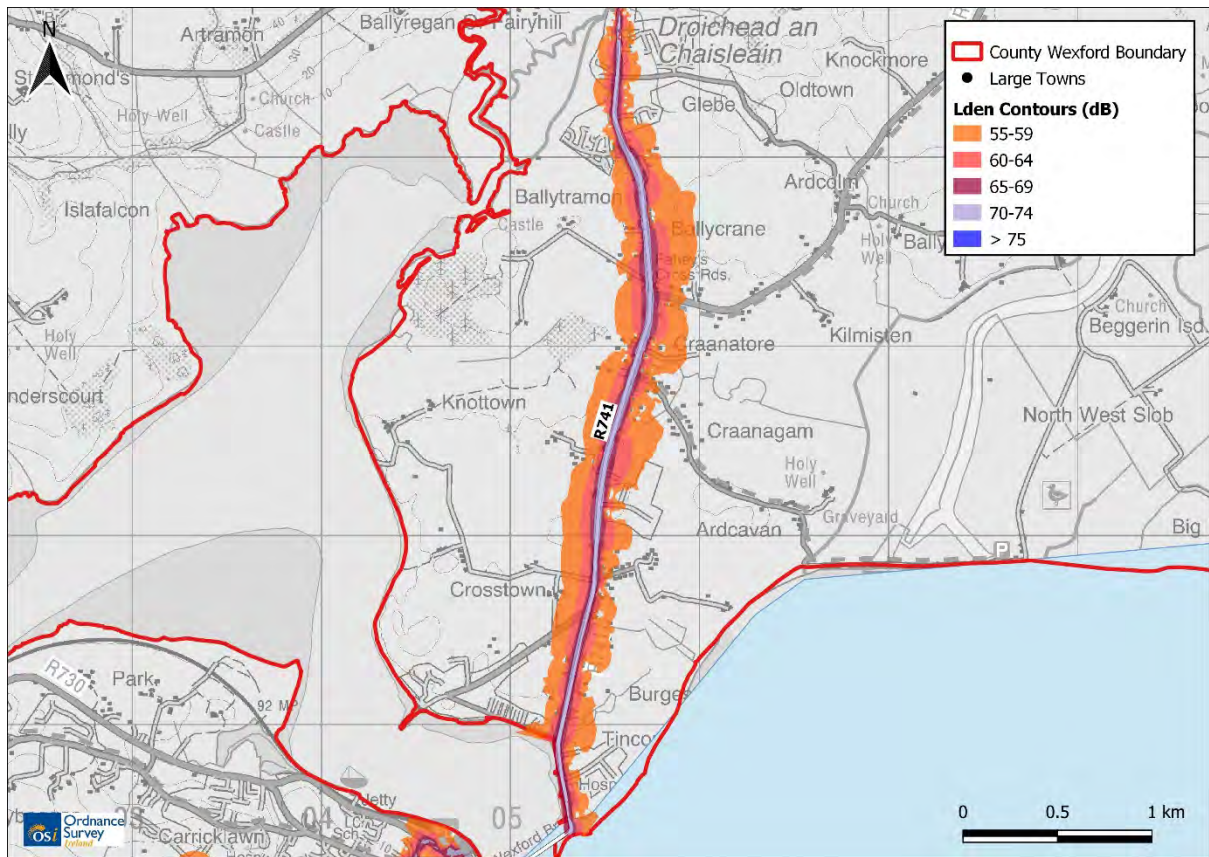


Figure C - 15: L_{den} (dB) R741 – Ferrybank to Castlebridge

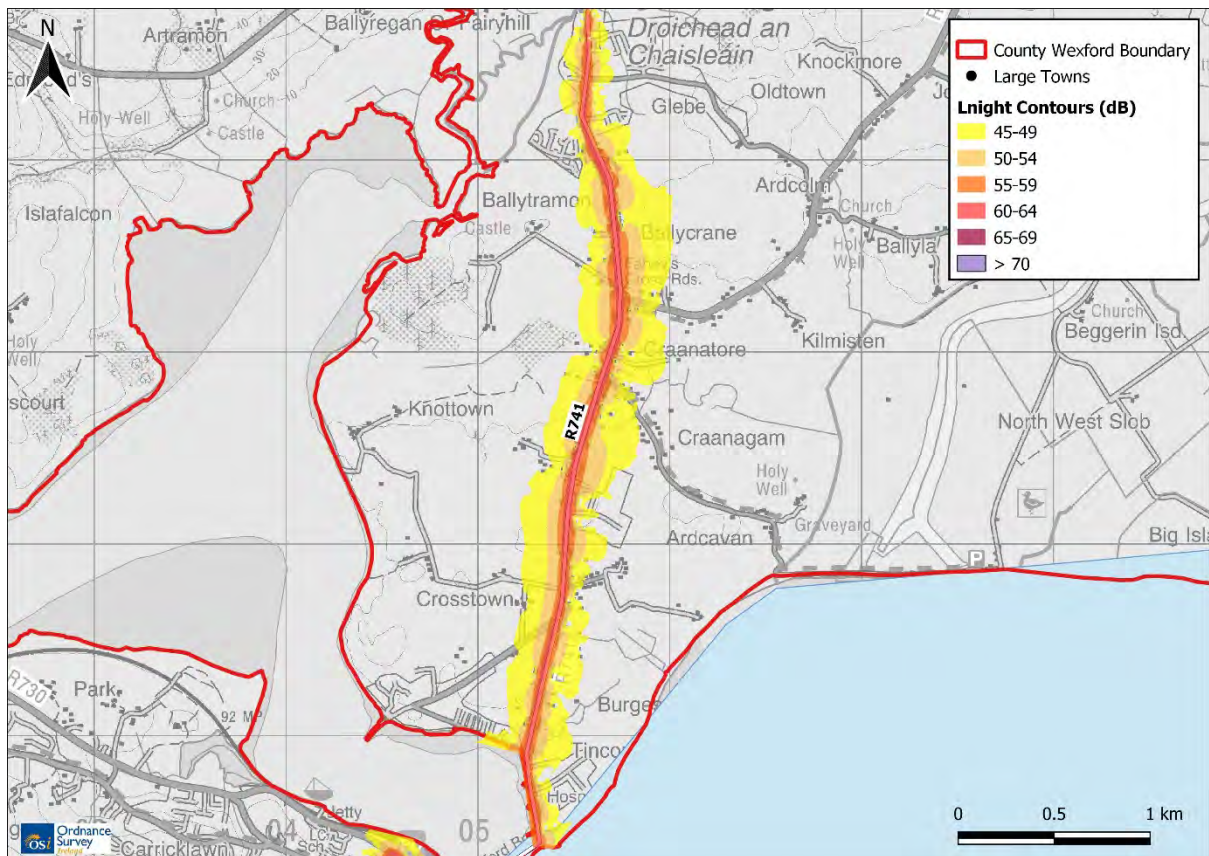


Figure C - 16: L_{night} (dB) R741 – Ferrybank to Castlebridge

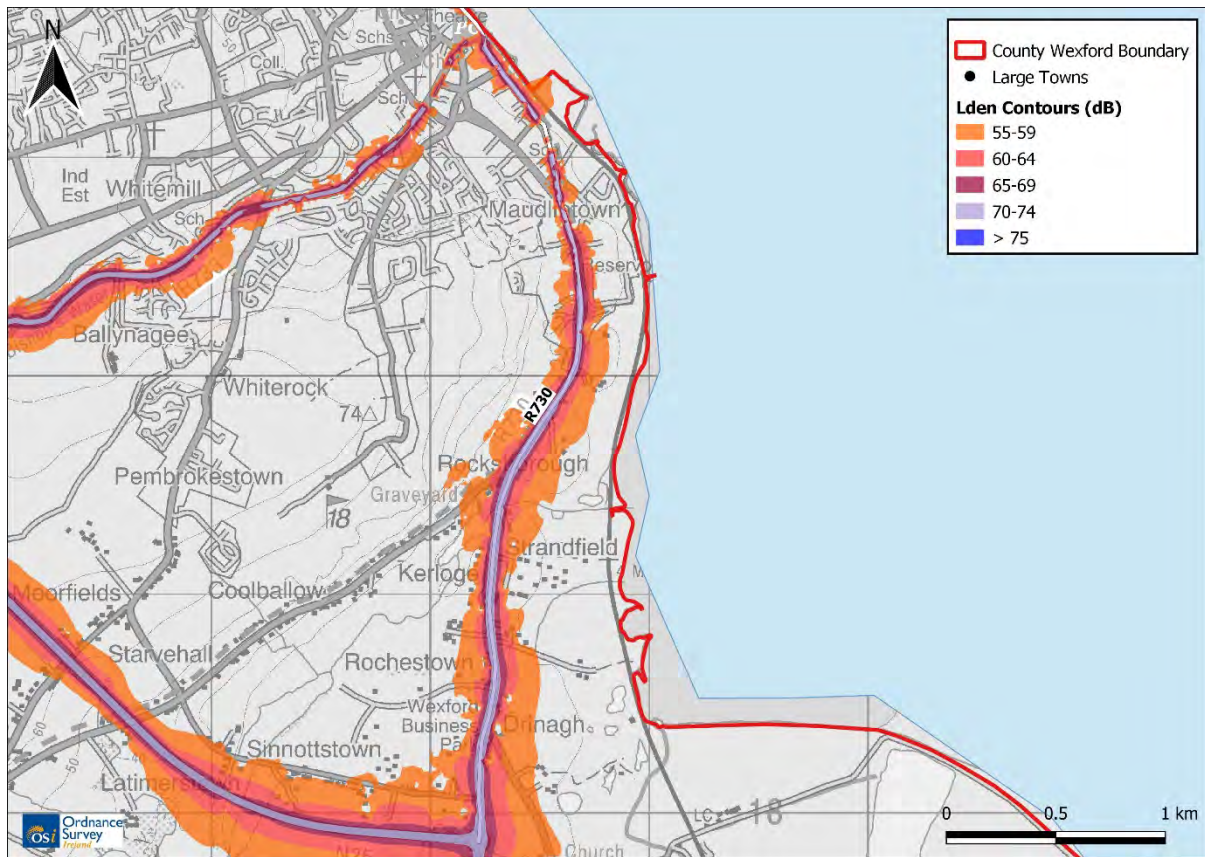


Figure C - 17: L_{den} (dB) R730 – R769 Junction to N25 Roundabout (Wexford Town)

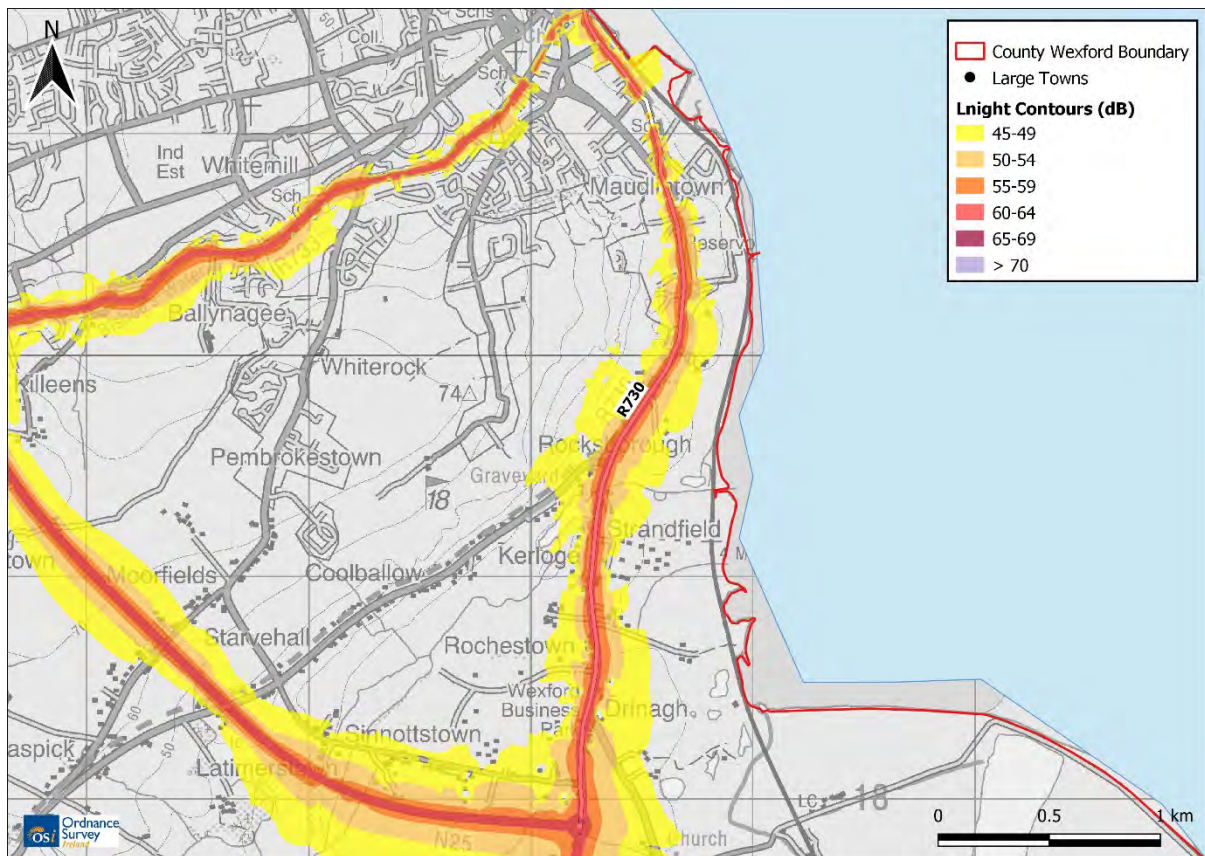


Figure C - 18: L_{night} (dB) R730 – R769 Junction to N25 Roundabout (Wexford Town)

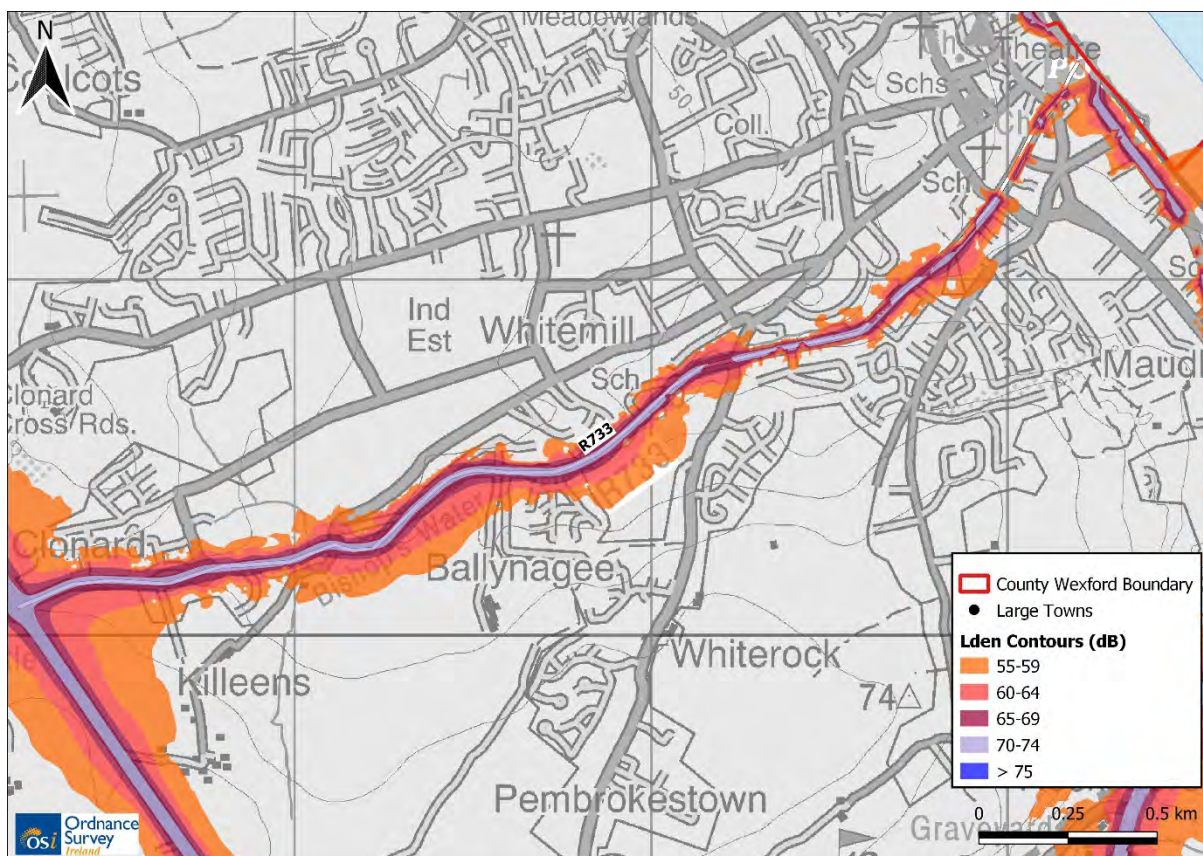


Figure C - 19: L_{den} (dB) R733 – N25 Roundabout to R730 Junction (Wexford Town)

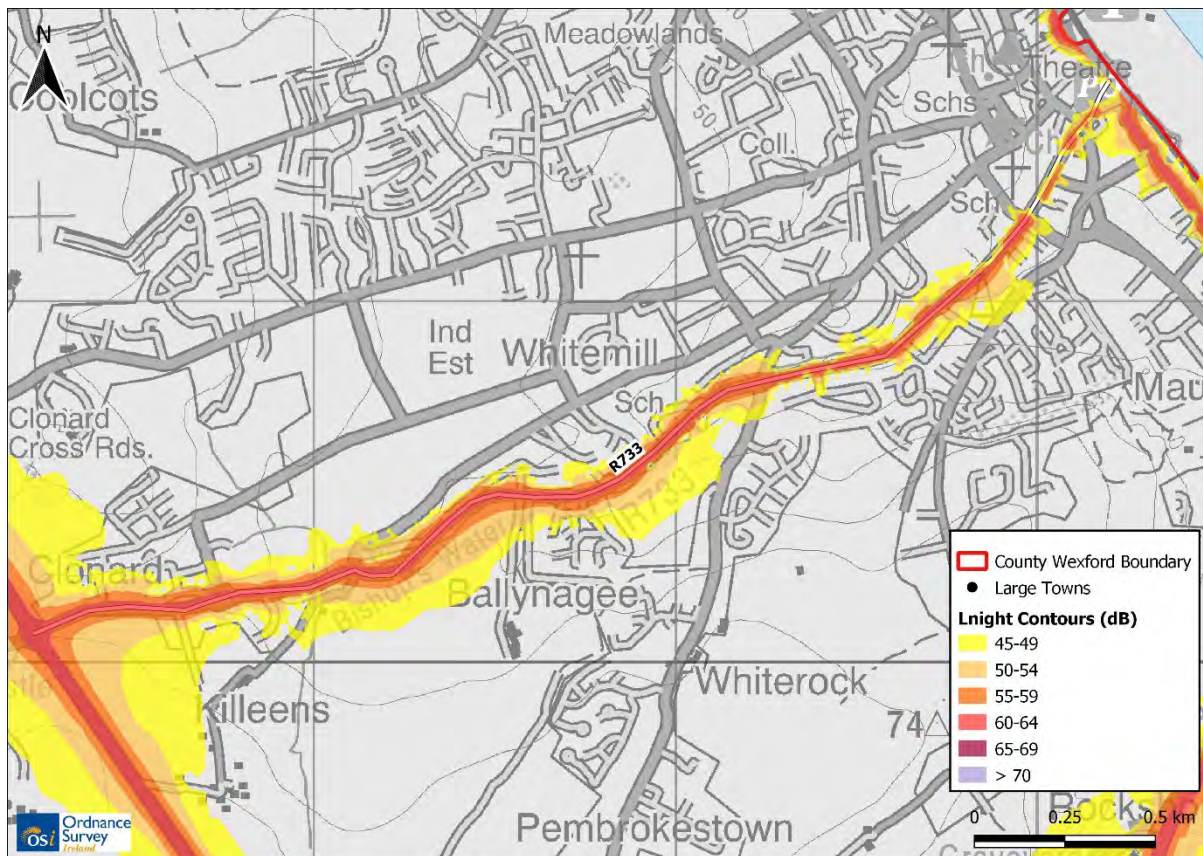


Figure C - 20: L_{night} (dB) R733 – N25 Roundabout to R730 Junction (Wexford Town)

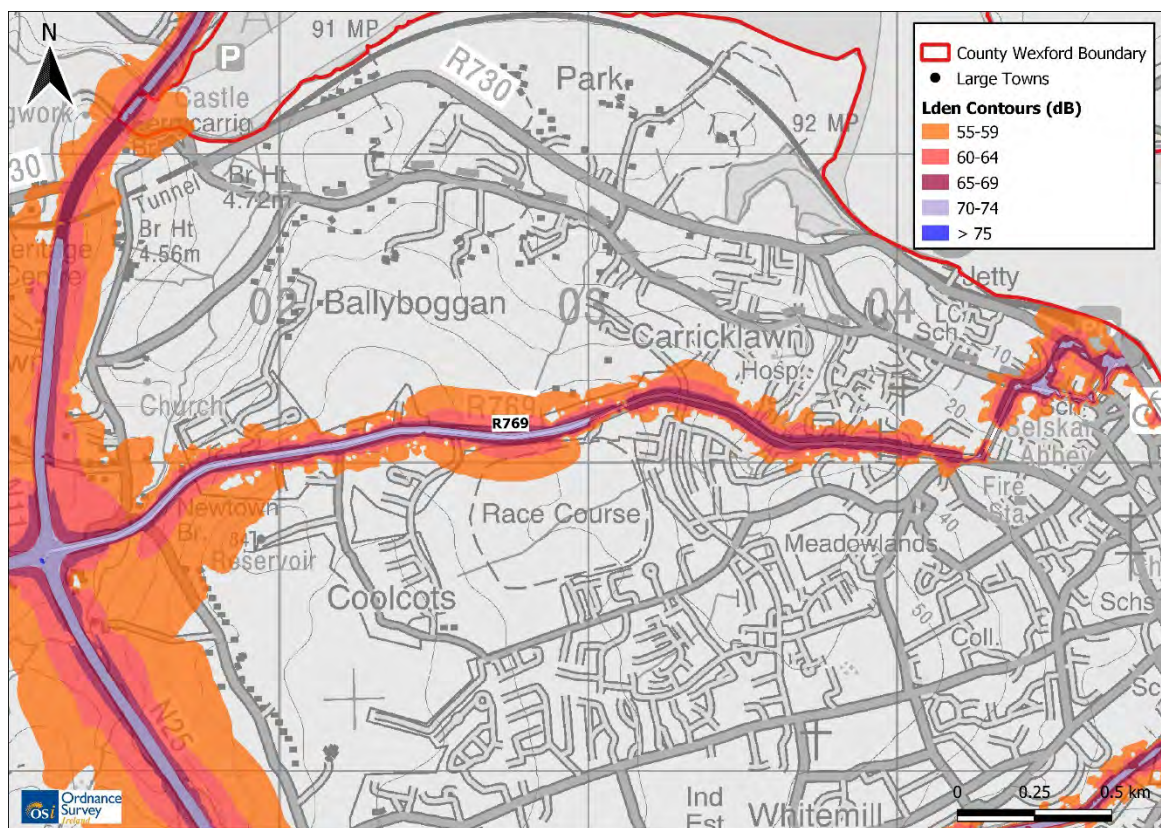


Figure C - 21: L_{den} (dB) R769 – N11/N25 Roundabout to R730 Junction (Wexford Town)

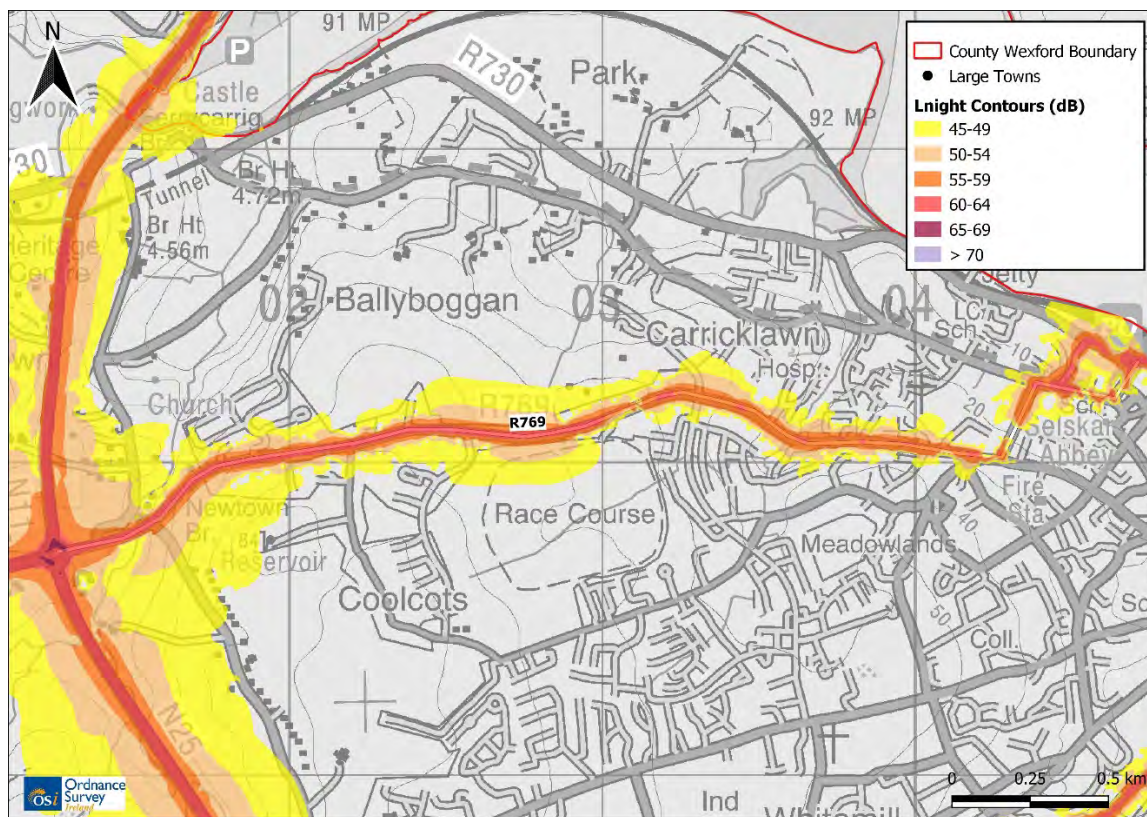


Figure C - 22: L_{night} (dB) R769 – N11/N25 Roundabout to R730 Junction (Wexford Town)

Appendix D
Potential Noise Hotspots in County Wexford

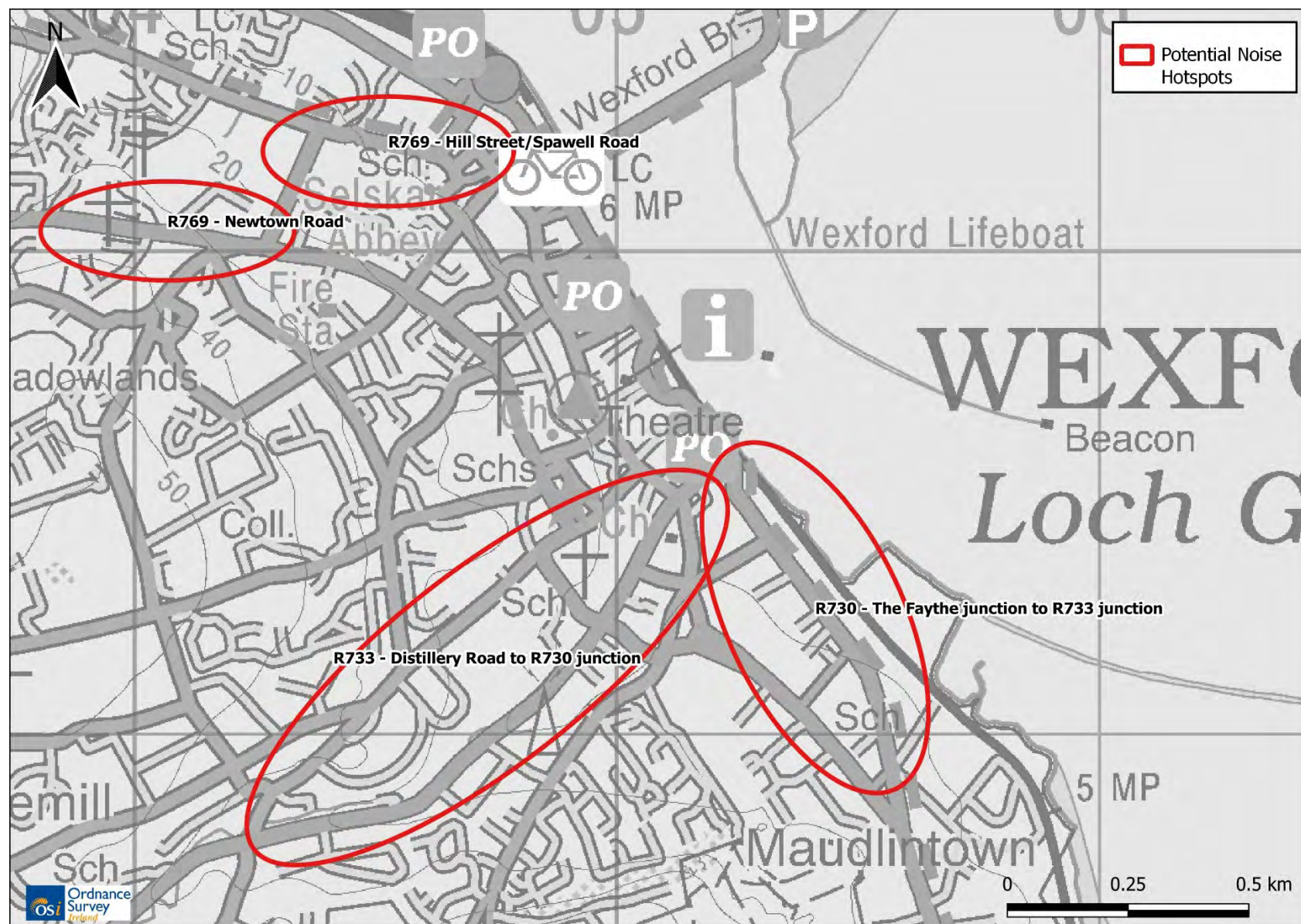


Figure D - 1: Potential Noise Hotspots in Wexford Town

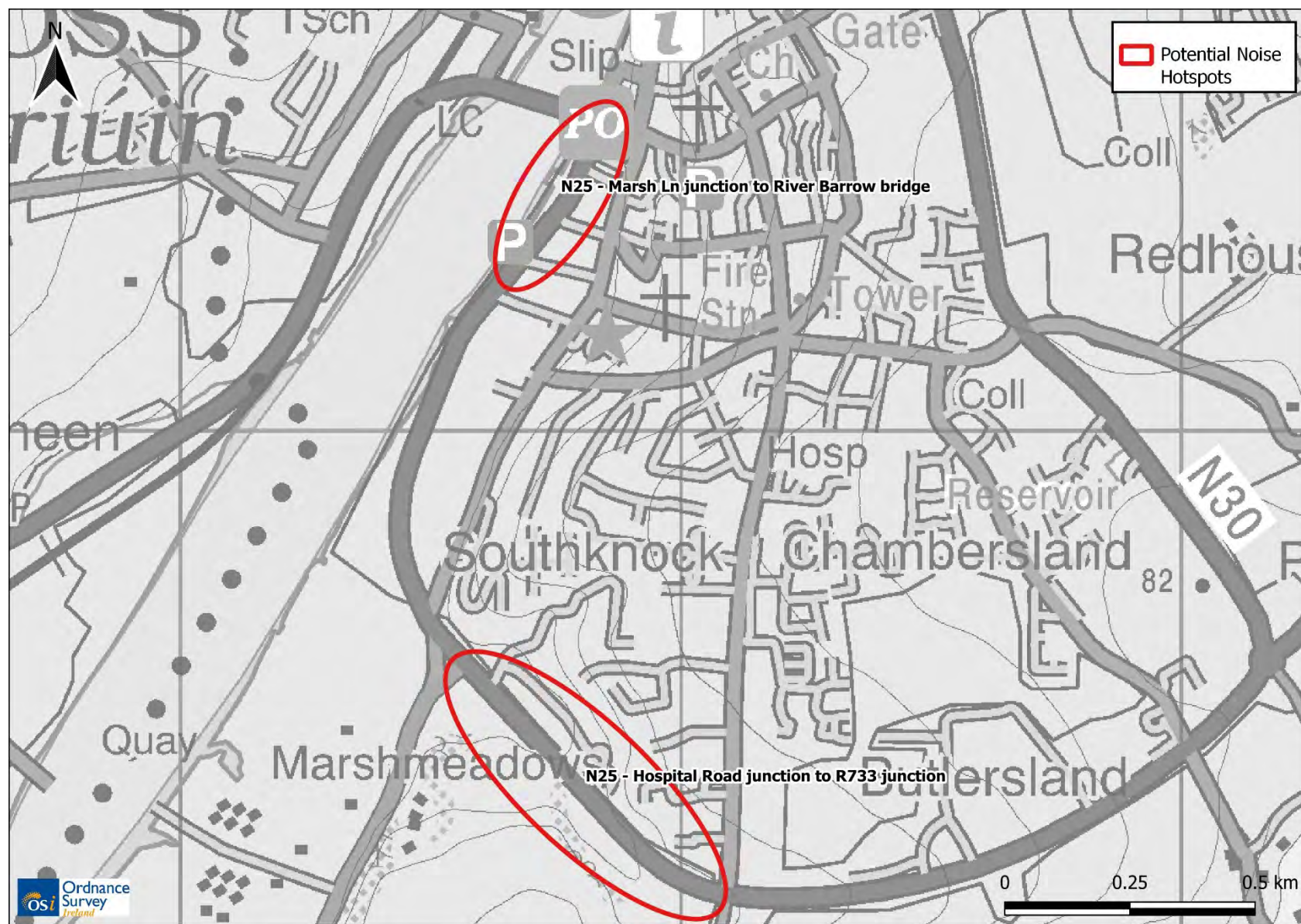
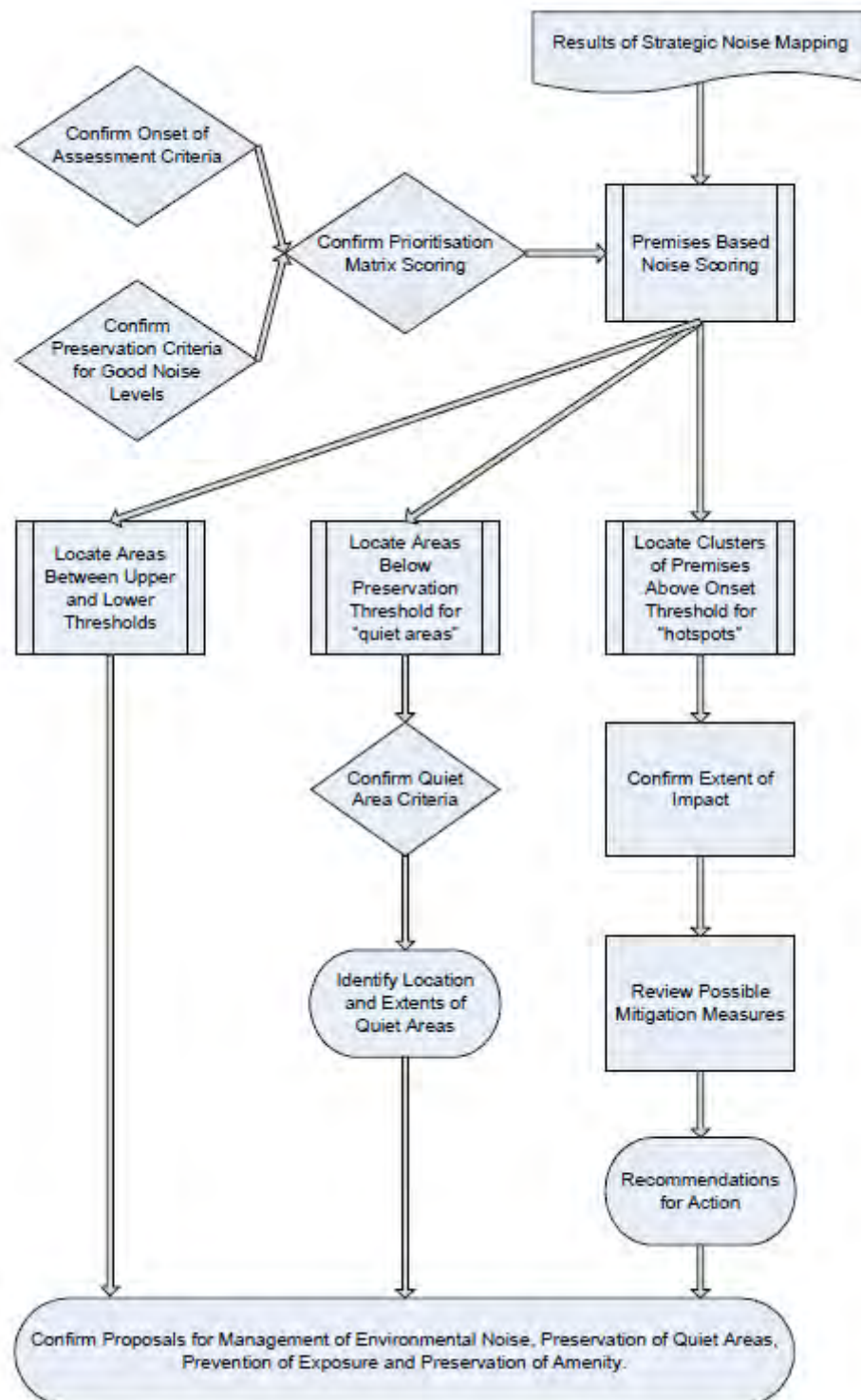


Figure D - 2: Potential Noise Hotspots in New Ross



Figure D - 3: Identified Noise Hotspots in Enniscorthy

APPENDIX E
Flow Diagram for Action Planning Decision Making



APPENDIX F
Priority Decision Support Matrix

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.

The following table presents the prioritisation decision support matrix to be used to support the action planning decision making process, referred to as **Table 6-1** in the main body of the report.

	Decision Selection Criteria	Score Range L_{den}	Score Range L_{night}	Subtotal
Noise Band(dB(A))	<55	3	4	
	55 - 59	2	2	
	60-64	1	3	
	65-69	2	4	
	70-74	3	5	
	>75	4	6	
Type of Location	Residential	2	3	
	Commercial	1	2	
	Noise Sensitive Location	3	3	
	School	3	3	
	Quiet Area	3	3	
	Recreational open space	2	2	
Type of Noise Source	Road	3	4	
			TOTAL	

Table F-1: Example Decision Support Matrix

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

APPENDIX G
Public Consultation

Consultation - Specified Stakeholders

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

Departments

Department of the Communications, Climate Action and Environment

Department of Housing, Planning and Local Government

Department of Transport, Tourism and Sport

Department of Education and Skills

Environmental Protection Agency

Adjacent Planning Authorities

Wicklow County Council

Carlow County Council

Kilkenny County Council

Waterford County Council

NGO and Professional Bodies

An Taisce

National Roads Authority

National Roads Design Office

Institute of Public Health

APPENDIX H
Landscape Character Map

Map No: 13

APPENDIX I
Potential Quiet Areas

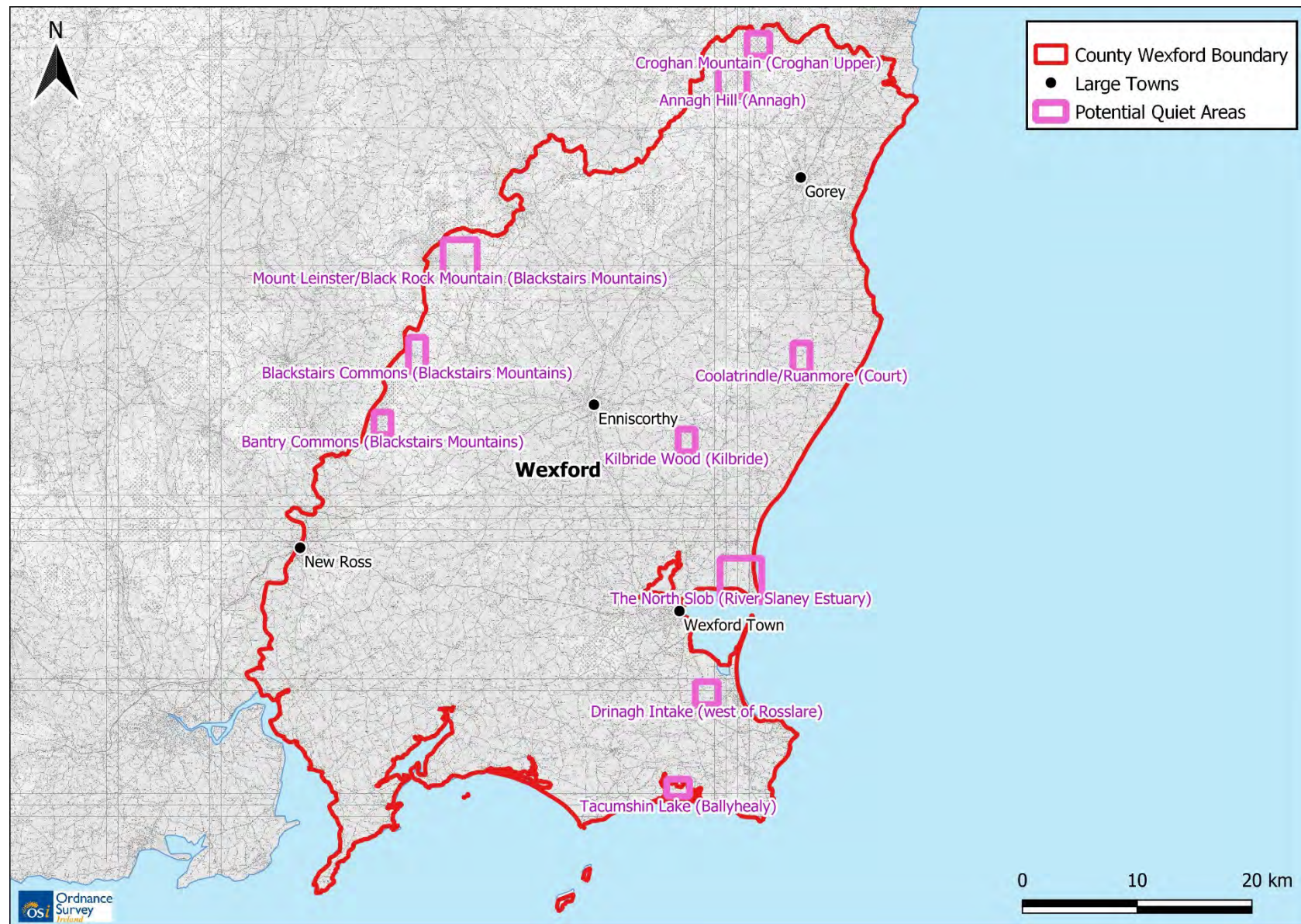


Figure I-1: Potential quiet areas in open country in County Wexford

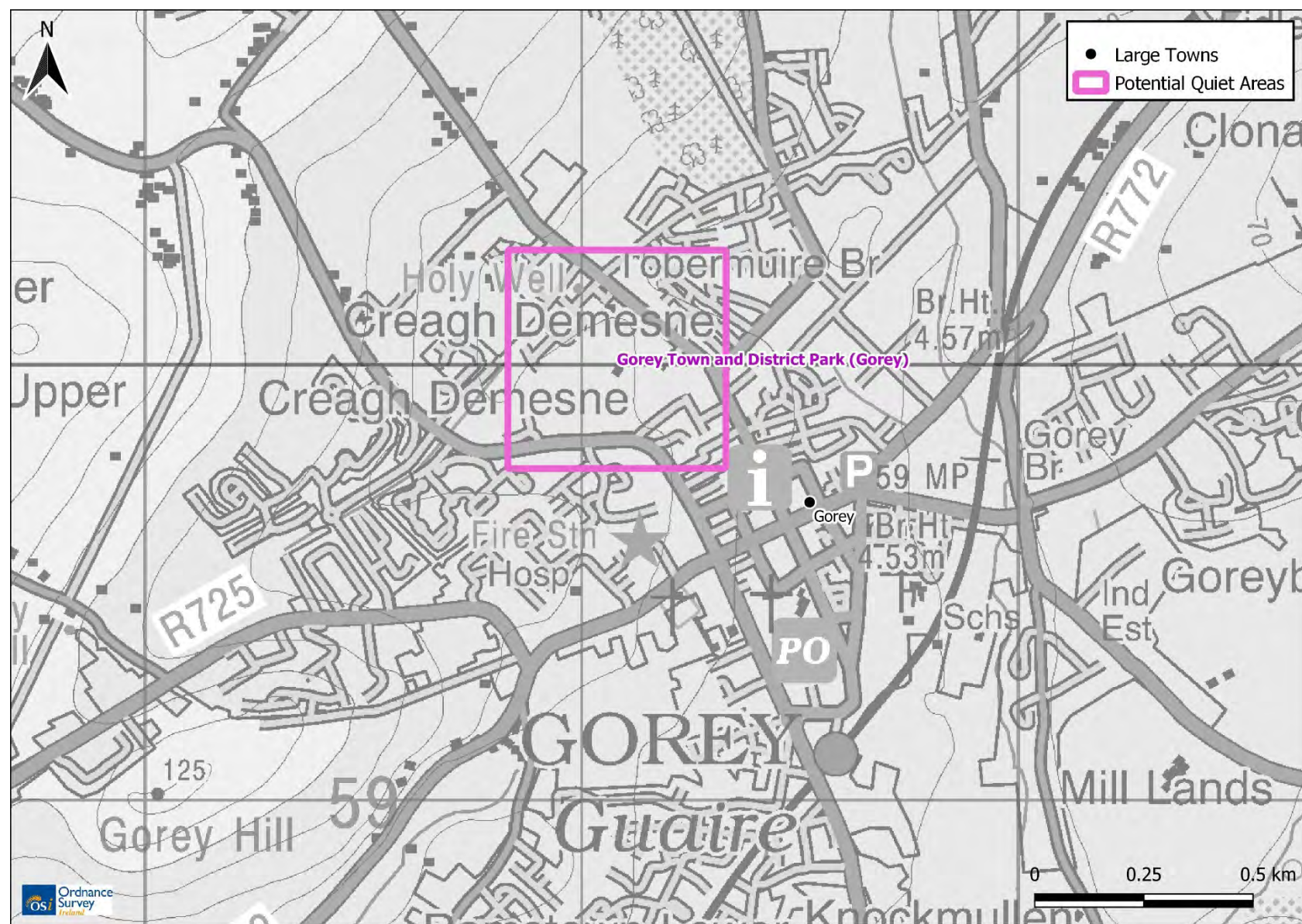


Figure I-2: Potential quiet areas in Gorey

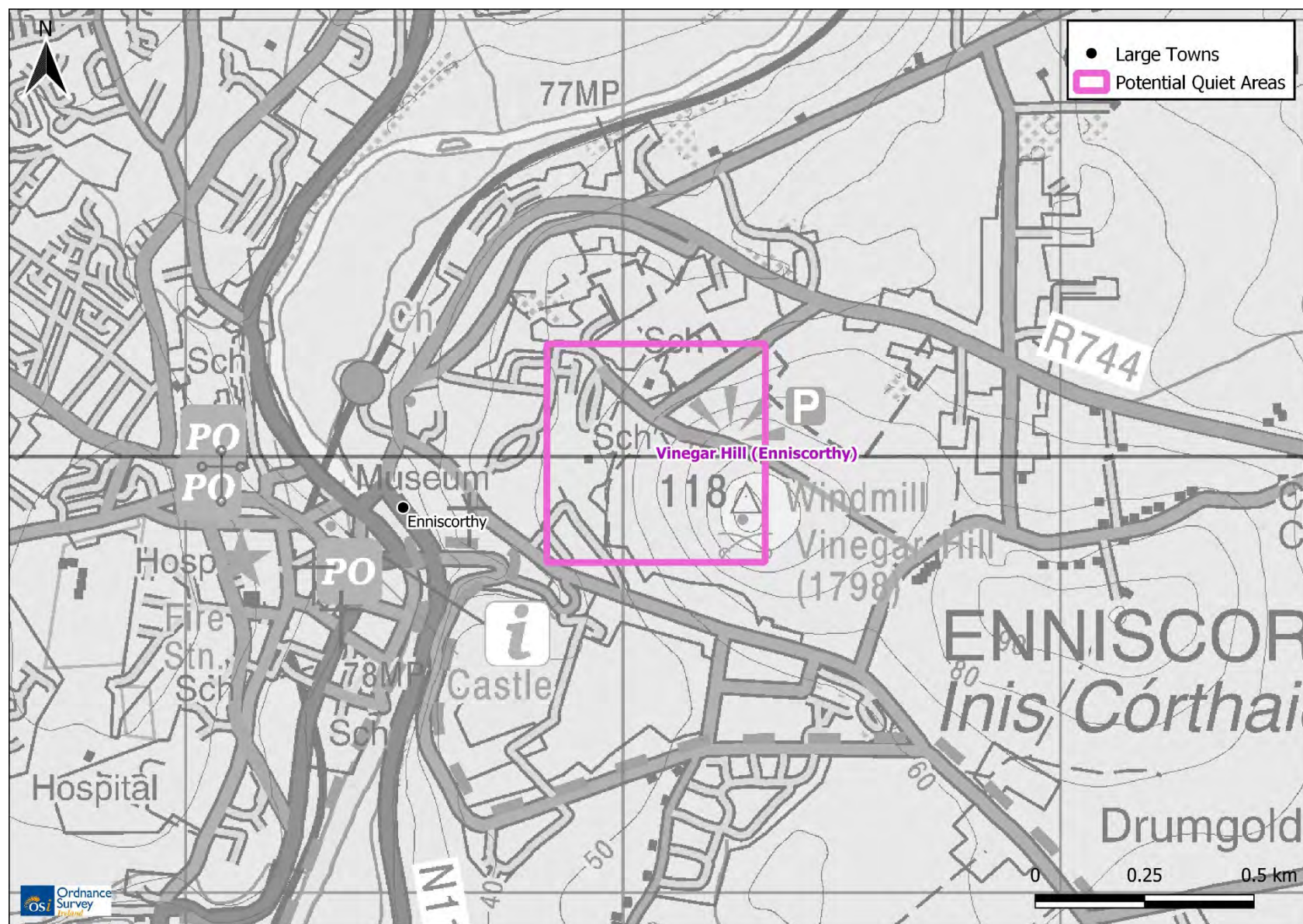


Figure I-3: Potential quiet areas in Enniscorthy

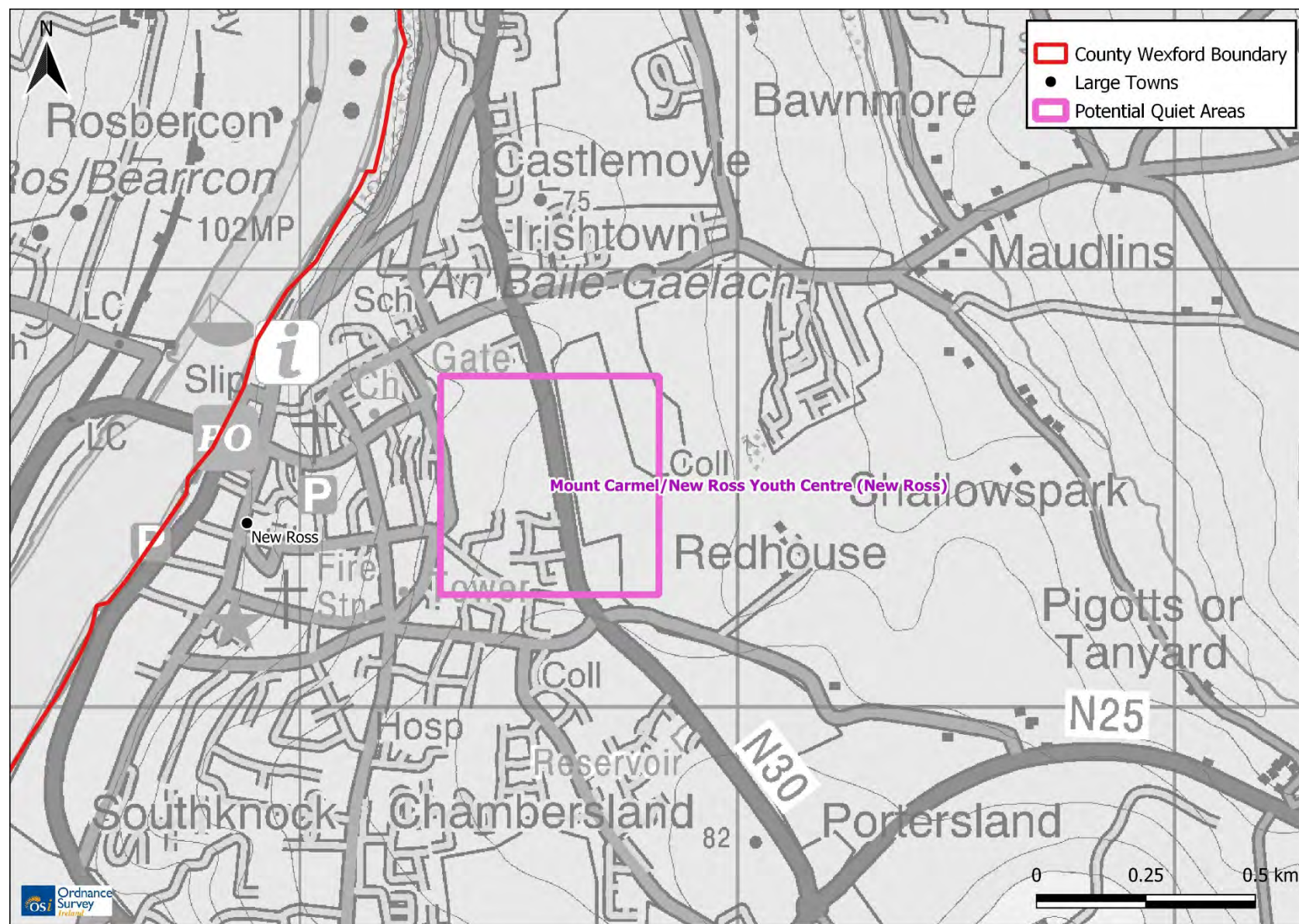


Figure I-4: Potential quiet areas in New Ross