Dublin Agglomeration
Environmental Noise Action Plan
December 2018 – November 2023

VOLUME 3 | FINGAL COUNTY COUNCIL

Public Consultation Document






November 2018

Comhairle Cathrach Bhaile Átha Cliath
Dublin City Council

Volume 1

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Comhairle Contae County Council

Volume 2

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Comhairle Contae Átha Cliath Theas
South Dublin County Council

Volume 4

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1. Introduction

Under the Environmental Noise Regulations 2006 (the 'Regulations'), Statutory Instrument 140 of 2006, Fingal County Council (FCC) is the designated Action Planning Authority with responsibility for preparing a Noise Action Plan for road, railway, major industrial and aircraft noise sources within Fingal County during 2018. These Regulations give effect to European Union (EU) Directive 2002/49/EC relating to the assessment and management of environmental noise. This Directive is commonly referred to as the Environmental Noise Directive or END and has the aim of establishing an EU common approach to avoiding, preventing or reducing the harmful effects due to exposure to environmental noise. The Regulations set out the approach to meeting the requirements of the END in Ireland.

This Noise Action Plan is aimed at managing Environmental Noise from Road, Rail and Industrial sources within the Fingal County Council (FCC) administrative area but excludes noise from aircraft which is dealt with in a separate Noise Action Plan dedicated to the management of Aircraft Noise alone, entitled 'Dublin Airport Noise Action Plan 2018 – 2023'.

The minimum requirements of the Noise Action Plan are set out within Annex V of the END and include the identification of existing noise emissions, the current methods of noise management, and their appropriateness and possible improvements in line with latest developments in policy and research.

Noise from domestic activities, noise created by neighbours, noise at work places or construction noise are not managed or discussed in this plan as these can be dealt with under existing legislation such the Environmental Protection Agency Act 1992 and Health & Safety legislation.

Policy Objective

The key 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. This will be achieved by taking a strategic approach to managing environmental noise and following a balanced approach within the context of sustainable development.

1.1 Purpose

The aim of this draft Noise Action Plan is to provide an overview the regulations, to review the results of the latest strategic noise maps for the FCC administrative area within the Dublin Agglomeration and to set out an approach to the strategic management and control of environmental noise for the period 2018 - 2023. It also provides the basis for feedback and input from the statutory authorities (see **Appendix B**) and the public to help inform the overall Dublin Agglomeration Noise Action Plan.

1.2 Scope

This draft Noise Action Plan complies with the requirements of the END, and the corresponding transposed Environmental Noise Regulations 2006, Statutory Instrument 140 of 2006 (the 'Regulations').

In accordance with the Regulations, this Noise Action Plan addresses the following:

- A description of the action planning area and the noise sources taken into account;
- The responsible authorities;
- The relevant legal and policy context;
- Any noise limit values in place;
- A summary of the results of the strategic noise mapping for 2016, including and evaluation of the estimated people exposed to noise;
- Identification of problems and situations that need to be improved;
- A record of public consultations that have taken place (to be completed following consultation on this draft);
- A description of existing and planned measures to manage environmental noise;
- A long-term strategy;
- Actions which are to take place over the duration of this Noise Action Plan; and
- Provisions envisaged for evaluating the implementation and the results of this Noise Action Plan.

1.3 Consultation

Noise Action Plans are required to be reviewed and revised every five years and to be subject to a public consultation process involving feedback, including statutory consultees, public bodies, the public and other stakeholders. Consultees include a variety of bodies and agencies. The statutory consultees and public bodies to be consulted are those listed in **Appendix B**.

This draft Noise Action Plan provides the basis for feedback and input from the statutory authorities and the public consultation process to help inform the Noise Action Plan and how FCC can improve its noise management procedures.

We intend to make this draft Noise Action Plan available for public consultation from September 2018 to October 2018.

Please consult nadp@fingal.ie or https://consult.fingal.ie/en/consultation/noiseactionplan for details on making a submission on this draft action plan

1.4 Noise Action Plan Timetable

Following consultation on this Noise Action Plan, and any updates with respect to the feedback received, the final version of this Noise Action Plan will be published by the end of 2018 and will operate from 2018-2023.

The proposed timetable of actions is as follows:

- August 2018 – Noise Action Plan to be submitted to Environmental Protection Agency (EPA) for review;
- September 10th - Presentation of the draft at the County Council meeting
- September to October 2018 – Public consultations on Noise Action Plan;
- November 2018 –Noise Action Plan (including comments) to be finalised;
- December 10th 2018 – Report to the County Council on the consultation process and the finalisation of the Noise Action Plan;
- December 2018 – finalised Noise Action Plan to be submitted to the EPA;
- January 2019 – Noise Action Plan noise control programs and measures to be reported to the European Commission (EC) by EPA;
- January 2019 – Summary of the Noise Action Plan to be submitted to the EC by the EPA.

2 Noise and Effects on Health and Quality of Life

Noise can be characterised as “unwanted sound” or “sound that is loud, unpleasant or unexpected” (‘Future Noise Policy - European Commission Green Paper’, 1996) and that can eventually cause disturbance, impairment or damage to health.

In this Noise Action Plan, the term 'noise' will be generally used when describing the quantification, control or prediction of emissions from environmental pollution sources, such as transport, construction and industry. The term 'sound' will be used when describing levels not attributed to a specific environmental pollution source, such as for the description of the existing baseline climate at a receptor location. Sound levels are expressed in decibels (dB) on a logarithmic scale, where 0 dB is nominally the "threshold of hearing" and 120 dB is nominally the "threshold of pain". One effect of using the decibel scale is that a doubling of the sound energy results in a 3 dB increase in the sound level.

Figure 1 Sound levels on the dB(A) scale as outlined in the National Roads Authority (NRA) Guidelines ‘Guidelines for the Treatment of Noise and Vibration in National Road Schemes’ (2004).

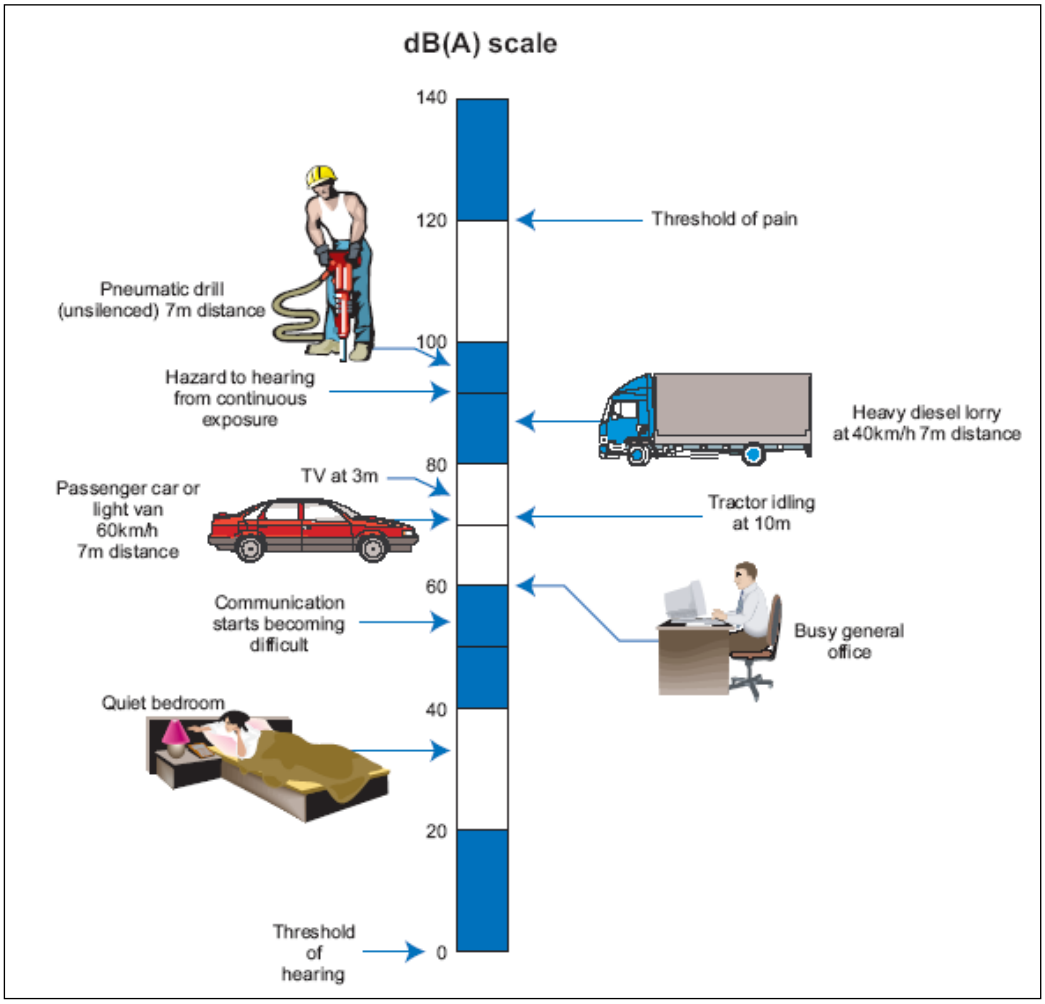


Figure 1 - Levels of typical common sounds on the dB(A) Scale (NRA, 2004)

Environmental noise, commonly called noise pollution, is among the most frequent sources of environmental complaint in Europe, especially in densely populated urban areas and residential areas near highways, railways and airports, (World Health Organisation, European office). People are exposed to different sources of noise, including:

- Transport (road traffic, rail traffic, air traffic);
- Construction and industry;
- Community sources (neighbours, radio, TV, bars, restaurants);
- Social and leisure sources (portable music players, fireworks, etc.); and
- Indoor noise sources (ventilation systems, office machines, home appliances and neighbours).

2.1 Effects on Health and Quality of Life

Noise can have a significant and disruptive effect on everyday life. Since the implementation of the Regulations, there have been extensive studies into the links between environmental noise exposure and health. These studies have considered transportation noise sources including road, rail and aircraft with responses being found to differ depending upon source. This work has resulted in organisations such as the European Environment Agency (EEA) and the World Health Organisation (WHO) developing guidelines and advice based on reviews and meta-analysis of the available research. This research has shown evidence supporting the association of environmental noise (including aircraft noise) with some or all of the following health outcomes:

- **cardiovascular disease** - including hypertension, coronary heart disease (CHD), acute myocardial infraction (AMI) and stroke;
- **cognitive impairment** – including the impact on children's reading and education;
- **sleep disturbance** – i.e. interference with sleep and awakenings;
- **tinnitus** – i.e. loss of hearing;
- **annoyance** – i.e. becoming or increasingly disturbed or bothered by noise; and
- **wellbeing** – i.e. impacts on quality of life and mental health.

Research indicates that Exposure of people to daytime noise levels above 65 dB(A) can cause severe health problems. In general, noise levels in cities can range between 60-70 dB(A), with suburban levels between 50-60 dB(A). The World Health Organisation (WHO) has set guideline levels for

annoyance at 55 dB(A), representing daytime levels below which a majority of the adult population will be protected from becoming a moderate or serious annoyance.

In 2009 the WHO European Regional Office published the 'Night Noise Guidelines for Europe' (2009). It presented evidence on the damage to human health due to long-term night-time noise exposure and recommended threshold values that, if breached at night, would threaten health. An annual average night-time exposure not exceeding 40 dB(A) outdoors is recommended in the guidelines. It is recommended that that this level should be the target for night-time noise guidelines to protect the public, including the most vulnerable groups such as children, the chronically ill and the elderly. A night-time level of 55 dB(A) is recommended as an interim target for countries that cannot meet these night-time noise guidelines in the short term for various reasons, and where policy-makers choose to adopt a stepwise approach.

In 2011 the WHO European Regional Office published 'Burden of Disease from Environmental Noise' (2011). It suggests that there is overwhelming evidence that exposure to environmental noise has adverse effects on the health of the population. The publication provides an evidence base for the future development of suitable guidelines on noise by the WHO. It supports the recommendations as set out in the 'Night Noise Guidelines for Europe' (2009) based on a review of evidence-based assessments of the impact of noise on health.

Transport-related environmental noise is the most significant contributor to community noise, causing the most annoyance, sleep disturbance and public health concerns. Road traffic noise is the most significant contributor to environmental noise, with the CE Delft report 'Traffic noise reduction in Europe – Health effects, social costs and technical and policy options to reduce road and rail traffic noise' (2007) estimating that approximately 210 million European Union (EU) citizens are regularly exposed to 55 dB(A) or more of road traffic noise. The major contributors to road traffic noise are passenger cars and lorries, with minor contributions from buses and motorcycles.

Railway noise is the second most dominant source of environmental noise in Europe, with approximately 9 million people exposed to levels above 50 dB(A) at night. Railway noise arises from engine noise, rolling noise and aerodynamic noise.

In Europe, aircraft noise affects a much smaller proportion of the population compared to rail and road traffic noise. However, aircraft noise is regarded as being more annoying than both rail and road traffic noise at the same exposure level.

Most of the evidence gathered by researchers over the past 10 years appears to indicate that people are becoming more annoyed by environmental noise and that the health effects of environmental noise occur at lower levels of exposure than previously thought. Research is on-going, and it is expected that further guidelines from WHO will be issued during the course of this Noise Action Plan.

We will monitor developments in this area and will consider the implications of any relevant publication in terms of policy provision.

2.2 Noise Level Indicators

To provide a standardised approach to the description of long term environmental noise, Article 6.2 of the END specifies the use of two noise level indicators when preparing environmental noise maps and action plans, the L_{den} and L_{night}. The L_{den} is a noise rating indicator, rather than a noise level, and is based upon the day, evening and night time noise levels, with weightings applied for the different periods. L_{night} is typically used to assess sleep disturbance.

- L_{day} is the A-weighted long-term average noise level between 07.00 and 19.00;
- $L_{evening}$ is the A-weighted long term-average noise level between 19.00 and 23.00;
- L_{night} is the A-weighted long-term average noise level between 23.00 and 07.00;
- L_{den} is the 24-hour noise rating level determined by the averaging of the L_{day} with the $L_{evening}$ plus a 5 dB penalty, and the L_{night} plus a 10 dB penalty (see formula in **Appendix A**);
- $L_{Aeq,\ 16hr}$ is the A-weighted long-term average noise level between 07.00 and 23.00.

The long-term, annual average, day, evening and night values are determined and then combined to provide the indicated L_{den} yearly average. The penalties are applied to the evening and night time periods during the assessment of L_{den} to take into account evidence that response to noise levels is not uniform throughout the 24-hour period. For example, a given indicated level of noise during the day may be deemed acceptable by the majority of people. However, that same level of noise at night may be deemed less acceptable.

The $L_{Aeq,\ 16hr}$ noise metric has been used in planning and noise management decisions in Ireland as a representation of the overall daytime noise level. The $L_{Aeq,\ 16hr}$ noise metric has also been used by FCC as the basis of managing noise and new development through planning conditions.

3 Legal and Policy Framework

The legal and policy framework relating to the management and control of for environmental noise is enacted through European, national and local legislation, regulation and guidance.

3.1 Environmental Noise Directive

In 2004 the European Community adopted Directive 2002/49/EC, which relates to the assessment and management of environmental noise. This directive is commonly referred to as the Environmental Noise Directive or END.

The aim of the END is to establish an EU common approach aimed at avoiding, preventing or reducing the negative and harmful effects due to exposure to environmental noise. The END applies to environmental noise to which humans are exposed, particularly in industrial or developed areas, public parks and in other quiet areas in agglomerations and in open country, near schools, hospitals, etc. However, the END does not apply to noise caused by the exposed person, noise created by domestic activities or neighbours, noise at the workplace or inside means of transportation due to military activities.

In the light of the END's provisions, environmental noise is defined 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 industrial activity'.

The END indicates a number of actions that need to be progressively implemented by Member States in order to achieve the objectives of the END. These actions relate to four main principles:

- **Monitoring of environmental noise** – Member States must develop strategic noise maps, using a common methodology, in order to determine the exposure to environmental noise in priority areas within their territories;
- **Managing environmental noise issues** – on the basis of the developed strategic noise maps, Member States have to adopt action plans containing measures designed to address noise issues, including noise prevention/reduction and preserving environmental noise quality where it is good;
- **Public information and consultation** – strategic noise maps, action plans and relevant information about noise exposure, its effects and measures to be considered to address environmental noise issues should be made available to the public or developed in consultation with the public; and
- **Development of EU long-term strategy** – with a view to reduce noise emitted by the major sources (in particular road and rail vehicles and infrastructure, aircraft, outdoor and

industrial equipment), the EU and Member States should cooperate in order to provide a framework for EU policies addressing environmental noise issues.

The END requires all EU Member States to produce strategic noise maps for the main sources of environmental noise, i.e. major roads, major railways, major airports and relevant sources within agglomerations with a population of more than 250,000 persons in 2007, and those with a population of more than 100,000 persons in 2012, 2017 and subsequent rounds.

The END also requires EU Members states to establish a common approach to assess the exposure to environmental noise throughout the EU. Article 6.2 of the END empowers the European Commission (EC) to establish common assessment methods for the determination of the noise indicators Lden (day-evening-night equivalent level) and L_{night} (night equivalent level). The END foresees the development of a harmonised methodological framework for noise assessment and, in 2009, the EC decided to develop CNOSSOS-EU (Common Noise Assessment Methods) for noise mapping of road traffic, railway traffic, aircraft and industrial noise.

On 19 May 2015 European Commission Directive 2015/996 was published. This Directive sets out common data requirements and a common assessment method for determining the values of L_{den} and L_{night} by computation. Member States are required to use these methods from 31 December 2018 onwards. This methodology will be adopted for Round 4 of Strategic Noise Mapping which is due in 2022.

3.2 Purpose and Scope of the Noise Regulations

The purpose and scope of the regulations are set out in the statutory instrument S.I No. 140 of 2006 (the 'Regulations'. It states that 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.

The Regulations set out a two-stage process for addressing environmental noise. Firstly, noise must be assessed through the preparation of strategic noise maps for areas and infrastructure falling within defined criteria, e.g. large agglomerations, major roads, major railways and major airports. Secondly, based on the results of the mapping process, the Regulations require the preparation of noise action plans for each area concerned. The fundamental objective of action plans is the prevention and reduction of environmental noise.

The Regulations designate noise-mapping bodies and action planning authorities for the making 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, these bodies will carry out their functions on behalf of the local authorities concerned.

The Regulations designate the Environmental Protection Agency (EPA) as the National Authority for the purposes of the Regulations. The EPA'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.

To assist the competent authorities in the implementation of the Regulations and the development of strategic noise maps and noise action plans, the EPA has published guidance. This includes:

- Guidance Note for Strategic Noise Mapping, Version 2, August 2011; and
- Guidance Note for Noise Action Planning, July 2009.

The Regulations provide for strategic noise maps and action plans to be made available to the general public. They also provide for public consultation on proposed action plans, and for the results of public consultation to be taken into account in finalising action plans or reviews of action plans.

3.2.1 Noise Mapping Bodies

The roles of the Irish Noise Mapping Bodies (NMB) are set out in the Regulations. **Table 1** outlines the organisations that have been designated as NMB under the Regulations:

Table 1 – Designated Noise Mapping Bodies

Roles	Designated Organisation
For the agglomeration of Dublin	Dublin City Council and the County Councils of Dún Laoghaire/Rathdown, Fingal and South Dublin
For the agglomeration of Cork	Cork City Council and Cork County Council
For major railways -	Iarnród Éireann (Irish Rail) or the Railway Procurement Agency (now part of Transport Infrastructure Ireland, TII), as appropriate;
For major roads	The National Roads Authority (now part of Transport Infrastructure Ireland, TII), for national roads classified in accordance with Section 10 of the Roads Act 1993 (No.14 of 1993), and the relevant road authority, or authorities, for major roads not classified as national roads
For major airports	The relevant airport authority, on behalf of the action planning authority or authorities concerned.

For the Round 1 of Noise Mapping in 2007, each designated NMB was required to produce strategic noise maps no later than 30 June 2012, using 2011 data. Following the Round 2 of Noise Mapping in 2012, the same designated NMB produced the Round 3 strategic noise maps during 2017 for each of the following areas in respect of data from 2016:

- An agglomeration with more than 100,000 inhabitants;
- Any major road with more than 3 million vehicle passages per year (approximately 8,220 per day);
- Any major railway with more than 30,000 train passages per year (approximately 82 per day); and
- Any major airport with more than 50,000 aircraft take-off or landing movements per year (approximately 137 per day).

In line with the requirements of the Regulations, the Round 3 strategic noise maps for the FCC functional area within the Dublin agglomeration were developed and submitted to the EPA as follows:

- Major roads, on behalf of TII, and agglomeration roads by FCC;
- Major railways and agglomeration railways, including light rail, by Irish Rail and TII; and
- Major airport by Dublin Airport Authority.

FCC submitted draft R3 strategic noise maps for roads and major roads to the EPA in January 2018 and submitted the final strategic noise maps in August 2018.

3.2.2 Noise Action Planning Authorities

Noise Action Planning Authorities are responsible for the making and approving of Noise Action Plans, in consultation with the EPA and the NMB for the relevant noise source. Under the Regulations the organisations listed in **Table 2** have been designated as action planning authorities:

Table 2 – Noise Action Planning Authorities

Roles	Designated Organisation
For the agglomeration of Dublin	Dublin City Council and the County Councils of Dún Laoghaire/Rathdown, Fingal and South Dublin
For the agglomeration of Cork	Cork City Council and Cork County Council
For major railways -	The local authority or local authorities within whose functional area or areas the railway is located
For major roads	The relevant local authority or local authorities within whose functional area or areas the road is located

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

Accordingly, FCC is designated as the Noise Action Planning Authority for all roads, including major roads, all railways, including major railways, all airports, including major airports, and industrial facilities, such as those licenced under Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control), located within the functional area of Fingal County Council.

As the designated Noise Action Planning Authority, FCC are required to:

- Make an action plan or revised action plan, following consultation with the Agency; and
- Determine measures to be included in an action plan.

And shall ensure that:

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

3.3 Environmental Protection Agency Act 1992

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

- Section 106 gives the relevant Minister certain powers to regulate noise that may give rise to a nuisance or be harmful to health or property;
- Section 107 gives powers to local authorities and the EPA to serve notice to take steps to control noise from any premises, process or work; and
- Section 108 sets out a process whereby noise issues may be taken to the District Court, which may make an order requiring that the person or body responsible for the noise takes steps to eliminate or ameliorate the noise in question.

The powers set out within the EPA Act largely relate to the control of noise nuisance, and therefore may be applicable to neighbourhood noise, music, industry or other such activities. Arising from the EPA Act, FCC has developed policy statements dealing with issues arising from its provisions that can be found by using the following link: http://www.fingal.ie/environment/clean-community/noise-pollution/

3.4 Noise Limits and Standards

There are no limit values or standards for controlling road traffic noise, or its assessment on either new or existing roads in Ireland.

In the absence of a regulatory assessment method or limit values, The National Roads Authority (now Transport Infrastructure Ireland) issued the document 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' (2004), which sets out the procedure to be followed in respect of 'the planning and design of national road schemes'.

A further good practice guide was issued by the National Roads Authority (NRA) in 2014, 'Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes'. This good practice guidance is based on the lessons learned from post Environmental Impact Assessment (EIA) noise evaluation studies and research undertaken on the design of noise barriers. It provides advice and information for use by acousticians and it is also relevant for traffic, motorway and pavement engineers. The advice supplements the original noise guidelines and it should be read in conjunction with that document.

The NRA good practice guidance indicates that all new national road schemes should be designed, "where feasible" to meet a day-evening-night noise level of 60 dB L_{den} in the opening year and design years. Therefore, the EIA for any new road scheme must take this target into account with regard to any existing sensitive residential properties likely to be affected by the road scheme. It is noted that the L_{den} is not a statutory limit value and is considered to be a target for best practice design where mitigation is feasible.

The Roads Act 2015 dissolved the Railway Procurement Agency and transferred its functions and staff to the National Roads Authority and provided additional functions to the newly created Transport Infrastructure Ireland (TII) established through a merger of the National Roads Authority and the Railway Procurement Agency. The 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.

The 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 early 2019.

3.5 Irish Planning Guidance

There is currently no national policy or guidance that addresses the issue of noise during planning leading to inconsistencies in relation to both the assessment and conditioning of planning applications.

In 2017, the Irish Government set out a high-level strategic plan for the management of future development in Ireland, 'Project Ireland 2040' (2017), which comprises a National Planning Framework (NPF) and National Development Plan 2018-2027 (NDP). Policy Objective 65 of the NPF relates to noise, and states:

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

Until such national planning guidance comes about, Local Authorities have it within their powers to set conditions relating to noise as part of a planning permission.

3.6 Planning Design Guidance

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

- Urban Design Manual: A best practice guide (A companion document to the Draft Planning Guidelines on Sustainable Residential Development in Urban Areas), February 2008;
- Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities, May 2009;
- Our Sustainable Future, A Framework for Sustainable Development in Ireland, June 2012;
- Design Manual for Urban Roads and Street, April 2013; and
- Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities), March 2018.

The 'Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities' (2009) highlights the need to *"Deliver a quality of life which residents and visitors are entitled to*

expect, in terms of amenity, safety and convenience". It states that *"Privacy is an important element of residential amenity"*. Whilst not mentioned specifically, it is appropriate to consider environmental noise and noise transfer between dwellings in respect of amenity and privacy. The recently published 'Sustainable Urban Housing: Design Standards for New Apartments' (2018) makes little reference to noise.

The 'Urban Design Manual: A best practice guide' (2008) 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.

3.7 Building Regulations 1997-2014

The design and construction of buildings is regulated under the Building Control Acts 1990 to 2014 to ensure the safety of people within the built environment. The current Irish Building Regulations call for certain constructions to offer "reasonable resistance" to both airborne and impact sound. In the absence of any form of objective criteria, reference is often made to the guidance values put forward in the "Similar Construction" method described in Technical Guidance Document E.

The Irish Building Regulations apply to the transmission of sound between adjoining residential dwellings, such as within apartment blocks, or semi-detached properties, they do not relate to the transmission of sound from the outside environment into the living accommodation.

The Department of Housing, Environment, Community and Local Government (DoHECLG) published new Building Regulations pertaining to sound in December 2014. An updated and enhanced Technical Guidance Document (TGD) E Sound followed in January 2015. The key aspects of the new guidance may be summarised as follows:

- For the first time in Ireland, minimum standards of sound insulation performance have been used to define "reasonable resistance to sound";
- Reverberation in common internal parts of buildings has been introduced as an issue requiring consideration; and
- Mandatory pre-completion testing is required to demonstrate compliance with the requirements of the regulations.

3.8 Integrated Pollution and Prevention Control (IPPC) Licensing

Certain activities that are required to be licensed may be subject to controls relating to noise emissions. The relevant guidance is set out in the EPA document, 'Guidance Note for Noise: Licence

Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' (2012 and updated in 2016). The updated Noise Guidance Note (NG4) is intended to assist licensed sites with the assessment of their potential and actual noise impact on the local environment. It recommends a "Best Available Technique" approach to the assessment and mitigation of noise pollution.

In FCC, there are 57 IPPC licenses covering activities at 39 individual facilities. The IPPC licenses and associated facility addresses are listed in **Appendix C**.

Strategic noise maps of industrial noise in FCC have not been produced for Round 3, as assessment of the noise emissions at the boundary of the facilities indicated that levels would be below the reporting noise threshold within the END. These facilities are also already controlled by scheduled activity licenses which include strict controls in relation to noise emissions.

3.9 Wind Energy Planning Guidelines

With specific regard to wind energy developments, the Department of the Environment, Heritage and Local Government (DEHLG) guidance 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"*. The latter requirement may be relaxed in areas with low background levels. A fixed limit of 43 dB(A) at night-time is deemed appropriate by DEHLG as there is no requirement to protect external amenity.

3.10 Quarries and Ancillary Activities

The EPA document 'Quarries and Ancillary Activities – Guidelines for Planning Authorities' (2004) contains a discussion of the primary sources of noise associated with quarrying and offers guidance in relation to the correct approach to be followed in respect of assessment and mitigation.

Suggested noise limit values are 55 dB $L_{Aeq,1hr}$ and 45 dB $L_{Aeq,15min}$ for daytime and night-time respectively, although it suggests that more onerous values may be considered appropriate in areas with low levels of pre-existing background noise. EPA guidance also states that 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"*.

3.11 Regional or Local Legislation or Guidance

This document is a Noise Action Plan for environmental noise generated mainly by road traffic in FCC. Currently there is no regional or local legislation relating to noise, however there are guidance

documents in relation to transportation, environment and development control policies and objectives that aim to reduce negative and harmful noise effects.

The 'Regional Planning Guidelines for the Greater Dublin Area 2010-2022' sets out planned growth within the Dublin area until 2022, and seeks to set out policies integrating land use, transport, economic growth and investment in water utilities, broadband and energy. It states that, *"Planning policies need to consider the added health burden from the effects of air and noise pollution, road traffic accidents, sedentary lifestyles, lack of safe community space or spaces with poor access…"*. Reference is also made to noise mitigation in the design of Green Infrastructure in the guidelines.

At County level, the Fingal Development Plan 2017-2023 (FDP), in accordance with the requirement of the Planning and Development Act (2000, as amended), sets out FCC's proposed policies and objectives for the sustainable development of the County over the period 2017-2023. The FDP includes a 'Core Strategy' for medium and long-term spatial development, which is consistent with the policies set out within the National Spatial Strategy 2002-2020 (NSS) and Regional Planning Guidelines for the Greater Dublin Area.

In addition, there are ongoing sustainability policies being implemented at a local level that aim to increase the mode share of sustainable travel modes in the Dublin region with resultant reduction in noise and air pollution levels arising from less car traffic on the roads. These are as follows:

- **Transport Strategy for the Greater Dublin Area, 2016 to 2030** - This transport strategy provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area over the next two decades. It also provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities. Little reference is made on noise in this document;

- **Smarter Travel – A Sustainable Transport Future 2009-2020** - This sets out a broad vision for the future and establishes objectives and targets for transportation. It also supports greater integration between spatial planning and transport policy and sets a target to reduce car-based commuting from 65% to 45% by 2020; and

- **National Cycle Policy Framework 2009-2020** - This sets out actions to deliver a new culture of cycling in Ireland by 2020, with 10% of all trips to work being made by bicycle by 2020.

4 Noise Action Plan Area

Under the Environmental Noise Regulations 2006, the four Local Authorities within the 'Agglomeration of Dublin' are designated as the noise-mapping and action planning bodies for the purpose of making and approving strategic noise maps and action plans. They have been designated as the noise mapping bodies and action planning authorities for the following categories within their areas:

- All Roads and Major Roads,
- All Rail and Major Rail,
- Major Industrial Processes,
- All Airports and Major Airport.

Before producing and implementing the Noise Action Plan, the Local Authorities must consult with the EPA and the noise-mapping body for the noise-map involved, i.e. the Transport Infrastructure Ireland, Iarnród Éireann, IPPC Licensed Plants and Dublin Airport Authority. Local Authorities are also responsible for consulting with members of the public and are required under the END to demonstrate how they have done so.

4.1 Extent of Planning Action Area

This noise action planning area extends over the FCC administrative area, which covers the northern 458 km^2 of Dublin County, as shown in **Figure 2**. This Noise Action Plan relates to locations within FCC which are exposed to noise from roads, railways and industrial facilities included within the strategic noise maps, and to potential quiet areas away from these sources of noise.

The 2016 population of the FCC is 296,214, which is an increase of 8.11% from 273,991 in 2011. FCC also has the youngest population in the country. In 2016 there were 104,237 residential dwellings within FCC, which is an increase of 0.9% compared with the 103,300 in 2011.

Figure 2 – Map of Fingal County Council Area

4.2 Roads

Approximately 1,438 km of road centrelines were included within the noise calculation model, 682 km of which are within FCC. The total length of road centrelines designated as Major Roads, with an annual traffic flow above 3 million vehicles, was 399 km within the model extents, of which 211 km were within FCC, mainly describing the M1, M50, M2 and M3 road carriageways.

4.3 Rail

Ireland has a network of rail lines that have been in place for almost 150 years over which a significant number of public transport rail services are provided. The network supports the economic and social development of the State in providing accessible transport to many key destinations.

Iarnród Éireann owns, operates and maintains the heavy railway infrastructure in the Republic of Ireland Córas Iompair Éireann owns both the land underlying the railway infrastructure and owns the stations. Iarnród Éireann operates approximately 600 passenger train services per day and 10 freight services per day. The Iarnród Éireann network currently extends to approximately 2,400 km of track, 5,100 bridges, 1,240 level crossings, 145 stations, 4,900+ cuttings and embankments, 372 platforms and 14 tunnels. The network includes main line intercity routes, outer commuter and Dublin/Cork suburban inner commuter passenger routes, together with freight-only routes.

All train movements on the Iarnród Éireann network are scheduled, managed and regulated by control signalman. This is required to ensure a safe rail operating environment. The timing of departures and arrivals is controlled to minimise congestion and disruption across the network.

Iarnród Éireann are also responsible for the construction and maintenance of all elements of the heavy rail system in Ireland, including, but not limited to, tracks, signalling systems, buildings, structures etc.
The maximum speed is 160 km/h for passenger trains and 80 km/h for freight trains. On certain sections of line and/or for certain types of train lower maximum speed limits apply on a temporary or permanent basis. The maximum axle load permissible on the IÉ network is 18.8 tonnes.

The strategic noise mapping of railways within FCC includes 49 km of Irish Rail lines, of which 13.5 km was designated as Major Rail with an annual traffic flow in excess of 30,000 trains per year. There was no significant change in train movements during the life of the previous noise action plan.

4.4 Airports

Dublin Airport is the main airport located in the country and is situated in FCC. Over the lifetime of the previous Noise Action Plan, passenger numbers at the airport increased by 19.1 million in 2012 to 27.9 million in 2016.

Dublin Airport has:

- 56 scheduled and charter airlines;
- Aircraft movements: In excess of 200,000 ATM per annum;

- Destinations: Over 190 destinations;
- Flying to 42 countries on four continents;
- Passengers per year: 27.9 million in 2016.

Aircraft noise is addressed in a separate Noise Action Plan entitled ‘Dublin Airport Noise Action Plan 2018 – 2023’.

4.5 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 where it is high and preserve environmental noise quality where it is within acceptable limits.

However, EPA guidance and the END indicates that the Action Planning Authority should take due consideration of the locations which will be considered to be noise sensitive, if any, in addition to residential dwellings. Non-residential buildings which are viewed as being noise sensitive within the functional area of FCC include hospitals, residential care facilities and schools.

5. Review of Round 2 Noise Maps and Action Plan

Under the Regulations each designated Noise Mapping Body is required to undertake a review of the Noise Action Plan at least every five years, and if necessary revise the action plan. During 2016 FCC undertook a review of the R2 NAP to identify any relevant changes which may affect the results of the strategic noise mapping or the approach to the noise action plan ahead of the implementation of Round 3 actions under the Regulations.

For the basis of the review of the Round 2 strategic noise maps and Dublin Agglomeration Noise Action Plan 2013-2018 ahead of Round 3, FCC followed the guidance issued by the EPA and considered the following aspects:

- Had there been a significant increase or decrease in traffic volumes?
- Had there been any significant new infrastructure developments?
- Had there been any significant new developments?
- Had additional road or railway segments come into the "major" category due to the change in traffic flows or flow thresholds?
- Had any major policy decisions caused a noise impact which should be shown in revised maps?
- Had there been any significant changes to the vehicle fleet?
- Had noise emissions from industrial sites within agglomerations altered?

5.1 Changes since the R2 Noise Mapping and Action Planning

5.1.1 Road Traffic

Error! Reference source not found. shows that over the period 2010 to 2016, there has been an ncreasing trend in the number of licensed vehicles in Dublin City and County, and nationally, with a higher increase in goods vehicles in the Dublin area[1].

Table 3 - Number of Licensed Vehicles in Dublin and Nationally

Year	Dublin City and County	Goods Vehicles	Nationally
2010	595,322	59,512	2,416,387
2011	595,033	58,215	2,425,156

[1] Irish Bulletin of Vehicle and Driver Statistics for 2016, available at: http://www.dttas.ie/roads/publications/english/irish-bulletin-vehicle-and-driver-statistics-2016 [Accessed July 2018]

2012	592,841	56,570	2,403,223
2013	596,418	57,203	2,482,557
2014	605,546	57,766	2,515,322
2015	620,469	61,724	2,570,294
2016	637,297	66,621	2,624,958
2010 to 2016 – diff	+41,975	+7,109	+208,571
2010 to 2016 - %	+7.1%	+11.9%	+8.6%
2014 to 2016 - %	+5.2%	+15.3%	+4.4%

Error! Reference source not found. outlines the trend in traffic flows, in terms of Annual Average aily Traffic (AADT), on the main national roads in the County over the period 2014 to 2017. We can see that there has been a significant increase in traffic volumes on the M50 and M1[2].

Table 4 - Traffic Flows in FCC National Roads 2014 to 2017

TII Traffic Flows AADT	2017	2016	2015	2014	Change 2014 to 2017
M50 near Castleknock	141,970	134,642	121,785	114,270	+24.2%
M50 Mayeston Hall	136,315	129,598	122,523	117,115	+16.4%
M1 near Dublin Airport	133,136	129,840	86,056	107,603	+23.7%
M1 near Blakes Cross	59,276	57,148	54,132	51,711	+14.6%
M3 Westown	27,281	26,056	24,714	23,307	+17.1%
M3 Pheasant Run	54,064	56,869	54,884	50,334	+7.4%

In August 2017, the Central Statistics Office (CSO) published 'Census 2016 Profile 6 Commuting in Ireland' (2017). The report shows that in April 2016 the number of people nationally travelling to work, school or college stood at 2,962,550, an increase of 9.3% on the 2011 figure.

Table 3 outlines the trends in travel mode share in FCC for those travelling to work, school or college. From this we see that there has been an increase in the percentage of people using sustainable travel modes to travel to work or education.

Table 5 - FCC Travel Model Share

Means of Travel	2016%	2011%	Increase%
On foot	15.0%	15.2%	12.6%

[2] TII Traffic Count data website, available at: https://www.nratrafficdata.ie/c2/gmapbasic.asp?sgid=ZvyVmXU8jBt9PJE$c7UXt6 [Accessed July 2018]

Bicycle	2.7%	2.2%	42.2%
Bus, minibus or coach	12.7%	11.6%	24.5%
Train, DART or LUAS	7.8%	8.3%	7.2%
Motorcycle or scooter	0.4%	0.6%	-14.1%
Motor car: Driver	37.5%	40.4%	5.7%
Motor car: Passenger	14.3%	14.1%	15.8%
Van	2.6%	2.7%	10.9%
Other, incl. lorry	0.2%	0.2%	-11.4%
Work mainly at or from home	1.7%	1.5%	27.9%
Not stated	4.9%	3.2%	74.9%

The review of traffic flows on a number of Regional and National roads in Fingal. In June 2016 Irish Traffic Solutions Ltd. was commissioned by Fingal County Council to carry out traffic surveys on the main Regional roads in the county. These results were then compared with the 2012 data used in Round 2. A desktop study was also carried out on all motorways in the county. This second study was designed to calculate the % difference in 2016 and 2012 traffic counts by comparing the most recent TII count data with the data used to populate the Round 2 noise model. The combined results of both exercises show that traffic volumes have increased significantly over the period 2012 -2016. Details of the percentage increases for all 22 roads surveyed are given in **Table 4**.

Table 6 – Percentage Increase in Road Traffic on Roads Surveyed

Location Number	Regional North	%increase
1	R135	46%
2	R122	59%
3	R107	58%
4	R132	76%
5	R121	77%
6	R106	42%
7	R108	76%
8	R104	31%
9	R127	86%
10	R105	50%
11	R139	75%
12	R836	45%
13	R843	66%
14	R125	50 %
15	R128	56%

16	M50 Blanchardstown	26%
17	M50 Finglas	22%
18	M1 Balbriggan	13%
19	M1 Dublin Airport	19.6%
20	M2 Finglas	20.7%
21	M2 Coldwinters	11.4%
22	M3 Clonee	43%

5.1.2 Railway traffic

Round 2 strategic noise mapping of railways during 2011 in Fingal was undertaken by Iarnród Éireann. Ahead of the R3 noise mapping for 2016 Iarnród Éireann undertook a review of any changes since 2011 and concluded that there had been no significant change in train movements or rail vehicles in use during the period of the noise action plan. As a result of the review, it was concluded that it was not necessary to revise the R2 strategic noise maps for R3.

5.1.3 Industry

Prior to the R2 noise mapping for 2011 a screening review of the IPPC licensed facilities in FCC was undertaken. This concluded that there were no significant complaints associated with any of the sites and that EPA licensing and control scheme resulted in noise levels from the sites outside the site boundary which were below the END reporting thresholds.

Ahead of the R3 noise mapping for 2016 the screening review was repeated for the 57 IPPC licenses covering activities at 39 individual facilities across FCC. The IPPC licenses and associated facility addresses are listed in **Appendix C**.

The review concluded that strategic noise maps of industrial noise in FCC did not need to be produced for Round 3, as there was no relevant change compared to R2 as assessment of the noise emissions at the boundary of the facilities indicated that levels would be below the reporting noise threshold within the END.

5.1.4 Model Input Datasets

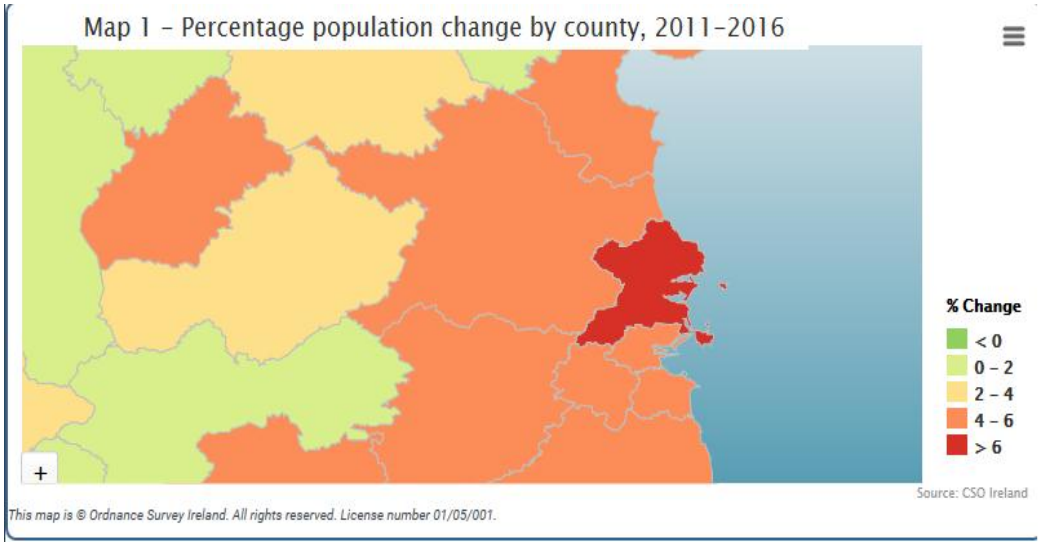
Between the R2 noise mapping for 2011 and the R3 noise mapping for 2016 there had been significant developments in the availability of digital datasets available from Ordnance Survey Ireland (OSi). OSi had transitioned form the vector based Large Scale products to the new and fully revised

polygon datasets within the PRIME2 database. Updated PRIME2 datasets had become available for building footprints, road centerlines, and data including possible barriers and bridges for inclusion within the models.

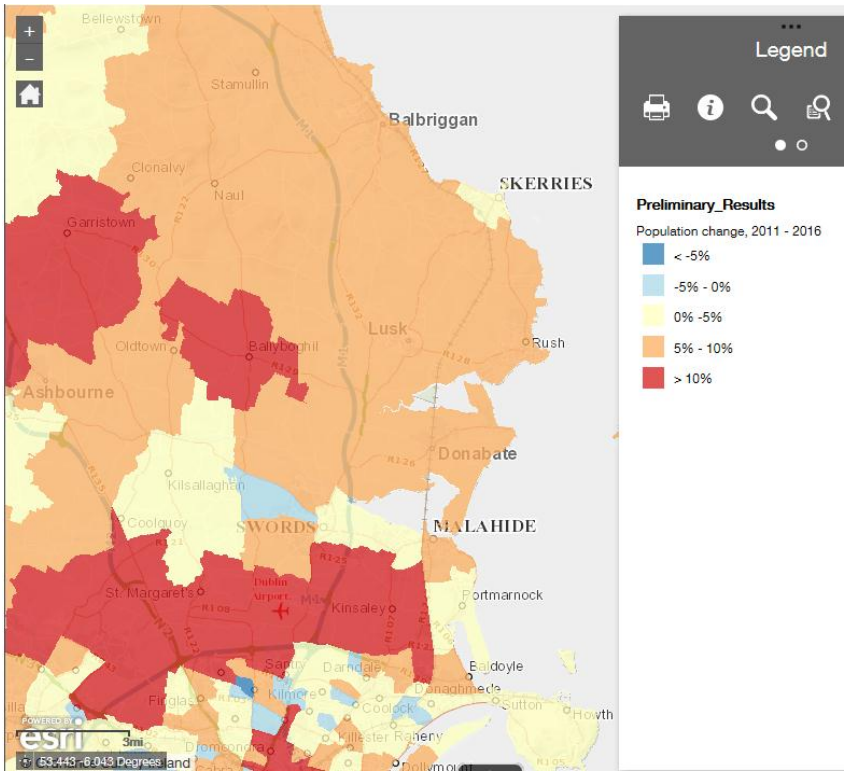
In addition to the revised OSi data, the EPA published CORINE 2012 land cover data to replace the previous CORINE 2006 data used for the R2 noise mapping.

5.1.5 Exposure Datasets

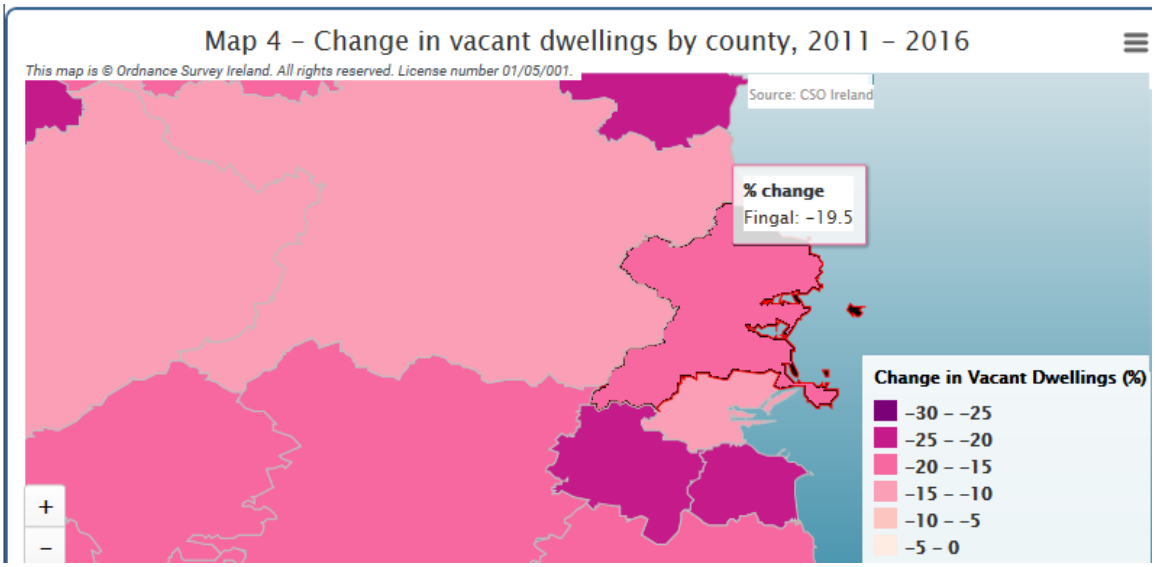
The CENSUS 2016 results published by CSO indicate that the population of Fingal increased by 8% during the period 2011-2016.



Whilst the overall population in the County rose, it was not evenly distributed, with some Electoral Dirsticts increasing by over 10%, and one to the North of Swords actually reported a decrease in population.



The number of reported vacant dwellings in Fingal also fell by 19.5% since the 2011 Census, as illustrated below:



The CENSUS 2016 data was published by CSO during 2017 which made it possible to use the most up to date Small Areas Population Statistics (SAPS) data from the 2016 Census for the assessment of exposure to noise.

5.2 Measures within the Round 2 Noise Action Plan

A number of measures were proposed in Chapter 9 of the Dublin Agglomeration Noise Action Plan 2013 to 2018 to prevent noise and reduce, avoid or relocate the various types of noise source under the following headings;

- 9.2.1 Traffic noise reduction and prevention measures;
- 9.2.2 Rail noise reduction and prevention measures;
- 9.2.3 Noise in the Planning Process;
- 9.2.4 Sound Monitoring Network;
- 9.2.5 Protecting "Quiet Areas"; and
- 9.2.6 Noise Complaint Investigation and Control procedures.

The following sections provide a review of what was Actions were carried out as part of the Plan.

5.2.1 Road traffic

A number of measures were outlined in the Noise Action Plan to support the use of sustainable travel modes for daily travel. The following measures were carried out in Fingal over the past 5 years:

- Development of Sustainable travel (walking and cycling) infrastructure. A number of schemes were completed in the past 5 years, namely:
    - Upgrade of Royal Canal way from Ashtown to 12th Lock at Blanchardstown
    - Cycle Route 1A Howth along the coast to Sutton and on to the City via Clontarf
    - Cycle Route P1 Baldoyle to Portmarnock to MAlahide
    - Cycle Branch at Sutton to Baldoyle.
    - Cycle Route 1C Malahide Rd. to Balgriffin
    - Cycle/ walking route from Seatown to Malahide along Estuary.
    - Cycle Route 1B Branch off Howth Road to Raheny and Donaghamede
    - Cycle Route 5 Phoenix Park to Blanchardstown
    - Blanchardstown westwards to Littlepace to County Boundary at Clonee.
    - Provision of limited Bike and ride at train stations along the Maynooth Line.
    - Expansion of Bus lanes

- Continued promotion and development of sustainable travel modes in conjunction with transport providers and local communities.
    - Fingal County Council worked closely with the National Transport Authority to develop cycling infrastructure schemes, as above.

- Sustainable travel is a key consideration in all major planning applications, Part 8"s and Local Area Plans. It was also considered as part of mixed-use development areas such as the Hansfield SDZ and Urban Centre Strategies for
  - Blanchardstown,
  - Castleknock,
  - Clonsilla,
  - Howth
  - Rush
  - Donabate
  - Portmarnock, and
  - Swords (masterplan).
- Website www.Fingal.ie was updated to include details of cycling related activity.
- A series of cycling activities were held during National Bike Week each year over the past 5 years.

- Introduction of Local Transport Plans - No National Guidance has been developed on Local Transport Plans. However, transport planning has been a key element of the main development areas in the County; the Hansfield SDZ and the Urban Framework Plans.

- Supported the introduction of Electric Vehicle charge points
  - Fingal County Council worked with ESB as part of the National Programme to roll out of 12 EV charge points throughout the county,
  - In addition, Fingal County Council has added new electric vehicles to its van fleet in an effort to promote sustainability and reduce environmental noise.

- Fingal County Council facilitated the introduction of car share clubs - A pilot car club was set up in the County in conjunction with Gocar (www.gocar.ie). There are currently over 30 Gocar locations throughout the county.

- Adoption of best practice / guideline documents and policy in Transportation Planning. Application of Design Manual for Urban Roads & Streets and National Cycling Manual principles was a key element is the design of all infrastructure schemes in the County.

- Reduction in excessive driving speeds in the County. A 30km/h Speed limit has been introduced on most roads in housing estates and residential areas in line with the mandatory "Guidelines for Setting and Managing Speed Limits in Ireland" issued by the Department of Transport, Tourism and Sport (March 2015).

- Promotion of the use of low-noise road surfaces where appropriate. Stone Mastic Asphalt is provided on roads with speed limits less than 60kph and this has been found to have a

significant reduction (about 3 dB(A)) in type /road interface noise levels when compared to dense grader asphalts.

- Use Roadside Noise Barriers for new road construction projects. No major new road construction schemes have been completed in the past 5 years.

- Review of key national roads with TII where noise issues have been identified arising from the noise mapping. Discussions were held with Transport Infrastructure Ireland on a number of noise issues along the N1, N3, and M50 but no measures have been implemented along these strategic routes.

5.2.2 Railway noise

As part of the previous Dublin Agglomeration Noise Action Plan 2008 to 2013, Iarnród Éireann were required to undertake the following actions in relation to noise:

To produce a sound impact assessment and apply mitigation measures where appropriate, for any new rail infrastructure or ancillary developments or any major intensification on any existing rail infrastructure or ancillary developments within the Dublin Agglomeration. This assessment should not alone include railway sound emissions but also a sound impact assessment, for example, of traffic, where the new infrastructure or intensification is likely to increase, disrupt or displace traffic flows within the Dublin Agglomeration.

No new rail infrastructure or ancillary developments or any major intensification on any existing rail infrastructure occurred in the County during the period of the plan and thus no sound impact assessment was carried out.

5.2.3 Noise in the Planning Process

As part of the previous Dublin Agglomeration Noise Action Plan 2008 to 2013, the following measures relating to planning and development were implemented.

County Development Plan

During the period of the Noise Plan 2013-2018, Fingal County Council adopted a County Development Plan covering the period 2017 to 2023. In the Development Plan noise was considered through the following objectives:

Objective NP01

Implement the relevant spatial planning recommendations and actions of the Dublin Agglomeration Environmental Noise Action Plan 2013-2018 (or any subsequent plan), working in conjunction with relevant statutory agencies.

Objective NP03

Require all developments to be designed and operated in a manner that will minimise and contain noise levels.

Objective NP04

Ensure that future developments are designed and constructed to minimise noise disturbance and take into account the multi-functional uses of streets including movement and recreation as detailed in the Urban Design Manual (2009) and the Design Manual for Urban Roads and Streets (2013).

Objective NP05

Ensure that development complies with the NRA's design goal for sensitive receptors exposed to road traffic noise or as updated by any subsequent guidelines published by Transport Infrastructure Ireland.

Objective PM69

Ensure that proposals do not have a detrimental effect on local amenity by way of traffic, parking, noise or loss of privacy of adjacent residents.

Objective SWORDS 26

The Local Area Plan will assess and determine the sequencing and phasing of development subject to the delivery of the necessary infrastructure, indicative route for new Metro North and its potential extension.

The Local Area Plan will take note of potential noise pollution from road, rail and motorway traffic and implement measures to address any issues that may cause annoyance to potential residents.

Objective SANTRY 3

Encourage enhanced landscaping and noise abatement measures along the realigned M50 where it impacts on Turnapin residents.

Objective SANTRY 4

Enhance cycle and pedestrian linkages between Santry and Ballymun. Objective

SANTRY 5 Prepare and implement a Masterplan for lands identified at Northwood (see Map Sheet 11, MP 11.E) during the lifetime of this Plan. The main elements to be included are provided below. The list is not intended to be exhaustive.

- Facilitate provision of an underpass to include provision for a car, bus, cycle, and pedestrian link to link lands east and west of the R108 to enhance connectivity.
- Ensure where feasible, development overlooks the Santry River Walk.
- Allow the re-location of existing units to facilitate connectivity to the proposed Northwood Metro Stop.
- Enhance pedestrian links within and to Santry Demesne.
- Facilitate provision of a direct access route from Old Ballymun Road through Northwood. Development shall enhance connectivity to the proposed Northwood Metro Stop.

Objective DMS31

Require that sound transmission levels in semi-detached, terraced, apartments and duplex units comply as a minimum with the 2014 Building Regulations Technical Guidance Document Part E or any updated standards and evidence will need to be provided by a qualified sound engineer that these levels have been met.

5.2.4 Sound Monitoring Network

Fingal County Council installed three noise monitoring units in 2010 in areas considered to be sites of public amenity or potentially noisy locations. These are;

- Old Airport Road Santry;
- Grove Road Blanchardstown; and
- Feltrim Road Swords.

The units are designed to operate continuously, recording sound levels and statistical information to allow analysis of trends in noise emissions and the entire network was upgraded to include Global System for Mobile (GSM) communications.

During the period Dublin Noise Action Plan 2013 to 2018, the network was extended to include an additional monitor at The Royal Canal Greenway.

5.2.5 Protecting 'Quiet Areas'

As part of the Dublin Agglomeration Noise Action Plan 2008 to 2013, an action was included to identify Quiet Areas and preparation of submissions for approval by the Minister for the Environment, Community and Local Government for delimiting as Quiet Areas. Due to funding and resource constraints, no quiet areas were identified.

5.2.6 Prioritising locations

As part of the Dublin Agglomeration Noise Action Plan 2013 to 2018, a prioritisation exercise based on the results of the strategic noise mapping and the decision support matrix was to be carried out and an ordered shortlist of areas drawn up for further exemption with a view to either reducing excessive sound levels or to preserve low sound levels where they exist. Due to funding and resource constraints, this process was not carried out.

5.3 Conclusions of Review

FCC concluded its review of R2 noise mapping and action planning in a report submitted to the EPA in October 2016. Similar reviews were also undertaken by TII and Irish Rail with regard to the National roads and railways within FCC. Changes between Round 2 and Round 3 in relation to the population, traffic volumes, significant infrastructure schemes, large developments and noise emissions from industrial sites had been assessed. The FCC, TII and IR reviews concluded overall that there had not been any relevant changes in the noise emissions from railways and industry in Fingal County, and that the strategic noise maps did not need to be revised. However, the reviews also concluded that there had been relevant changes at the airport, and to the road network and traffic flows across Fingal County to merit the revision of the strategic noise maps of the airport and roads for Round 3. The following summarises the key findings.

Based on the 2016 Census data, the population of the County increased by 8% since 2011; and Traffic volumes increased by between 11% and 86% on Regional and Major National roads in FCC since Round 2.

A decision was made by FCC to proceed with a revision of the strategic noise maps in order to take advantage of significant improvements in data available since Round 2 and advancements in calculation methods. The improved data and calculation methods included the following:

- Implementation of speed limit changes across Fingal County had reduced average traffic speeds, particularly on the M50;
- Improved roads network and traffic data for the majority of the County from OSi PRIME2 data;
- Improved terrain model data- 1m contours for Round 3 from OSi LiDAR data, 10m contours for Round 2;
- Revised Census Data from 2016 Census; and
- Resolution of census data – Small Area Population Statistics (SAPS) for Round 3, Electoral Division (ED) for Round 2.

6 Preparation of Strategic Noise Maps

Preparation of strategic noise maps is mainly a technical process requiring an array of different input datasets across large geographical areas. The strategic noise mapping resulted in grids of calculated noise levels at specified contour intervals. The output from the mapping process allows us to determine the location and level of noise within an area using 5 dB(A) contour bands and also gives an indication of the number of people and households exposed to differing levels of environmental noise.

Preparation of strategic noise maps was carried out by FCC. The assessment of exposure to noise for areas, dwellings and people living in dwellings was undertaken in line with the revised Section 10 of the EPA 'Guidance Note on Strategic Noise Mapping for the Environmental Noise Regulations 2006 (2011), which was issued in October 2017. Indicative noise exposure maps for FCC for roads and rail are included in **Appendix D** and **Appendix E** respectively.

6.1 Noise Calculation methodology- Methods of Assessment

The Environmental Noise Regulations prescribes two methods that can be used for the assessment of Noise from road sources. These are Department of Transport Welsh Office 'Calculation of Road Traffic Noise' (CRTN, 1988) and the EC Recommended 'Interim Method' version of the French NMPB 1996 method as described in the END.

In the interest of consistency with the Round 2 Noise mapping, it was decided to use the adapted version of the CRTN methodology for the assessment of road traffic noise levels. Within this assessment procedure, Method 3 was used for conversion of 18hr AADT to L_{den} and L_{night}.

The Environmental Noise Regulations prescribes two methods that can be used for the assessment of Noise from railway sources. These are Department of Transport 'Calculation of Railway Noise' (CRN, 1996) and the EC Recommended 'Interim Method' version of the Netherlands RMR 96 method as described in the END.

The strategic noise mapping of railways was undertaken during Round 2 using the EC Recommended 'Interim Method'. As there had not been a significant change in railway operations or noise emissions between R2 and R3 the results of these R2 calculations were used as the basis of the R3 results, with the dwelling and population exposure assessment undertaken using the R3 methodology and 2016 Census data.

6.1.1 Dataset Specification

Strategic noise mapping entails the calculation of noise levels at receiver/receptor points. These values are then used to draw colour contour ‘noise maps’, which visually represent the levels of ‘noise’ throughout the area being mapped. In general, the calculation of noise levels takes place in two stages within the ‘noise mapping’ software:

1) The assessment of the level of noise emitted from a source - the “source noise emission”; and
2) The assessment of the attenuation of the emitted noise en-route from the point of emission to the receptor, - the “propagation attenuation”.

After the assessment of noise levels across the area of the strategic noise mapping is performed, it is then necessary to undertake statistical analysis to determine the area, dwelling and population exposure data required to be reported to the EC. Following this concept, the input dataset required can be classified into:

- Source input data which defines the position and characteristics of the noise sources;
- 3D model pathway input data which defines the environment within which propagation occurs; and
- Population input data which defines the location of the population exposed to the long term environmental noise sources.

6.1.2 Input Data Requirements

Noise maps are developed by inputting data into ‘noise mapping’ software. The information required for the source emission model for the road traffic is specific to each method of assessment. The following CRTN input information is required for each road section:

- Road centrelines and Traffic Data;
- Traffic volume;
- %HGV's;
- mean vehicle speed;
- Direction of vehicle flow;
- Road width;
- Road surface type;
- Texture depth;
- Road gradient; and
- Road classification.

Similarly, the calculation of noise from railway sources requires the following input information for each section of track:

- Railway centrelines;
- Rail track support;
- Track type and presence of switch and joints;
- Train type;
- Train speed; and
- Number of trains.

For the calculation of the attenuation of noise between the road and railway sources and the receivers, a 3D model was built within the software which represented the Fingal County area, including:

- Terrain contours to describe the ground height;
- Ground surface cover, such as regions of hard and soft ground;
- Buildings;
- Noise barriers, walls and screens; and
- Road and railway bridges.

Figure 3 and **Figure 4** show examples of the calculation model for road traffic noise inside the computer software.

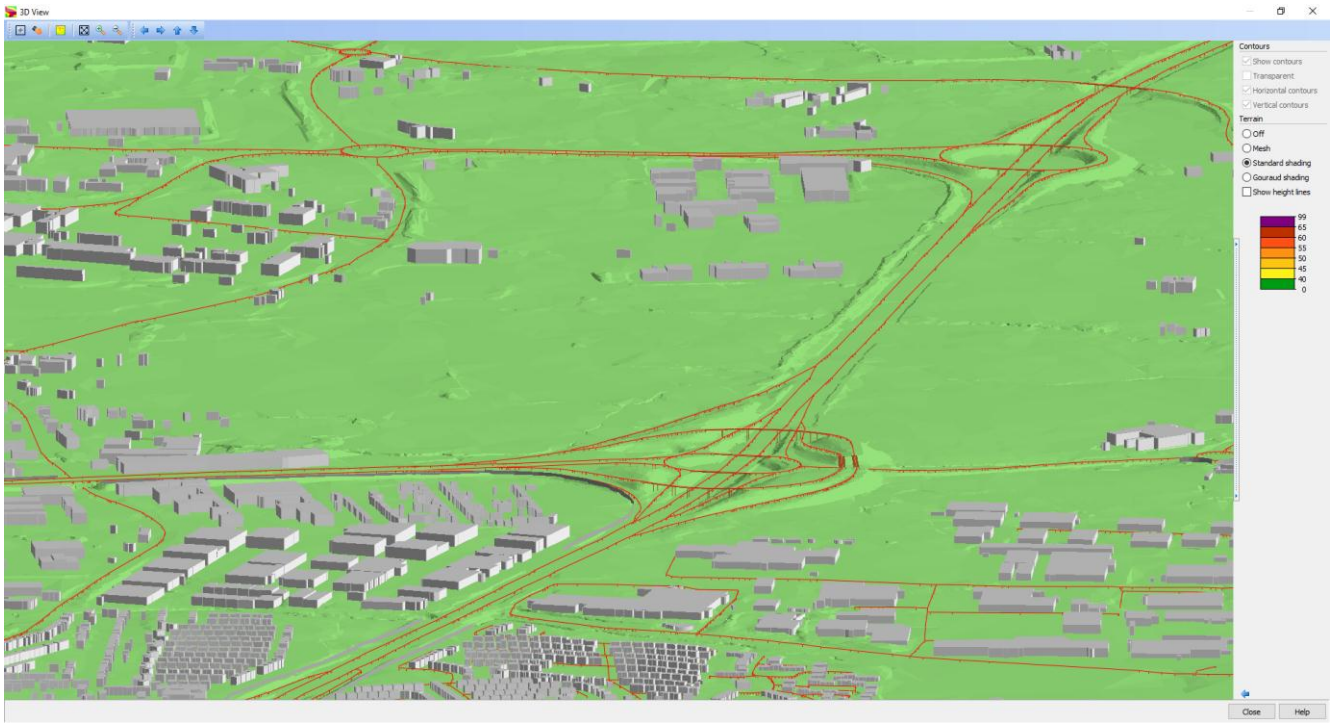


Figure 3 - Example 1: Road Traffic Noise Calculation Model

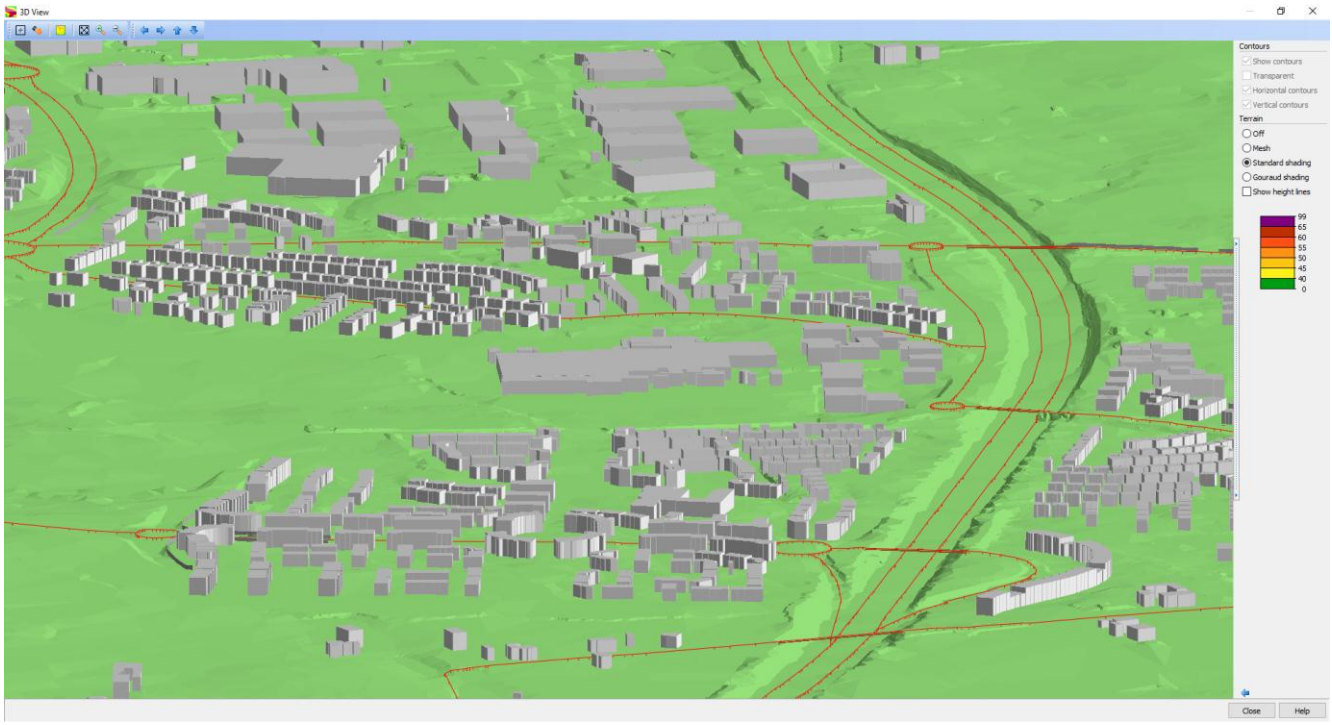


Figure 4 - Example 2: Road Traffic Noise Calculation Model

6.2 Noise Model Data Sources

The calculation models used for the emission noise levels from roads and railways, and the 3D model of Fingal for the attenuation of noise between the sources and the receivers, require input data from a range of different sources.

Road infrastructure and road traffic data was supplied by:

- Transport Infrastructure Ireland;
- Ordnance Survey Ireland; and
- FCC transport department.

Railway infrastructure and railway traffic data was supplied by:

- Irish Rail; and
- Ordnance Survey Ireland.

Data required for the 3D model of Fingal County was supplied by:

- Transport Infrastructure Ireland;
- Ordnance Survey Ireland;
- Environmental Protection Agency; and

- FCC.

In addition to the calculation of noise levels across the County, the END also requires an assessment of the noise exposure to be undertaken in order to estimate the area exposed to noise, the number of dwellings exposed to noise and the number of people exposed to noise. The EPA issued revised guidance in October 2017 which sets out a methodology for the assessment of area, dwelling and population exposure assessment, the methodology was based on the following input datasets:

- A Post and Ordnance Survey Ireland (OSI) GeoDirectory 'Buildings' table and 'Address Point' table;
- CSO 2016 census data – Small Area Population Statistics (SAPS); and
- Geo referenced to Ordnance Survey Ireland (OSI) SAPS Area data.

6.3 Noise Level Calculations

The Bruel & Kjaer Predictor\Lima software suite (version 11.21) was used in the processing of the noise maps. The receiver noise level calculations were undertaken for a 10m grid spacing across the County, and adjacent to the facades of buildings with a residential use, as indicated by GeoDirectory.

In total almost 5.5 million receiver noise levels were calculated across FCC. To help improve calculation efficiency, the model was subdivided automatically into 240 2 x 2 km tiles with 2 km buffers. This resulted in each model being 36 km^2 in size. For the area near the boundaries of each adjacent local authority, such as Dublin County Council (DCC), South Dublin County Council (SDCC) and Meath County Council (MCC), a buffer region of 2 km was used. These smaller model tiles were recombined automatically when the calculated results were exported from the noise calculation software into the GIS environment.

6.4 Noise Exposure Levels

There are currently no national criteria in relation to noise limit values. In 2009, the EPA issued guidance notes on the development of noise action plans. The guidance on noise values where and action should be invoked, are in terms of average night time and 24-hour values. In the current Noise Action Plan they are expressed as average day and night time values. The EPA guidance suggests a desirable night time level of 45 dB(A).

In 2009, WHO's European Office published guidance 'Night Noise Guidelines for Europe' stated that, 'considering the scientific evidence on the thresholds of night noise exposure indicated by L_{night}, outside, as defined in the END, an L_{night}, outside of 40 dB(A) should be the target of the night noise guidelines (NNG) to protect the public, including the most vulnerable groups such as children, the

chronically ill and the elderly. L_{night}, outside value of 55 dB(A) is recommended as an interim target for the countries where the Night Noise Guideline cannot be achieved in the short term for various reasons, and where policy-makers choose to adopt a stepwise approach'.

For this reason, it is proposed to use an L_{night} desirable level of 50 dB(A) and undesirable level of 55 dB(A) for the Noise Action Plan that are in line with the recommended interim target. In addition, L_{den} levels below 55 dB(A) are considered desirable, and L_{den} levels greater than 70 dB(A) are considered to be undesirable.

7 Results of the Strategic Noise Mapping

This section sets out the results of the strategic noise mapping of roads and railways in Fingal for Round 3 of the END representing the annual average situation during 2016. This has been undertaken with the use of the noise metrics required by the END.

The results of the 2016 noise mapping are compared with the Round 2 END results for 2011 where relevant. Whilst a comparison to previous rounds is not required under the END, it can be used to demonstrate trends which may provide context to the existing noise situation and similarly assist in the identification of noise problems and situations to be improved, from which actions can be determined.

7.1 Results of the 2016 Noise Mapping

These statistics, rounded to the nearest hundred, are reported for the L_{den} and L_{night} noise metrics from 55 dB and 50 dB, respectively, in 5 dB contour bands.

7.1.1 Agglomeration roads

Table 7 sets out the population exposures to L_{den} (or 24 hour) from road traffic sources on agglomeration roads in the FCC Area.

Table 7 - Noise Exposure Levels, L_{den} from Agglomeration Roads – FCC

Decibels dB(A)	L_{den} number of people exposed	L_{den} % people exposed	L_{den} number dwellings exposed	L_{den} % of dwellings exposed
<55	221,414	74.4	76,200	73.1
55-59	37,400	12.8	13,600	13.1
60-64	22,300	7.6	8,400	8.1

65-69	11,300	3.9	4,500	4.3
70-74	3,300	1.1	1,300	1.2
>75	500	0.2	200	0.2

Of the 296,214 people living in the FCC administrative area, 25.6% are exposed to road traffic noise levels greater than 55 dB(A) L_{den}, reducing from 26.2% in 2011. This means that 25.6% of the population or 74,800 people in the FCC administrative area are exposed to noise levels from road traffic sources above the desirable L_{den} level of 55 dB(A), with 1.3% of the population are exposed to L_{den} noise levels from road traffic above 70 dB(A), i.e. 3,800 people.

Table 8 sets out the population exposure to night time noise from traffic sources on agglomeration roads in the FCC administrative area.

Table 8 - Noise Exposure Levels L_{night} from Agglomeration Roads – FCC

Decibels dB(A)	L_{night} number of people exposed	L_{night} % people exposed
<50	241,214	81.2
50-54	32,300	11.0
55-59	16,100	5.5
60-64	4,800	1.6
65-69	1,500	0.5
>70	300	0.1

From **Table 8** the following can be observed:

- The number of people exposed to the desirable night time road traffic noise levels less than 50 dB(A) has decreased from 83.9% in 2011 to 81.2% in 2016.
- The number of people exposed to the undesirable night time road traffic noise levels above 55 dB(A) has increased from 7.3% in 2011 to 7.8% in 2016. Less than 1% of the population of FCC are currently exposed to night time road traffic noise levels above 70 dB(A), i.e. 300 people.

7.1.2 Major roads

Table 9 sets out the population exposure to noise from traffic sources on major roads in the FCC administrative area.

Table 9 - Noise Exposure Levels, L_{den} from Major Roads – FCC

Decibels dB(A)	L_{den} number of people exposed	L_{den} % people exposed	L_{den} number dwellings exposed	L_{den} % of dwellings exposed
<55	239,014	80.5	82,700	79.4
55-59	28,400	9.7	10,400	10.0
60-64	15,900	5.4	6,000	5.8
65-69	9,100	3.1	3,600	3.5
70-74	3,300	1.1	1,300	1.2
>75	500	0.2	200	0.2

From **Table 9** the following can be observed:

- Of the 296,214 people living in the FCC administrative area, 19.5% are exposed to noise levels from major roads greater than 55 dB(A) L_{den}.
- 19.5% of the population are exposed to noise levels from major road sources above the desirable L_{den} level of 55 dB(A).
- 1.3% of the population are exposed to L_{den} noise levels above 70 dB(A) from major roads, i.e. 3,800 people.

Table 10 sets out the population exposure from night time noise from traffic sources on major roads in the FCC administrative area.

Table 10 - Night time Noise Exposure Levels, L_{night} from Major Roads - FCC

Decibels dB(A)	L_{night} number of people exposed	L_{night} % people exposed
<50	251,314	84.7
50-54	25,600	8.7
55-59	12,800	4.4
60-64	4,700	1.6
65-69	1,500	0.5
>70	300	0.1

From **Table 10** the following can be observed:

- The number of people exposed to the desirable night time noise levels from major roads less than 50 dB(A) is 251,314.

- Therefore 84.7% of the population of Fingal receives less than 50 dB(A) L_{night} from major road sources.
- The number of people exposed to the undesirable night time levels above 55 dB(A) from major roads has increased from 7.3% in 2013 to 7.8% in 2018.
- Less than 0.1% of the population are currently exposed to night time noise levels above 70 dB(A) from major roads, i.e. 300 people.

7.1.3 Agglomeration railways

Table 11 and **Table 12** provide details of the population exposures to noise from all the Irish Rail lines in FCC.

Table 11 - Noise Exposure Levels, L_{den} from Agglomeration Railways – FCC

Decibels dB(A)	L_{den} number of people exposed	L_{den} % people exposed	L_{den} number dwellings exposed	L_{den} % of dwellings exposed
<55	293,814	99.18	103,100	98.94
55-59	1,600	0.55	700	0.67
60-64	700	0.24	300	0.29
65-69	100	0.03	100	0.10
70-74	0	0.00	0	0.00
>75	0	0.00	0	0.00

Of the 296,214 people living in the FCC administrative area, 0.82% are exposed to railway noise levels greater than 55 dB(A) L_{den}. This means that 2,400 people in the FCC administrative area are exposed to noise levels from railway sources above the desirable L_{den} level of 55 dB(A), with 0% of the population exposed to L_{den} noise levels from railway sources above 70 dB(A).

Table 12 sets out the population exposure to night time noise from agglomeration railway sources in the FCC administrative area.

Table 12 - Noise Exposure Levels L_{night} from Agglomeration Railways – FCC

Decibels dB(A)	L_{night} number of people exposed	L_{night} % people exposed
<50	294,814	99.52
50-54	1,200	0.41

55-59	200	0.07
60-64	0	0.00
65-69	0	0.00
>70	0	0.00

The number of people exposed to the desirable night time railway noise levels less than 50 dB(A) was 99.52% in 2016. The number of people exposed to the undesirable night time railway noise levels above 55 dB(A) was 0.07% in 2016. 0% of the population of FCC are currently exposed to night time railway noise levels above 70 dB(A).

7,1,4 Major railways

Table 13 sets out the population exposure to noise from major railways in the FCC administrative area.

Table 13 - Noise Exposure Levels, L_{den} from Major Railways – FCC

Decibels dB(A)	L_{den} number of people exposed	L_{den} % people exposed	L_{den} number dwellings exposed	L_{den} % of dwellings exposed
<55	295,414	99.73	103,800	99.62
55-59	600	0.20	300	0.29
60-64	200	0.07	100	0.10
65-69	0	0.00	0	0.00
70-74	0	0.00	0	0.00
>75	0	0.00	0	0.00

Of the 296,214 people living in the FCC administrative area, 0.27% are exposed to noise levels from major railways greater than 55 dB(A) L_{den}. 0.27% of the population are exposed to noise levels from major railway sources above the desirable L_{den} level of 55 dB(A), or 800 people. 0% of the population are exposed to L_{den} noise levels from major railways above 70 dB(A).

Table 14 sets out the population exposure from night time noise from major railways in the FCC administrative area.

Table 14 - Night time Noise Exposure Levels, L_{night} from Major Railways - FCC

Decibels dB(A)	L_{night} number of people exposed	L_{night} % people exposed
<50	295,814	99.86
50-54	400	0.14
55-59	0	0.00
60-64	0	0.00
65-69	0	0.00
>70	0	0.00

The number of people exposed to the desirable night time noise levels from major railways less than 50 dB(A) is 292,300. Therefore 99.86% of the population of Fingal receives less than 50 dB(A) L_{night}. The number of people exposed to the undesirable night time noise levels from major railways above 55 dB(A) was 0% in 2016, and 0% of the population are currently exposed to night time noise levels above 70 dB(A) from major railways.

7.2 Discussion of Results

The results of the strategic noise mapping and the exposure assessment indicate that the predominant source of noise exposure across Fingal County is from road traffic sources.

The assessment indicates that 25.6% of the population, or 74,800 people, in the FCC administrative area are exposed to noise levels from road traffic sources above the desirable L_{den} level of 55 dB(A); compared to 0.82% of the population, or 2,400 people, exposed to noise from railway sources.

The 6.8% increase in total population of Fingal County, from 273,991 people in 2011 to 296,214 in 2016, means that although the % of people exposed has dropped in some cases, the overall number of dwellings and people exposed to undesirable noise levels from road traffic has increased from 3,400 to 3,800 > 70 dB(A) L_{den}, particularly for the L_{night} results from 18,600 to 22,700 people exposed above 55 dB(A).

Due to differences in the noise calculation models between Round 2 and Round 3; particularly the terrain contour information, Census SAPS data, road traffic flow data and noise calculation software; it is uncertain how much of the change in the reported exposure is due to real world changes in noise levels experienced by people living in Fingal County. Identification of Noise Problems and Situations to be improved.

The results of the noise mapping and the situation described above indicates that overall there has been an increased exposure to noise from agglomeration road traffic in Fingal County over the life cycle of the last noise action plan.

In view of the rapid expansion in population over the past five years, and the likelihood of future population increase and the subsequent pressure to develop more residential dwellings, FCC will need to be conscious of the risks of increase noise exposure on human health when considering potential developments in the vicinity of transport infrastructure. Land use planning, and the use of appropriate planning conditions to provide suitable noise levels within noise sensitive develops are areas which FCC should consider for improvement in order to try to mitigate future increases in noise exposure. To this end, actions have been proposed which will prompt further work.

8 Action Plan on the Management of Environmental Noise

Low environmental noise levels contribute significantly to the good health and quality of life for the population in the FCC administrative area. Co-ordinated and sustained effort is required to protect those areas that have low environmental noise levels and to improve areas that are deemed to have undesirable high levels. It can be more cost effective to adopt an approach of prevention through good management and planning rather than having to retrofit existing situations to try and improve the quality of life for citizens. The use and enjoyment of many natural resources, such as our green spaces and sea frontage can be further enhanced through the preservation of low noise levels or the reduction in undesirably high levels, thus providing respite from the noisy 'hustle and bustle' often experienced in the busy urban environment.

8.1 Identification of Noise Management Areas

The results of the strategic noise maps can provide an indication of the extent of environmental noise exposure in an area. However, they do not necessarily indicate where noise mitigation measures are required or where they would be cost effective. For this reason, it is necessary to set out an approach which seeks to identify locations where noise mitigation measures are necessary, feasible and will be cost effective.

To do this, a decision support matrix will be used, as shown in
Table 15, which takes into account factors such as the noise exposure level, the type of noise receptor, the type of noise source and the number of people affected. 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 different factors to be examined and facilitates assessing the relative importance of each.

For this Noise Action Plan, it is proposed that the higher the number achieved in the decision matrix process, the higher the priority for action. A value of **17 or more** is suggested as the point where priority action should be considered either to reduce excessive noise levels or to preserve low noise levels where they exist. For example, an address which falls within the noise level 65-69 dB(A) in the day (2) and 60-64 dB(A) at night (3), in a noise sensitive area for day and night (3+3) and exposed to noise from traffic day and night, (2+3) will give an overall total of 16 as can be seen in
Table 15.

Table 15 - Noise Priority Matrix

Decision Selection Criteria		Score Range day	Score Range Night	Subtotal
Noise Band	<55	3	4	

dB(A)	55-59 60-64 65-69 70-74 >=75	2 1 2 3 4	2 3 4 5 6	 3 2
Type of location	City Centre Commercial Residential Noise Sensitive Location Quiet Area Recreational open space	1 1 2 3 3 2	1 2 3 3 2	 6
Type of Noise	Road Rail Airport	2 3	3 4	5
			Total	16

In addition to the residential dwellings which have been identified during the exposure assessment based on the An Post GeoDirectory data, there are 74 places of worship, 23 hospitals including nursing and convalescence homes, 108 educational institutions, and 170 childcare\crèche facilities which are considered as noise sensitive locations. The priority decision matrix will be applied to each of these, as well as the residential dwellings.

The processing of using the noise decision matrix to identify residential properties, noise sensitive locations, quiet areas and recreational open spaces with a score of 17 has revealed the following:-
In total, 76.6% (79,825) of residential properties have been identified as having a score of 17 or greater thus suggesting priority action should be considered.

The 76.6% can be further broken down to show that 79,659 properties are in areas with exposure to low sound levels.
The remaining 0.21% (166) properties are in areas exposed to high sound levels. Applying this to the population statistics equates to potential annoyance from high sound levels for approx.470 people.

The areas exposed to low sound values and therefore prioritised for preservation of the good environmental sound quality, can be identified from the Lden and Lnight noise maps in Appendix E, where the colour contours are transparent in both maps i.e. below 45dB(A) at night and below 55dB(A) during the day. Similar areas to be prioritised for action to be taken to reduce high sound levels, can be identified from the Lden and Lnight noise maps where the colour contours range

above 65dB(A) for Night time and 70dB(A) for daytime.

8.2 Areas with Desirable Low and Undesirable High Noise Levels

Areas with desirable low noise levels are defined as areas with a night time level less than 50 dB(A) and\or a daytime level less than 55 dB(A).

Areas with undesirable high noise levels are defined as areas with a night time level greater than 55 dB(A) and a daytime level greater than 70 dB(A).

8.3 Processing Areas Above the Onset of Assessment Criteria

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

8.3.1 Confirmation of Protection Thresholds for Quiet Areas

Prior to the review of potential noise mitigation measures, and any subsequent commitment of budget to undertake any necessary actions, it is considered appropriate to confirm that the noise levels indicated by the strategic noise maps are being experienced by the population within FCC. This will be confirmed by undertaking field survey work to measure noise levels prior to the commencement of any works. Field survey work would help with calibration of the strategic noise map, as well as provide information on whether the properties being assessed had noise sensitive rooms exposed on the most exposed facades, or whether noise mitigation measures were already present which may not be indicated within the calculation model.

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

This staged approach will help to ensure that any work undertaken is cost effective and will deliver genuine benefit to the residents.

8.3.2 Noise Mitigation Measures

The general principles of noise mitigation apply in relation to noise action planning. These are:

- Mitigate the source;
- Mitigate the receiver; or
- Mitigate the noise pathway.

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 receiving\exposed to the noise levels could be treated with dual glazing or a new house could be located further away from the source.

Assessment of Options

There are a wide range of potential noise mitigation measures, some of which may act at a national or regional level, others which may be introduced at a local level. A non-exhaustive list of measures includes the following:

- Vehicle noise emissions and tyre noise regulations will be set at EU level;
- National planning guidance or noise regulations will be set at national level;
- Transport policy objectives may be set at regional level;
    - Improved public transport;
    - Getting people out of cars; and
    - Increasing bus, train, bicycle journeys.

- At Local Authority level there are powers to act as follows:
    - Replace diesel vehicles with compressed natural gas / electric;
    - Truck routes;
    - Night time delivery restrictions or limits;
    - Planning permissions;
    - Road closures / traffic routing;
    - Road re-surfacing;
    - Planning zones;
    - Facade insulation requirements;
    - Noise barriers;
    - Public liaison groups; and
    - Long term targets.

- Roads Authorities can undertake the following:
    - Traffic management – routes and Heavy Goods Vehicles (HGV's);
    - New road construction (bypass);

- Re-surface roads;
- Vehicle speed management;
- Noise screening measures; and
- Facade insulation measures.

In general, not one design intervention can provide a solution in an area and often a range of measures will be needed. In general, the best way to minimise the costs of noise prevention and noise reduction is:

- In the case of existing noise sources or sensitive buildings affected by noise, noise mitigation can be coordinated with scheduled maintenance, renewal and modernisation activities insofar as the funding and lands available will allow;
- Where new noise sources are being created in the vicinity of existing sensitive buildings, or vice versa the most cost-effective mitigation is to take it into account from the very beginning of the planning process; or
- Where a new noise source is being created, consideration should be given as to whether it is absolutely necessary, and whether the benefits really outweigh the disadvantages. If this is the case then consideration should be given to the location of the noise source so that it causes the minimum possible disturbance.

For the locations where noise has been identified as being an issue, a list of potential noise mitigation actions will be drawn up. In order to undertake an assessment of feasibility and develop a prioritised list of actions, a cost-benefit analysis will be undertaken in order to maximise value for money and deliver benefit from investment. The cost-benefit analysis will address lifetime construction and maintenance cost against noise reduction benefit.

8.3.3 Cost and Benefits of Options

The benefit of noise reduction may be viewed in terms of decibels, people, or time and may be considered using an assessment of changes in estimated levels of annoyance or sleep disturbance, or could be monetised to fully process the analysis. Monetisation of noise is becoming increasingly common. The monetary assessments of noise levels tends to take two differing approaches: impact upon property market value; and willingness to pay by residents exposed to noise to produce a reduction.

As may be expected these tend to lead to somewhat differing suggested levels of financial benefit. The appropriate metrics and valuations will be reviewed at the time of the analysis, using the best available research data. The best information available at present comes from a EC working group position paper from December 2003 ‘Working Group on Health and Socio-Economic Valuation of Noise’ (2003), 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. The validity range of this interim value is between 50/55 L_{den} and 70/75 L_{den}, to be adjusted as new research on the value of noise becomes available.

According to the EC funded SMILE project "In other German regions, where the housing market is more stable, it was found (Borjans et al) that noise could reduce the value of a plot of land by at least 1.5 % for every decibel exceeding 50 dB(A) during the day. Even at times when the demand for individual dwellings was extraordinarily high, a plot of land with an average noise level of 70 dB(A) was found to cost 30 % less than a plot with an average noise level of 50 dB(A)."

Applying this data to the priority residential properties arising from the matrix analysis, we can estimate that moving the priority action status to a lower status equates to a positive benefit.

8.4 Preservation of Areas Below Protection Threshold

Where areas are identified as being below the onset of "desirable" threshold, they will be considered for review in the context of the review for Quiet Areas. In addition to this, if the locations identified have amenity values then the planning process may then be used to help preserve the nature and level of the existing noise environment.

8.4.1 Quiet Areas

The END requires Member States to "preserve environmental noise quality where it is good" through the identification and protection of designated Quiet Areas within agglomerations. The END does not contain a prescriptive definition of what constitutes a Quiet Area. It is for each Member State to develop its own approach to the identification and protection of such areas.

The Environmental Noise Regulations defines a "Quiet Area in an agglomeration" as an area, delimited by an action planning authority following consultation with the Agency and approval by the Minister, where particular requirements on exposure to environmental noise shall apply. At present there are no Quiet Areas defined within Fingal County.

The EPA guidance suggests that Quiet Areas in agglomerations should have both a low level of noise from strategic noise sources and a wider consideration of related aspects such as land use, local amenity value, accessibility and historic usage. A Quiet Area could be an area with low noise levels or an area that should not be exposed to high noise levels due to the type of area or the nature of the activities that take place within it.

Some public spaces may currently have low levels of environmental noise as indicated by the strategic noise mapping yet have much higher existing noise levels due to other noise sources not

considered within the scope of the mapping, such as recreation, entertainment, neighbourhood noise, smaller roads, or some industrial facilities. In this Noise Action Plan, it is proposed to use a two-step approach to identify potential Quiet Areas which may then be taken forward for further consideration prior to public consultation on designation.

The first step would be to determine green spaces within Fingal County, which the strategic noise maps indicate have a noise level below the following values:

- < 45 dB(A) L_{night};
- < 55 dB(A) L_{day}; and

The second step would then be a consideration of the accessibility and amenity value of the green space, for example:

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

In addition to this primary approach, it is also proposed to identify a secondary class of Relatively Quiet Areas. These types of locations will be defined by their proximity to areas of high noise levels, and which provide a perceived area of tranquillity. It is expected that these areas may be public open green spaces which provide a localised haven from high levels of environmental noise, however they may not meet the first criteria for a low absolute noise level from strategic sources. Both quantitative and qualitative assessments will be used to identify these types of locations.

During the implementation of this Noise Action Plan, it is proposed to identify locations that have noise levels below these criteria and review their use. If appropriate or necessary, locations could be identified as Quiet Areas where the existing noise levels are to be preserved or reduced if possible.

8.4.2 Potential Quiet Areas

The FCC administrative area is geographically located north of Dublin City bordering the plains of Kildare and Meath. To the east it borders the Irish Sea and a number of large rivers and canals such

as the River Liffey, Delvin, Corduff, Ballyboughal, Broadmeadow, Ward, Tolka, Santry, Sluice, Mayne and the Royal Canal flow through it.

Fingal County has over 60 km of coastline stretching from Howth to Balbriggan. The county boasts three protected estuaries, salt marsh habitats. The River Liffey borders the south-western edge. Using the decision-making matrix during R2 all were found to have a score of less than 17, it is planned to repeat this process based on the R3 results.

For the FCC administrative area the recreational open spaces available to its citizens population can be broken down into approximately 4,500 acres of large open space\recreational areas, 11 play grounds, 11 public parks and gardens, 30 miles of coastline with 20 popular bathing spots, 10 major heritage sites, two nature reserves,

The decision support matrix will be used with the R3 noise level results for each of these public recreational open spaces in order to identify any which have a desirably low noise level which may benefit from being preserved.

8.5 Management of Areas Between the Thresholds

Careful consideration of environmental noise pollution when planning for new developments will be a key factor in the management of the noise environment in the interest of sustainable development. Setting out clear planning policy relating to noise, and incorporating environmental mitigation noise strategies into the development, planning and local area planning processes will help to ensure that the existing noise climate is preserved where appropriate.

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

9 Noise Action Plan Proposal for Action

9.1 Principles

The key 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. This will be achieved by taking a strategic approach to managing environmental noise and following a balanced approach within the context of sustainable development.

In line with previous Noise Action Plans, it is proposed that the following principles will be adhered to when deciding on the appropriate actions to reduce noise levels and to maintain levels where they are considered good\satisfactory.

- As the noise maps were developed for strategic use only, it is proposed that the basis of the Noise Action Plan should be strategic in nature also and shall not include proposals in relation to noise from domestic activity, noise created by neighbours, noise caused by the exposed person themselves or noise at work.
- It is proposed to include actions to manage environmental noise only, primarily from road traffic as this is the dominant noise source, but also from rail, aircraft and industrial sources, where required.
- Mitigation measures will be prioritised using the decision support matrix. For this Noise Action Plan it is proposed that the higher number achieved the higher the priority for action. A value of 17 or more has been proposed as the point where priority action should be considered.
- The plan shall address priorities, which have been identified by the relevant noise limit value being exceeded or other relevant criteria established by the EPA and shall in the first instance, address the most important areas established by the strategic mapping process. The following are the proposed limits:
    - Desirable low noise levels are defined as areas with a night time level less than 50 dB(A) and\or a daytime level less than 55 dB(A).
    - Undesirable high noise levels are defined areas with a night time level greater than 55 dB(A) and a daytime level greater than 70 dB(A).
    - Absolute value of below 55 dB(A) daytime and below 45 dB(A) at night time as one criterion for defining a Quiet Area.
    - A second criterion for defining for perceived or ‘Relatively Quiet’ areas. will be defined by their proximity to areas of high noise levels, but which provide a perceived area of tranquillity
- There will be earlier integration of noise abatement planning into the planning process and certain transportation schemes.

9.2 Proposed Noise Action Plan Measures

A number of measures are proposed as part of this plan to prevent noise and reduce, avoid or relocate the various types of noise source. These measures focus mainly on road traffic noise emissions, as the noise maps have shown it to be the major noise source in the FCC administrative area. These measures will be the primary measures considered when deciding on action to prevent, reduce avoid or relocate sources of high noise levels.

9.2.1 Identification of Priority Areas

The initial stage of the management of areas, which are indicated to be above the threshold where noise mitigation measures are deemed necessary, is to conduct a review of existing noise mapping. The review shall identify the order of priority of potential areas for subsequent treatment. On completion of the initial assessment, a field survey of actual noise levels shall be carried out to verify the initial findings and confirm the order of priority for treatment. As part of the establishment of the order of priority, the most appropriate and cost-effective mitigation measures shall be identified to optimise the return from the mitigation process.

A decision support matrix will be generated to facilitate this process. On implementation of the noise mitigation measures, the areas in question shall be resurveyed to establish the effectiveness and extent of the mitigation measures.

Prior to the review of potential noise mitigation measures, and any subsequent commitment of budget to undertake any necessary actions, the noise levels assessed by the strategic noise mapping will be validated to ensure there are being experienced by population and residential dwellings within the areas being addressed. External noise consultants may be appointed for the purpose of carrying out the field verification studies.

9.2.2 Traffic Noise Reduction and Prevention Measures

A number of measures are proposed to support the use of sustainable travel modes for daily travel. The following measures will be pursued in Fingal over the duration of this Action Plan:

- Development of Sustainable travel (walking and cycling routes) infrastructure. A number of schemes are currently in the pipeline, namely:
    - Expansion of the National Cycle East Coast trail linking Donabate to Rush, Skerries & Balbriggan
    - Proposed pedestrian and Cycle bridge over the N3 Cycle route from Damastown Employment Zone to Littlepace to Huntstown

- This link will connect Route 5 with the Ongar Road (Route 5B) Blanchardstown to Dunboyne via Clonee.
- Royal Canal Greenway via Ashtown Road to the War Memorial Park Kilmainham via a newly constructed bridge over the River Liffey.
- Extension of Greenway into Damastown, Wterville Park and Castle Curragh Park.
- Expansion of Bike and ride at all train stations along the Maynooth Linei.e. Ashtown, Castleknock, Coolmine Clonsilla,

- Continued promotion and development of sustainable travel modes in conjunction with transport providers and local communities.
  - Fingal County Council will continue to work closely with the National Transport Authority to develop cycling infrastructure schemes, as above.
  - Sustainable travel will continue to be a key consideration in all major planning applications, Part 8"s and Local Area Plans.
- Introduction of Local Transport Plans - No National Guidance has been developed on Local Transport Plans. However, transport planning will continue to be a key element of the main development areas in the County.

- Support the introduction of Electric Vehicle charge points
  - Fingal County Council will continue to work with the ESB as part of the National Programme to roll out of 12 EV charge points throughout the county,
  - In addition, Fingal County Council will continue to replace it's van fleet with electric vehicles in an effort to promote sustainability and reduce environmental noise.

- Fingal County Council will facilitate car share clubs over the lifetime of this plan.

- Fingal County Council will continue to reduce driving speeds in the County. A 30km/h Speed limit has been introduced on most roads in housing estates and residential areas in line with the mandatory "Guidelines for Setting and Managing Speed Limits in Ireland" issued by the Department of Transport, Tourism and Sport (March 2015). This will be expanded to remaining areas where appropriate.

- Continued use of low-noise road surfaces where appropriate. Stone Mastic Asphalt is provided on roads with speed limits less than 60kph and this has been found to have a significant reduction (about 3 dB(A)) in type /road interface noise levels when compared to dense grader asphalts.

- Use of Roadside Noise Barriers for new road construction projects where appropriate.

- Review of key national roads with TII where noise issues have been identified arising from the noise mapping. Discussions were held with Transport Infrastructure Ireland on a number of noise issues along the N1, N3, and M50.

9.2.3 Rail Reduction and Prevention Measures

Iarnród Éireann will continue to provide heavy rail services to meet passenger requirements and in accordance with Transport Policy and Strategy.

Iarnród Éireann Working Timetable of scheduled train movement will continue to be revised to take opportunity provided from infrastructure improvements and/or amendment. Where adequate train-path capacity exists additional train services will be provided.

The 'Transport Strategy for the Greater Dublin Area 2016-2035' and the 'National Development Plan 2018-2027' identify the following:

- Protect the national railway system to maintain safety and service levels; and
- Provide increased investment in focused Public Transport Programmes:
    - Delivery of priority elements of the DART Expansion Programme including investment in new train fleet, new infrastructure and electrification of existing lines;
    - Park-and-Ride Programme: strategic park and ride sites plus investment in parking facilities at rail, Luas and bus locations.

In terms of the roll out of the DART Expansion Programme, the National Transport Authority is recommending purchase of additional fleet for the DART network and measures to provide increased infrastructural capacity to enable an increase in hourly train services. It is also proposing to improve the infrastructure along all radial routes within the GDA to facilitate fast high-frequency electrified services to from City Centre to/from Drogheda, Celbridge/Hazelhatch, Maynooth/M3 Parkway and Bray/Greystones.

The short to medium term objective is to enable additional passenger services to be put in place using existing infrastructure with some enhancements. The short to medium term integrated rail network will provide a core, high-capacity transit system for the region and will deliver a very substantial increase in peak-hour capacity.
Iarnród Éireann do not have budgets available specifically relating to noise control. Iarnród Éireann will continue its principal of controlling rail noise emission at source. In specific instances and as funding permits, Iarnród Éireann may consider other forms of noise control. This will be undertaken in

consultation with the Noise Action Planning Authority on a prioritised basis and based on a quantified benefit to cost assessment

9.2.4 Aircraft Noise Reduction and Prevention Measures

Dublin International Airport is within the FCC administrative area. Noise maps for Dublin International Airport are presented within a separate Noise Action Plan entitled 'Dublin Airport Noise Action Plan 2018 – 2023'.

9.2.5 Noise in the Planning Process

Scope exists within planning and development management process to manage increased levels of noise arising from new development and development that generate noise with a view to reducing and preventing environmental noise where exposure levels can be harmful to health.

There are two main scenarios in development where noise could be considered as being a material issue, namely:

1) Introducing people into potentially noisy areas through the provision new residential housing, hospital, schools nursing homes etc. in the vicinity of existing road rail industrial or airport noise, or where there are potential high levels of noise with buildings or in adjoining gardens or public open spaces.
2) Introducing potentially noisy developments such as new or altered roads, railways, industrial sites, and airports, commercial or large sporting recreational developments into the vicinity of noise sensitive locations.

In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested in the interim, that Action Planning Authorities should examine planning policy guidance notes, such as ProPG (2017). Such guidance notes have been produced with a view to providing practitioners with guidance on a recommended approach to the management of noise within the planning system.

In view of the rapid expansion in population over the past five years in FCC, and the likelihood of future population increase and the subsequent pressure to develop more residential dwellings, FCC will need to be conscious of the risks of increase noise exposure on human health when considering potential developments in the vicinity of transport infrastructure. Land use planning, and the use of appropriate planning conditions to provide suitable noise levels within noise sensitive develops are areas which FCC should consider for improvement in order to try to mitigate future increases in noise exposure. To this end, actions have been proposed which will prompt further work.

In advance of any national guidance relating to noise in the planning process, the following actions relating to planning and development will be considered for implementation:

a) To integrate Noise Action Plans into the County Development Plans.
b) To develop guidelines relating to Noise and Planning for FCC. These guidelines should outline the considerations to be taken into account when determining planning applications for both noise-sensitive developments and for those activities which will generate noise. They should introduce the concept of a risk based approach to assessment of noise exposure, and for Good Acoustic Design to be encouraged as part of all new residential developments in FCC.
c) To require developers to produce a noise impact assessment and mitigation plans, where necessary, for any new development where the Planning Authority considers that any new development will impact negatively on pre-existing environmental noise levels within their Council area.
d) To ensure that future developments are designed and constructed in such a way as to minimise noise disturbances in accordance with Department of the Environment, Community and Local Government planning guidelines such as the Urban Design Manual. e.g. the position, direction and height of new buildings, along with their function, their distance from roads, and the position of noise barriers and buffer zones with low sensitivity to noise,
e) To ensure that new housing areas and in particular brown field developments will be planned from the outset in a way that ensures that at least the central area is quiet. This could mean designating the centre of new areas as pedestrian and cycling zones with future developments to provide road design layouts to achieve low speed areas where appropriate.
f) To incorporate street design in new developments, which recognise that residential streets have multi-function uses (e.g. movement, recreation) for pedestrians, cyclists and vehicles, in that priority order. The noise maps will be used to identify and classify the priority areas and streets. In the design of streets, cognisance should be given to the Irish Manual for Roads and Streets 2013.
g) To require sound proofing for all windows, in all new residential developments, where noise maps have indicate undesirable high noise levels. This may also lead to a requirement to install ducted ventilation.
h) To advise during pre-planning meetings regarding site specific design, the orientation of sensitive rooms and balconies away from noise, designing the layout and internal arrangement in apartments to ensure that similar rooms in individual units are located above each other or adjoin each other and that halls are used as buffer zones between sensitive rooms and staircases.

Where noise mitigation measures are deemed necessary on National Roads, FCC will:

(i) Prepare an ordered shortlist of areas possibly requiring mitigation;

(ii) Confirm that noise levels, indicated by the strategic noise maps completed by FCC in 2018, are valid through noise monitoring surveys, the identification of the most exposed façade and the presence, or otherwise, of existing acoustic mitigation measures; and

(iii) Investigate, following confirmation of mapped noise levels, possible noise mitigation measures and the completion of a cost benefit analysis by FCC with the aim of developing a selection matrix which leads towards a recommendation for action.

TII have indicated that they are available to meet with, review and discuss potential noise mitigation measures and the cost benefit analysis exercises completed by local authorities once the process detailed within this Noise Action Plan has been completed.

9.2.6 Protecting 'Quiet Areas'

Quiet Areas offer many opportunities for public recreation. They are thus not only of value to their residents but can also improve the quality of life of people living in adjacent but noisy roads, by affording opportunities for peaceful recreation from time to time. Hence, it is very important that existing quiet areas be preserved, and that new ones be created where possible.

While one aim of the Noise Action Plan is to reduce human exposure to high noise levels, another important goal is to preserve areas, which are still 'tranquil' or quiet. As part of the plan, there will be an ongoing process of identifying Quiet Areas and forwarding them to the Minister for the Environment, Community and Local Government for delimiting as Quiet Areas.

The decision support matrix will be used with the R3 noise level results for each of these public recreational open spaces in order to identify any which have a desirably low noise level which may benefit from being preserved. These locations will be identified as priority locations for noise level preservation, or as candidate quiet areas with the potential to be formally designated at a later stage in the process.

9.2.7 Noise Complaint Investigation and Control Procedures

Whilst the noise maps and the Environmental Noise Regulations are aimed at developing strategic policy, it is acknowledged that when most people complain about noise, it relates more to local issues such as neighbour, entertainment and construction noises. However, it is envisaged that the Noise Action Plan should solely concentrate on strategic issues identified by the noise mapping as systems are already in place to deal with noise nuisances, including neighbour, entertainment and construction noises.

Local noise issues will be dealt with by each Local Authority as required by the EPA Act (1992) with details of each local authority approach being outlined on their respective websites

10 Noise Implementation Plan

10.1 Objectives

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

It is proposed that the Noise Action Plan will be implemented through a staged process over 5 years with FCC endeavouring to follow the minimum time frame set out below in relation to the implementation of the Noise Action Plan. It should be noted that the implementation of the actions in the plan is dependent on resources (e.g. funding, people etc.) being made available to FCC.

First year of Plan (2019):

- Identify from noise maps where priority action is required at a local level.
- Make a list of priority areas for noise mitigation review
- Carry out noise assessment to support noise mapping levels in priority areas.
- Review planning guidance regarding noise assessment and control and develop. a programme of action to meet any shortfalls.

Second Year of Plan (2020):

- Ongoing identification of Quiet Areas and prepare submissions for approval by the Minister
- Identify a list of possible noise mitigation measures and examine their feasibility based on an estimated costing.
- Prepare a list of cost effective interventions.
- Form an implantation group to prepare planning guidance on noise assessment and control.

Third Year of Plan (2021):

- Commence implementation of the relevant cost effective interventions on a prioritised basis.

Fourth Year of Plan (2022):

- Commence capture of date for the new noise plans.
- Produce new noise maps for the Dublin Agglomeration in accordance with EPA guidance.

Fifth Year of Action Plan (2023):

- Review impact of Action Plan and amend where appropriate to prepare the Noise Plan for 2023 in accordance with EPA guidance.

11 Our Approach to Monitoring and Reporting on Noise Action Plan Delivery

We are committed to systematically reviewing our performance in the delivery of the Noise Action Plan. Our progress is informed by a review of the separate performance indicators and their associated target timescales.

We will use our review to identify the actions requiring further committed resources, and those which are most successfully managing noise impacts.

We are committed to annually reporting the progress of our Noise Action Plan, in addition to making information available on our website and via committee meetings.

We are also committed to amending the Noise Action Plan following any development on the railway network or National or Regional road networks.

12 Summary and Conclusions

This Noise Action Plan has been prepared as required by the Environmental Noise Regulations 2006, Statutory Instrument 140 of 2006. 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. This will be achieved by taking a strategic approach to managing environmental noise and following a balanced approach which promotes in the context of sustainable development.

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

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

- Of the 296,214 people living in the FCC area (based on 2016 census), 25.6%, or 74,800 people are exposed to road traffic noise sources above the desirable L_{den} level of 55 dB(A);
- 0.82 % of people living in the FCC area are exposed to rail traffic noise sources above the desirable L_{den} level of 55 dB(A); and
- Whilst the % of people exposed to noise sources above the desirable L_{den} level of 55 dB(A) has decreased since 2011, the overall population in FCC has increased, therefore the number of dwellings and people exposed to levels above 55 dB(A) L_{den} has increased.

At the end of the Noise Action Plan, a review of the program of works and policies developed over the first 5 years assessing the effectiveness of the measures adopted and determining if the measures were cost effective and value for money.

Appendix A

Definitions & Explanations.

- Agglomeration: 'Agglomeration' shall mean part of a territory, delimited by the Member State, having a population in excess of 100,000 persons and a population density such that the Member State considers it to be an urbanised area.

- Agglomeration of Dublin: 'Agglomeration of Dublin' means the county borough of Dublin, the administrative county of Dun Laoghaire/Rathdown other than those areas excluded in the First Schedule to the Air Pollution Act 1987 (Marketing, Sale and Distribution of Fuels) Regulations 1998 (S.I. No. 118 of 1998), and the administrative counties of Fingal and South Dublin;

- 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. Noise is sometimes defined as unwanted sound.

- Decibel dB(A): A unit of measurement of sound.

- 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. Lden is calculated as follows:
- $L_{den} = 10 \times \left(\frac{1}{24}\right)\left(12 \times 10^{\left(\frac{L_{day}}{10}\right)} + 4 \times 10^{\left(\frac{5+L_{evening}}{10}\right)} + 8 \times 10^{\left(\frac{10+L_{night}}{10}\right)}\right)$ dB(A)
- Daytime: Between the hours of 7am and 7pm

- 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

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

- $L_{evening}$: (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.

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

- L_{night}: (night-time noise indicator) shall mean the noise indicator for sleep disturbance. This is the average value in decibels for the night-time period

- 'Major intensification': An Action(s) that is likely to lead to a breach of any statutory noise limit, or national guide value or standard, or an action(s) that leads to and increase in noise levels above the undesirable noise levels' or likely to increase the pre-existing annual Lden by more than 5dB

- Noise Indicator: Method used to measure or quantify sound, in decibels, in order to equate it with what might be perceived as noise.

Appendix B

Public Consultation

The following Bodies\Agencies will be circulated for comment on this draft document:

- An Bord Pleanála
- An Taisce
- Bord Fáilte (Planning Section)
- Chambers of Commerce
- CODEMA
- County Development Boards
- ESB
- Department of Communications, Climate Action and Environment
- Department of Housing, Planning and Local Government
- Department of Transport, Tourism and Sport
- Dublin Airport Authority
- Dublin Bus
- Dublin City Business Association
- Environmental Protection Agency
- Health Service Executive
- Iarnród Éireann
- Irish Aviation Authority
- National Transport Authority
- Transport Infrastructure Ireland
- Office of Public Works

Appendix C

FCC IPPC Licensed Facilities

Table 16 – Summary of IPPC Licensed Facilities in FCC

IPPC Reg No.	Name	Location of Facility
P0007-01	Astellas Ireland Company Limited	Dublin Plant, Damastown Road, Damastown Industrial Estate, Mulhuddart, Dublin 15.
P0007-02	Astellas Ireland Company Limited	Dublin Plant, Damastown Road, Damastown Industrial Estate, Mulhuddart, Dublin 15.
P0007-03	Astellas Ireland Company Limited	Dublin Plant, Damastown Road, Damastown Industrial Estate, Mulhuddart, Dublin 15.
P0014-01	Sk Biotek Ireland Limited	Watery Lane, Swords, County Dublin.
P0014-02	Sk Biotek Ireland Limited	Watery Lane, Swords, County Dublin.
P0014-03	Sk Biotek Ireland Limited	Watery Lane, Swords, County Dublin.
P0014-04	Sk Biotek Ireland Limited	Watery Lane, Swords, County Dublin.
P0050-01	Guerbet Ireland Unlimited Company	Guebret Ireland Unlimited Company, Damastown, Mulhuddart, Dublin 15.
P0050-02	Guerbet Ireland Unlimited Company	Guebret Ireland Unlimited Company, Damastown, Mulhuddart, Dublin 15.
P0060-01	Arch Chemicals BV	Watery Lane, Swords, Co. Dublin.
P0071-01	Reheis Inc	Kilbarrack Road, Dublin 5.
P0071-02	Reheis Inc	Kilbarrack Road, Dublin 5.
P0081-01	Lagan Bitumen Limited	Rosemount Business Park, Ballycoolin Road, Blanchardstown, Dublin 11.
P0081-02	Lagan Bitumen Limited	Rosemount Business Park, Ballycoolin Road, Blanchardstown, Dublin 11.
P0083-01	Evode Industries Limited	Newtown, Swords, Co. Dublin.
P0097-01	Newport Synthesis Ltd.	Baldoyle Industrial Estate, Grange Road, Baldoyle, Dublin 13.
P0117-01	Ipsen Manufacturing Ireland Ltd	Blanchardstown Industrial Park, Snugborough Road, Blanchardstown, Dublin 15.

P0117-02	Ipsen Manufacturing Ireland Ltd	Blanchardstown Industrial Park, Snugborough Road, Blanchardstown, Dublin 15.
P0125-01	Clarochem Ireland Limited	Damastown, Mulhuddart, Dublin 15.
P0125-02	Clarochem Ireland Limited	Damastown, Mulhuddart, Dublin 15.
P0143-01	Wood-Printcraft Limited	17 Greencastle Parade, Coolock Industrial Estate, Dublin 17.
P0149-01	Modus Media International Dublin	Clonshaugh Industrial Estate, Clonshaugh, Dublin 17.
P0189-01	AIBP	AIBP T/A AIBP Dublin, Cloghran, Swords, Co Dublin.
P0231-01	I. B. C. Limited	Irish Building Chemicals, Baldoyle Industrial Estate, Baldoyle, Dublin 13.
P0250-01	Manders Coatings & Inks Ireland Limited	Dunsinea Works, Ashtown, Dublin 15.
P0421-01	Team Aer Lingus Limited	Dublin Airport, County Dublin.
P0434-01	Hitech Plating Limited	Unit 10, Ballycoolin Business Park, Blanchardstown, Dublin 15.
P0434-02	Hitech Plating Limited	Unit 10, Ballycoolin Business Park, Blanchardstown, Dublin 15.
P0474-01	Kelly Timber Frame Limited	Kilshane Cross, North Road, Finglas, Dublin 11.
P0480-01	Dublin Aerospace Limited	Dublin Airport, County Dublin.
P0480-02	Dublin Aerospace Limited	Dublin Airport, County Dublin.
P0483-01	Huntstown Power Company Limited	Huntstown, Finglas, Dublin 11.
P0483-02	Huntstown Power Company Limited	Huntstown, Finglas, Dublin 11.
P0483-03	Huntstown Power Company Limited	Huntstown, Finglas, Dublin 11.
P0483-04	Huntstown Power Company Limited	Huntstown, Finglas, Dublin 11.
P0484-01	James McMahon Limited	North West Business Park, Ratoath Road, Grange Townland, Co. Dublin.
P0522-	Barclay Chemicals	Damastown, Mulhuddart, County Dublin.

01	Manufacturing Limited	
P0535-01	IBM International Holdings Ireland	IBM Technology Campus, Damastown Industrial Estate, Mulhuddart, Dublin 15.
P0552-01	Swords Laboratories	Swords Laboratories (T/A Bristol-Myers Squibb Cruiserath Biologics), Cruiserath Road, Mulhuddart, Dublin 15.
P0552-02	Swords Laboratories	Swords Laboratories (T/A Bristol-Myers Squibb Cruiserath Biologics), Cruiserath Road, Mulhuddart, Dublin 15.
P0552-03	Swords Laboratories	Swords Laboratories (T/A Bristol-Myers Squibb Cruiserath Biologics), Cruiserath Road, Mulhuddart, Dublin 15.
P0569-01	Ireland Power Energy Limited	Damastown Industrial Estate, Powerstown and Macetown North, Mulhuddart, Dublin 15.
P0777-01	Viridian Power Limited	Huntstown, Finglas, Dublin 11.
P0777-02	Viridian Power Limited	Huntstown, Finglas, Dublin 11.
P0780-01	Brooks Group Limited	Unit BC 5-8, M1 Business Park, Courtlough, Balbriggan, Fingal, Dublin.
P0886-01	Rottapharm Limited	Damastown Industrial Park, Mulhuddart, Dublin 15.
P0886-02	Rottapharm Limited	Damastown Industrial Park, Mulhuddart, Dublin 15.
P0921-01	International Aerospace Coatings Limited	Hangar 3, Dublin Airport, County Dublin.
P0993-01	Huntstown BioEnergy Limited	Huntstown, North Road, Finglas, Dublin 11.
P1014-01	Pacon Waste & Recycling Ltd	Stephenstown Business Park, Balbriggan, County Dublin.
P1030-01	Alexion Pharma International Trading	College Business & Technology Park, Blanchardstown Road North, Blanchardstown, Dublin 15.
P1060-01	Mallinckrodt Pharmaceuticals Ireland Limited	College Business and Technology Park, Cruiserath Road, Blanchardstown, Dublin 15.
W0009-03	Fingal County Council/Balleally Landfill	Balleally, Lusk, Co. Dublin.
W0183-01	Starrus Eco Holdings Limited	Millennium Business Park, Grange, Ballycoolin, Dublin 11.
W0183-	Starrus Eco Holding Limited	Milennium Business Park, Cappagh Road, Grange,

02		Ballycoolin, Dublin 11.
W0222-01	Advanced Environmental Solutions (Ireland) Limited	Coldwinters, Blakescross, Lusk, Co. Dublin.
W0231-01	Fingal County Council/Fingal Landfill, Nevitt	Lusk, County Dublin.
W0242-02	Padraig Thornton Waste Disposal Ltd t/a Thorntons Recycling	Millennium Business Park Facility, Millennium Business Park, Cappagh Road (in townlands of Grange and Cappoge), Dublin 11.

Appendix D

Dublin Agglomeration Road Traffic Noise Exposure Map and Tables

Table 17 – Noise Emissions from All Roads and Major Roads within FCC

Element	Data	All Roads	Major Roads		All Roads	Major Roads
Lden<55	Number of people in dwellings Lden <55dB	221414	239014			
Lden5559	Number of people in dwellings Lden 55-59dB	37400	28400	**People> 55**	74800	57200
Lden6064	Number of people in dwellings Lden 60-64dB	22300	15900			
Lden6569	Number of people in dwellings Lden 65-69dB	11300	9100	**People> 65**	15100	12900
Lden7074	Number of people in dwellings Lden 70-74dB	3300	3300			
Lden>75	Number of people in dwellings Lden >75dB	500	500	**People> 75**	500	500
Lnight<50	Number of people in dwellings Lnight 50-54dB	241214	251314			
Lnight5054	Number of people in dwellings Lnight 50-54dB	32300	25600	**People> 50**	55000	44900
Lnight5559	Number of people in dwellings Lnight 55-59dB	16100	12800			
Lnight6064	Number of people in dwellings Lnight 60-64dB	4800	4700	**People> 60**	6600	6500
Lnight6569	Number of people in dwellings Lnight 65-69dB	1500	1500			
Lnight>70	Number of people in dwellings Lnight >70dB	300	300	**People> 70**	300	300
Area Lden<55	Area in km2 Lden <55dB	308	344			
Area Lden5559	Area in km2 Lden 55-59dB	68	47	**Area>55**	150	114
Area Lden6064	Area in km2 Lden 60-64dB	43	34			
Area Lden6569	Area in km2 Lden 65-69dB	23	18	**Area>65**	39	33
Area Lden7074	Area in km2 Lden 70-74dB	9	8			
Area Lden>75	Area in km2 Lden >75dB	7	7	**Area>75**	7	7
Dwellings Lden<55	Number of dwellings Lden <55dB	76200	82700			
Dwellings Lden5559	Number of dwellings Lden 55-59dB	13600	10400	**Dwellings>55**	28000	21500

Dwellings Lden6064	Number of dwellings Lden 60-64dB	8400	**6000**			
Dwellings Lden6569	Number of dwellings Lden 65-69dB	4500	**3600**	**Dwellings>65**	6000	**5100**
Dwellings Lden7074	Number of dwellings Lden 70-74dB	1300	**1300**			
Dwellings Lden>75	Number of dwellings Lden >75dB	200	**200**	**Dwellings>75**	200	**200**

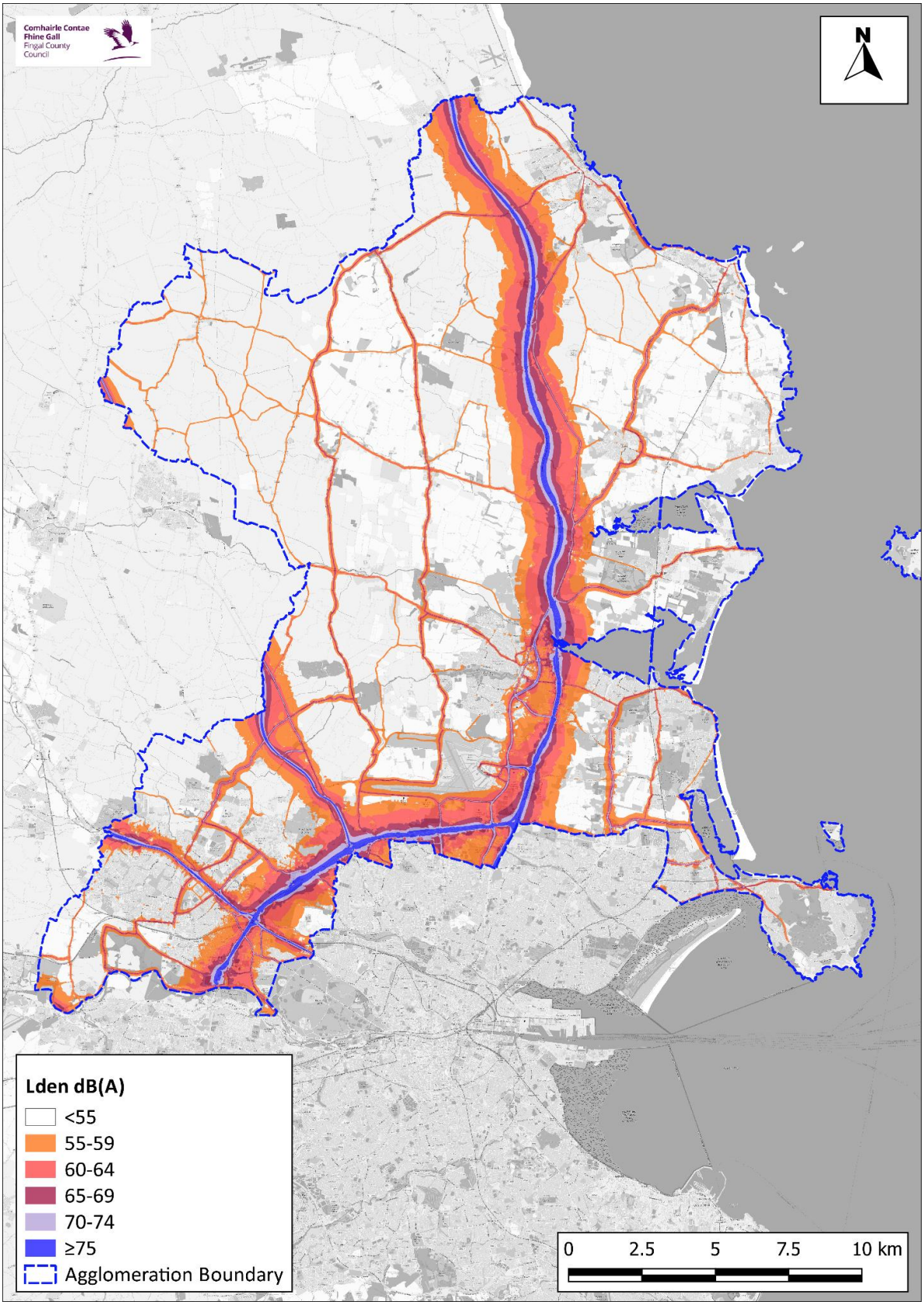


Figure 5 - 2017 Noise Exposure Map – All Roads L_{den} dB(A) FCC

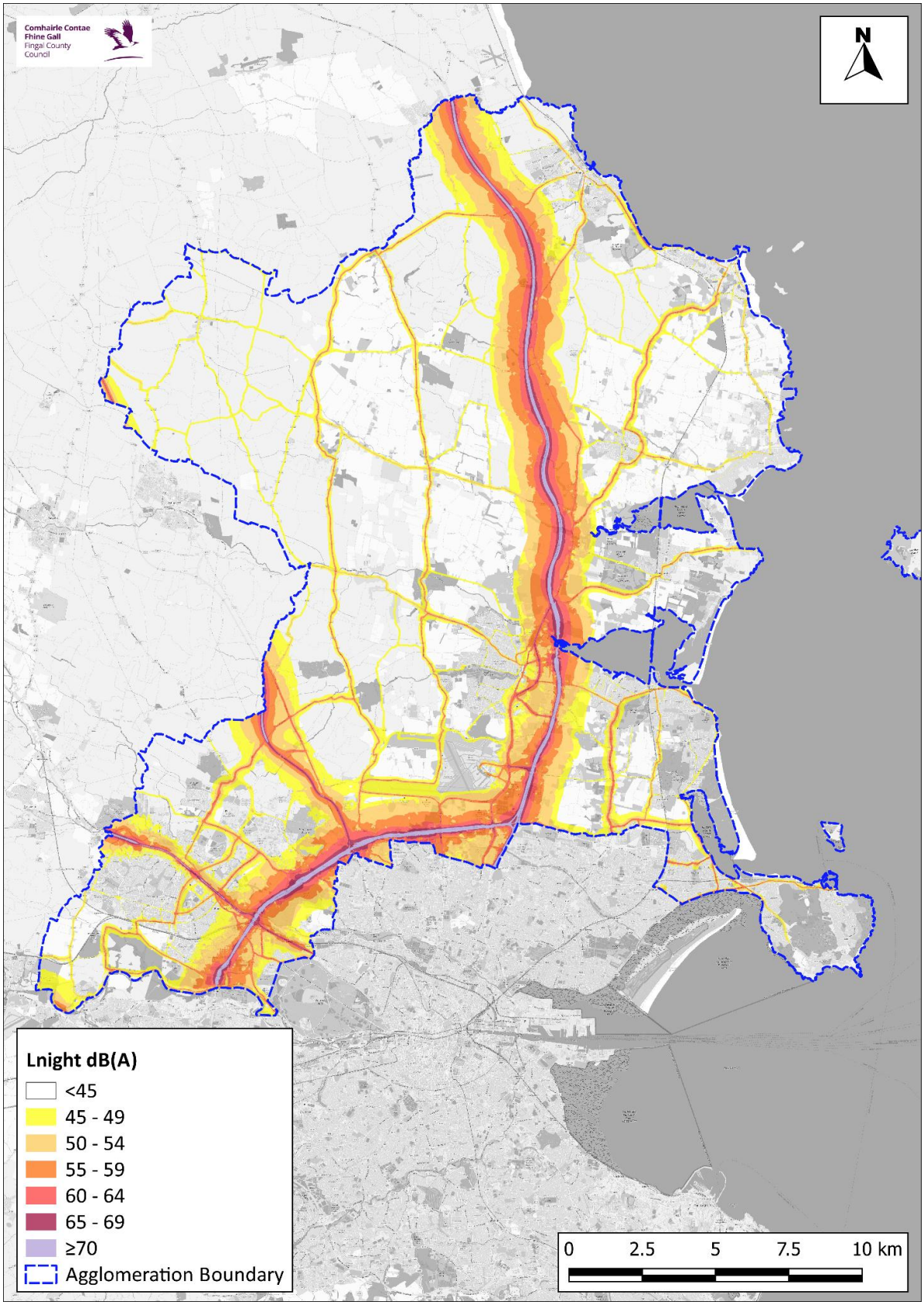


Figure 6 - 2017 Noise Exposure Map – All Roads L_{night} dB(A) FCC

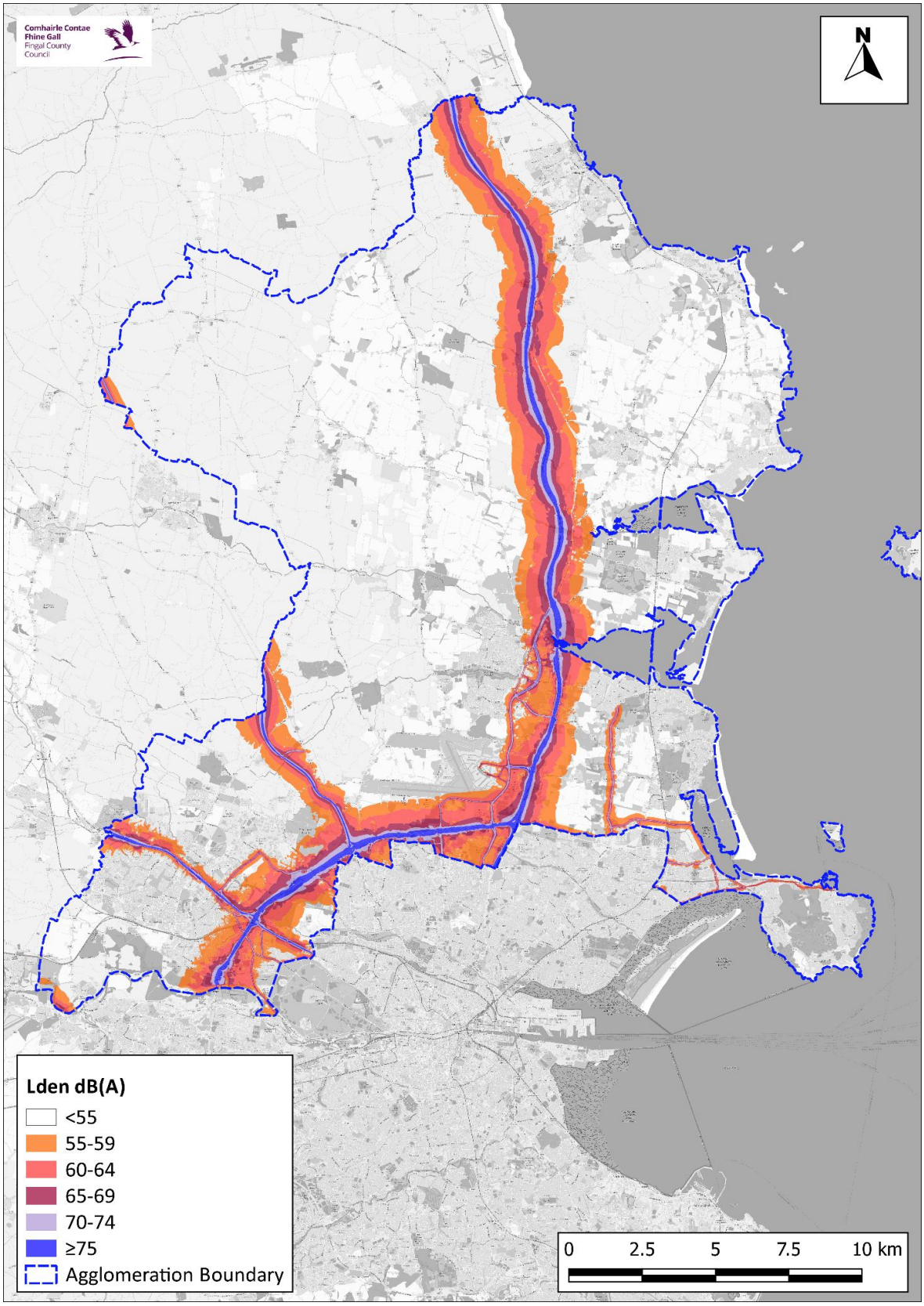


Figure 7 - 2017 Noise Exposure Map – Major Roads L_{den} dB(A) FCC

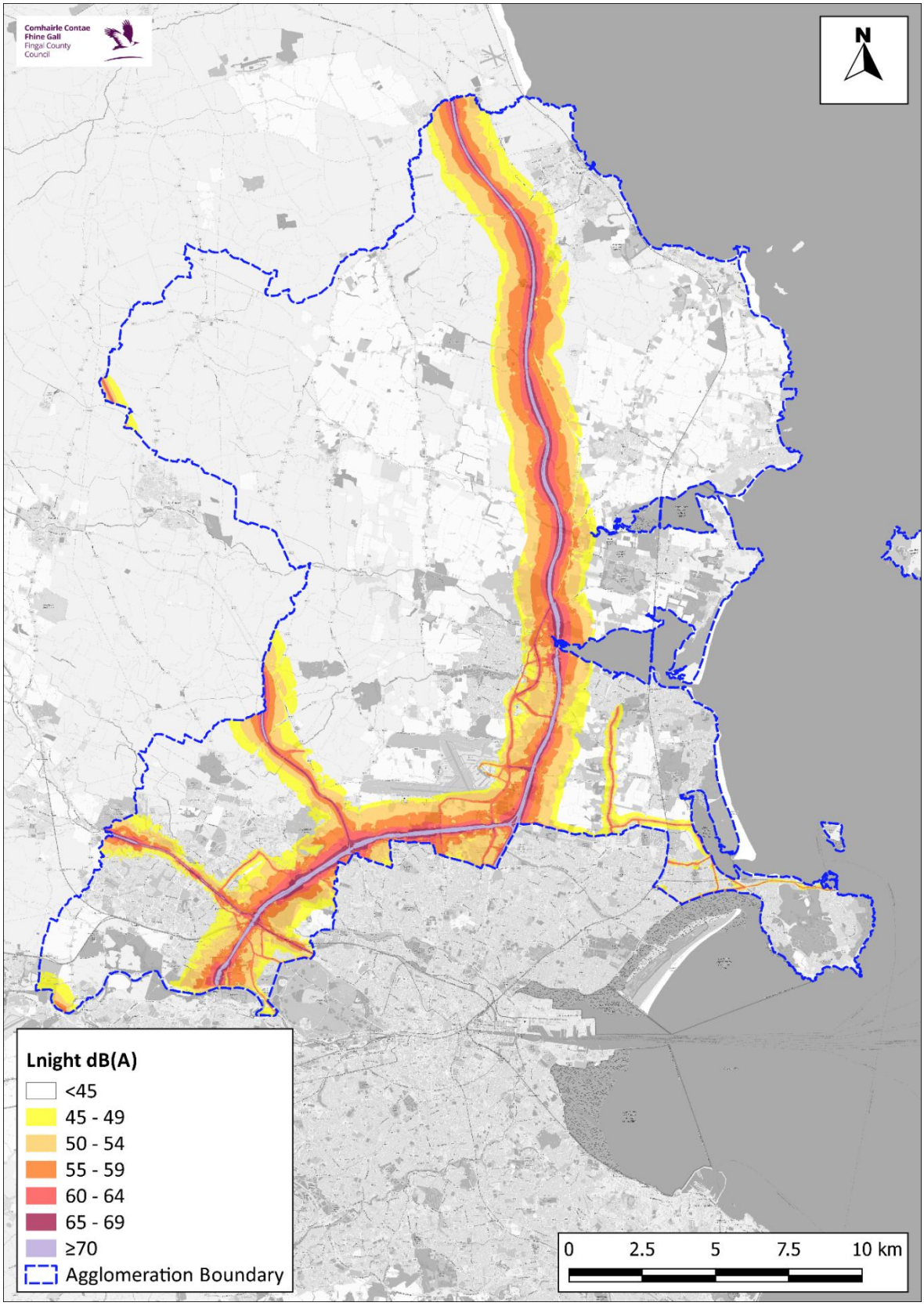


Figure 8 - 2017 Noise Exposure Map – Major Roads L_{night} dB(A) FCC

Appendix E

Dublin Agglomeration Rail Traffic Noise Exposure Map and Tables

Table 18 – Noise Emissions from All Rail and Major Rail within FCC

Element	Data	All Rail	Major Rail		All Rail	Major Rail
Lden<55	Number of people in dwellings Lden <55dB	293814	295414			
Lden5559	Number of people in dwellings Lden 55-59dB	1600	600	**People> 55**	2400	800
Lden6064	Number of people in dwellings Lden 60-64dB	700	200			
Lden6569	Number of people in dwellings Lden 65-69dB	100	0	**People> 65**	100	0
Lden7074	Number of people in dwellings Lden 70-74dB	0	0			
Lden>75	Number of people in dwellings Lden >75dB	0	0	**People> 75**	0	0
Lnight<50	Number of people in dwellings Lnight 50-54dB	293814	295814			
Lnight5054	Number of people in dwellings Lnight 50-54dB	1200	400	**People> 50**	1400	400
Lnight5559	Number of people in dwellings Lnight 55-59dB	200	0			
Lnight6064	Number of people in dwellings Lnight 60-64dB	0	0	**People> 60**	0	0
Lnight6569	Number of people in dwellings Lnight 65-69dB	0	0			
Lnight>70	Number of people in dwellings Lnight >70dB	0	0	**People> 70**	0	0
Area Lden<55	Area in km2 Lden <55dB	452	456			
Area Lden5559	Area in km2 Lden 55-59dB	3	1	**Area>55**	6	2
Area Lden6064	Area in km2 Lden 60-64dB	2	1			
Area Lden6569	Area in km2 Lden 65-69dB	1	0	**Area>65**	1	0
Area Lden7074	Area in km2 Lden 70-74dB	0	0			
Area Lden>75	Area in km2 Lden >75dB	0	0	**Area>75**	0	0
Dwellings Lden<55	Number of dwellings Lden <55dB	103100	103800			
Dwellings Lden5559	Number of dwellings Lden 55-59dB	700	300	**Dwellings>55**	1100	400

Dwellings Lden6064	Number of dwellings Lden 60-64dB	300	100			
Dwellings Lden6569	Number of dwellings Lden 65-69dB	100	0	**Dwellings>65**	100	0
Dwellings Lden7074	Number of dwellings Lden 70-74dB	0	0			
Dwellings Lden>75	Number of dwellings Lden >75dB	0	0	**Dwellings>75**	0	0

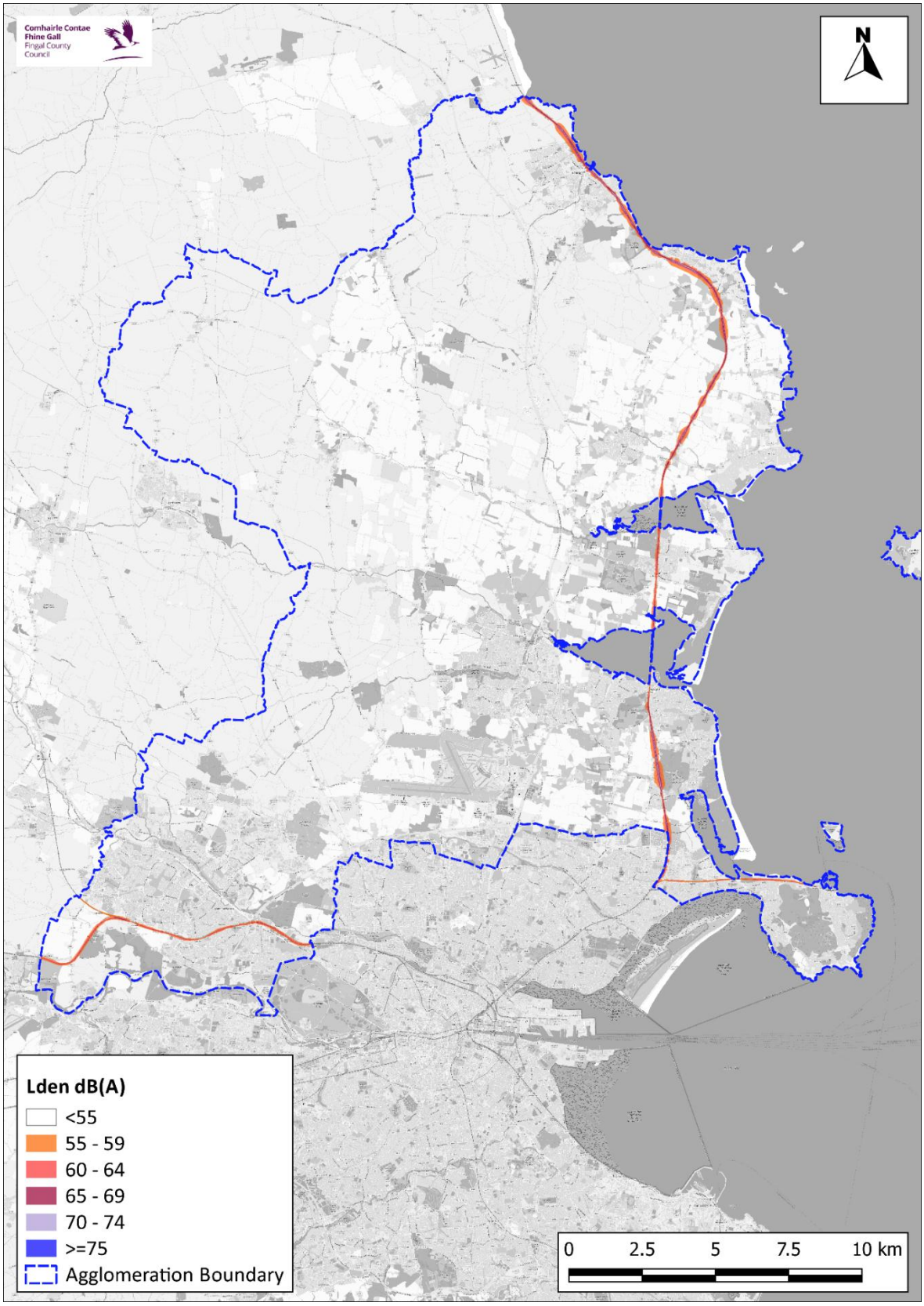


Figure 9 - 2017 Noise Exposure Map – All Rail L_{den} dB(A) FCC

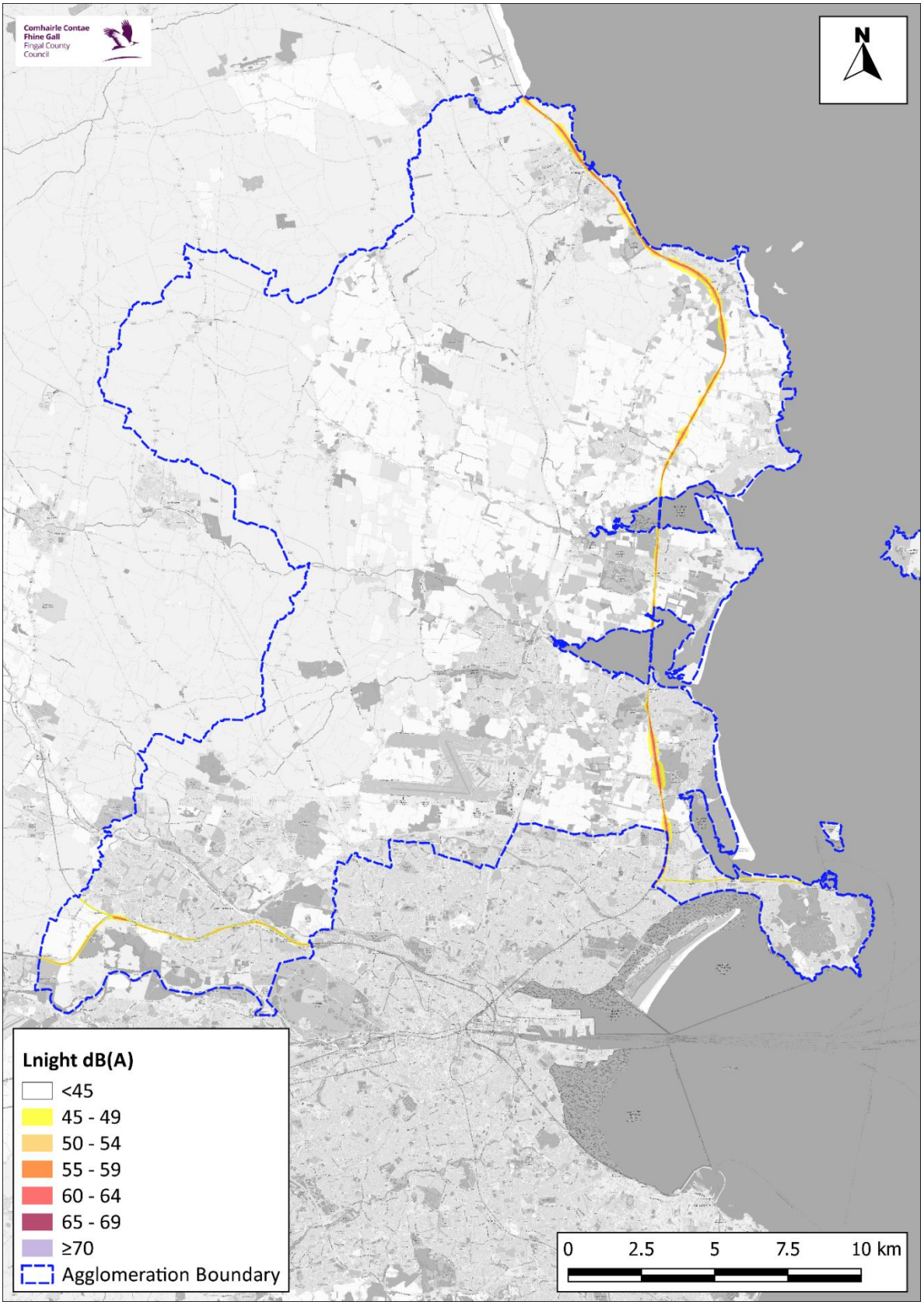


Figure 10 - 2017 Noise Exposure Map – All Rail L_{night} dB(A) FCC

Figure 11 - 2017 Noise Exposure Map – Major Rail L_{den} dB(A) FCC

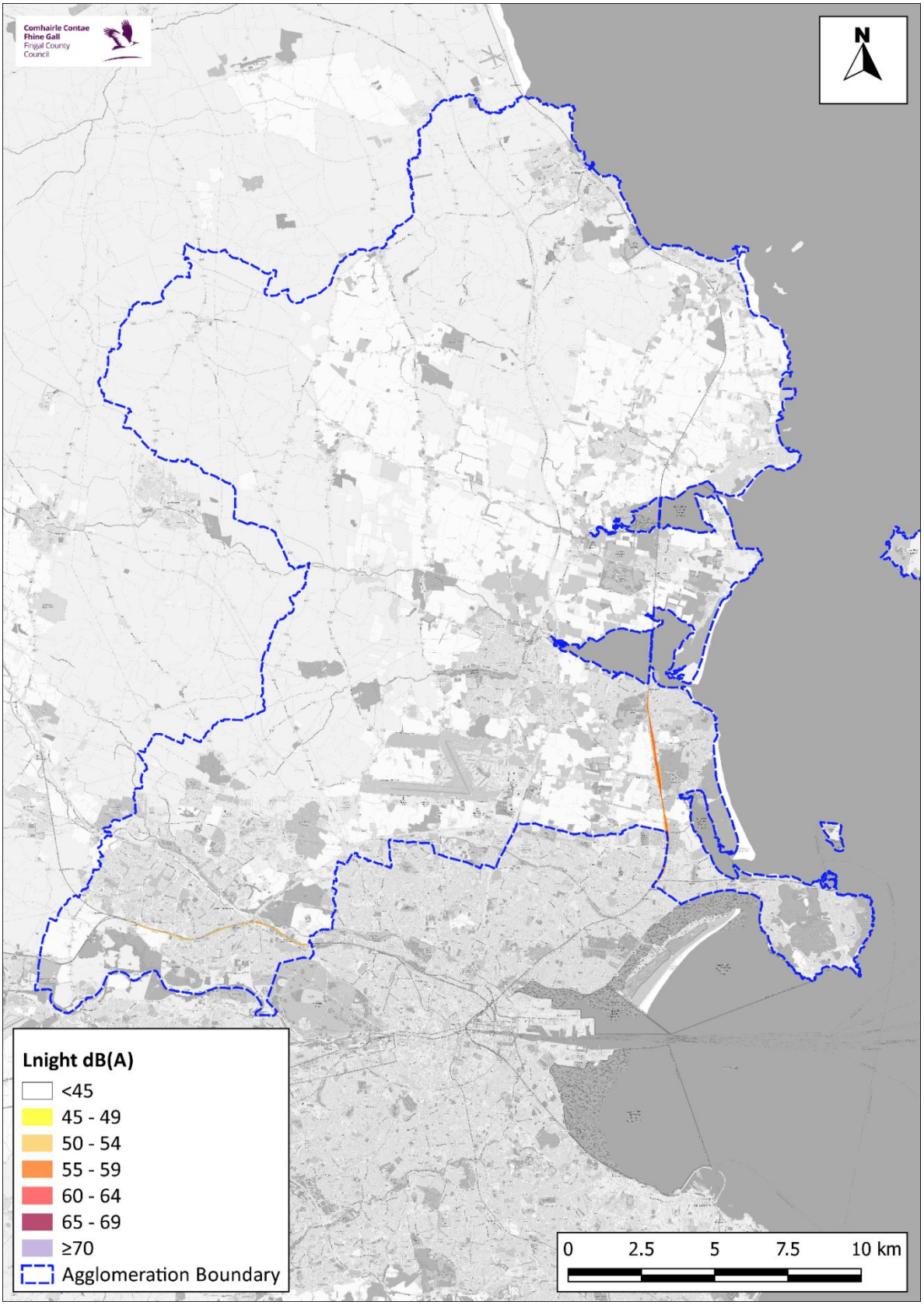


Figure 12 - 2017 Noise Exposure Map – Major Rail L_{night} dB(A) FCC

Appendix F

Noise Colour Band Scheme

The noise level band colour schemes used for the noise exposure maps are based upon those set out within ISO 1996-2 'Acoustics: Description and measurement of environmental noise – Part 2: Acquisition of data pertinent to land use' (1987), as recommended in the EPA Guidance Note.

Table 19 - Noise Level Band Colour Scheme for Lden Maps

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

Table 20 - Noise Level Band Colour Scheme for Lnight Maps

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

Appendix G

Strategic Environmental Assessment (SEA) Screening

Screening Statement

The purpose of this report is to establish whether or not a Strategic Environmental Assessment (SEA) should be carried out on the Fingal County Council 'Draft Action Plan for the Assessment and Management of Environmental Noise'. It is recommended by the EPA that an SEA pre-screening of the Action Plan and associated consultation with relevant environmental authorities is carried out as part of the public consultation process. This SEA pre-screening determines whether the Round 3 Action Plans could potentially give rise to some significant negative environmental effects.

Purpose of the Plan

The purpose of the draft Action Plan is to develop a clear and integrated set of actions providing for the assessment of environmental noise but which notably address priorities based upon noise mapping results with a view to preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserving environmental acoustic quality where it is good. The focus of the draft action plan is to set down actions at a strategic level, to manage noise issues and effects, including noise reduction if necessary.

Background to the Draft Action Plans for the Assessment and Management of Environmental Noise 2018-2023

This draft Action Plan will replace the current Action Plan 2013-2018. The plan provides an overview of regulation, reviews the results of the latest strategic noise maps for Fingal County Council and sets out an approach to the strategic management and control of environmental noise over the next five years. As there is no provision in legislation upon which the actions outlined in the Plan can be enforced, reliance will be made on various other plans and policies such as the Dublin Development Plan, the Draft National Planning Framework 2040 and the Planning Acts, for their implementation. This draft plan also provides the basis for feedback and input from statutory authorities and the public to help inform this draft Action Plan in relation to the assessment and management of environmental noise.

Policy Context

The draft Fingal County Council Action Plan relates to the Fingal County Council region. As required by the EU Directive 2002/49/EC relating to The Assessment and Management of Environmental Noise, (known as the 'END' Directive) which was transposed into Irish law by the Environmental Noise Regulations, SI number 140 of 2006, this draft Action Plan is aimed at managing 'Environmental Noise'. Fingal County Council has prepared this draft plan for the Fingal County Council region which will form part of a combined plan for the Dublin Agglomeration i.e. the region covered by Fingal County Council, South Dublin County Council, Dublin City Council, and Dún Laoghaire-Rathdown County Council, who are the designated action planning authorities under article 7 of the Environmental Noise Regulations 2006. It is proposed that this plan will be in place on the expiration of the current plan in November 2018 and will cover the period between December 2018 and November 2023.

A SEA pre-screening was carried out to determine whether the *Draft Fingal County Council Action Plan Relating to the Assessment and Management of Environmental Noise* required a full SEA. The type of pre-screening checks that were completed are outlined in the EPA report '*Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland'*. (Appendix B; SEA Checklist)[3]. The screening is based on a systematic evaluation of the criteria in Annex II of the SEA Directive (Schedule 1 of the SEA Regs).

Task 1.1 Apply pre-screening check using decision-tree

The pre-screening check is based on questions of an administrative nature, which can be rapidly checked by the authority to determine whether the P/P should be taken to the second screening stage. It allows rapid screening-out of those P/Ps that are clearly not going to have any environmental impact and screening-in of those that definitely do require SEA.

A "decision-tree" or flowchart is provided which simplifies the complex wording of the SEA Directive into a systematic and logical series of questions. This is shown in Fig. 1.

The decision-tree uses the criteria set out in the SEA Directive to decide if SEA is required or not. Unlike the environmental significance screening criteria, which are used in Task 1.2, the questions in the decision-tree are more "administrative" in nature and are based upon the status of the P/P in question.

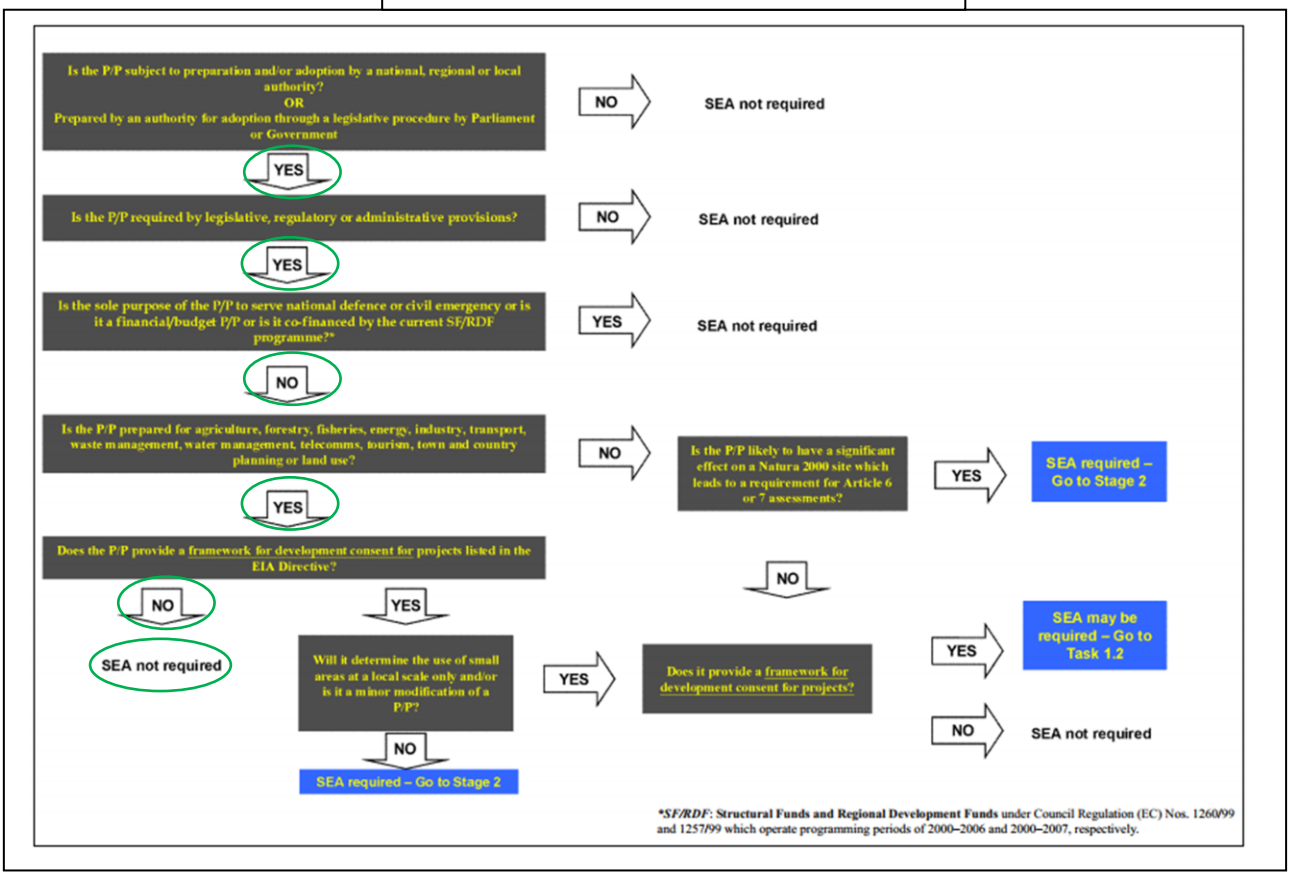
As a result of this Task, the following possible outcomes could arise:

1. P/P applies to one or more of the 11 sectors quoted in the SEA Directive and provides a framework for development consent of projects requiring EIA. It should, therefore, be taken forward to Stage 2.

2. P/P will significantly affect a Natura 2000 site and, therefore, requires an assessment under the Habitats Directive. It can be moved forward to Stage 2.

3. The P/P does not fall into any of the sectors covered by the Directive, it will not significantly affect a Natura 2000 site nor does it provide a framework for development consent. It is, therefore, screened-out by the prescreening check and no further consideration of its possible impacts is required. Under such circumstances, a note, highlighting the screening criteria applied

Fig.1 EPA SEA Pre-Screening Guidance



The Pre-screening Statement, which presents the results of the required task 1.1, are set out below

Stage 1 – SEA Pre-Screening of Plans and Programmes (P/P) - decision-tree

Is the P/P subject to preparation and/or adoption by a national, regional or local authority? OR Prepared by an authority for adoption through a legislative procedure by Parliament or Government	**Yes.** The Action Plan is required to be made or revised every 5 years for the Agglomeration of Dublin under Directive 2002/49/EC and S.I. No. 140 of 2006, Environmental Noise Regulations and required to be adopted by Fingal County Council, being an Action Planning Authority as prescribed by S.I No. 140 of 2006
Is the P/P required by legislative, regulatory or administrative provisions?	**Yes.** The Action Plan is required to be made or revised every 5 years for the Agglomeration of Dublin under Directive 2002/49/EC and S.I. No. 140 of 2006, Environmental Noise Regulations
Is the sole purpose of the P/P to serve national defence or civil emergency or is it a financial/budget P/P or is it co-financed by the current SF/RDF programme	**No**
Is the P/P prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecoms, tourism, town and country planning or land use?	**Yes.** The draft Action Plan mainly relates to the management of Transport and Land Use.
Does the P/P provide a framework for the development consent for projects listed in the EIA Directive?	**No.** The plan does not the set the framework for projects and other activities listed in the EIA Directive and attached to the end of this pre-screening report for completeness. As the Noise Mapping stage has excluded major industries as listed in the EIA Directive, Annex I&II from assessment, and as this draft Action Plan will primarily base its actions on the outputs of the noise mapping process and as the control of major industry and major projects are managed and controlled by other legislation, it is not proposed that the draft Action Plan will cover such major industry or projects. The draft Action Plan informs how Fingal County Council fulfils its obligations under the Environmental Noise Directive 2002/49/EC which provides the objective of assessing and managing environmental noise. The draft Fingal County Council Action Plan is relevant for other plans and programmes that will influence the assessment and management of noise. Therefore the draft Action Plan will be in line with programmes such as:- • The Fingal County Council Development Plan.

	• The Draft National Planning Framework 2040. • Local Area Plans. • Transport strategy for the Greater Dublin Area, 2016 to 2030. • Smarter Travel – A Sustainable Transport Future 2009-2020 • National Cycle Policy Framework 2009-2020. The draft Action Plan will have a positive impact on the environment with respect to the assessment and management of environmental noise and no environmental problems are envisaged as result of the plan. For the most part actions proposed under this draft Action Plan will rely on various other planning frameworks and policies, such as the Dublin Development Plan, the Draft National Planning Framework 2040 and the Planning Acts, for their progression and implementation.
Is the P/P likely to have a significant effect on a Natura 2000 site which leads to a requirement for Article 6 or 7 assessments?	**No.** Appropriate Assessment Screening was carried out and based on the 'Screening Matrix' and 'Finding of No Significant Effects Matrix' it was concluded that there will be no direct, indirect or cumulative impact on any Natura 2000 site on implementation of the draft Action Plan. Accordingly, it has been determined that an Appropriate Assessment (AA) is not required. The AA Screening is attached to the Draft Action Plan in Appendix D.

Task 1.1 establishes whether the relevant P/P must undergo an SEA. It uses a series of procedural tasks, firstly to consider the overall characteristics of the P/P to see if it falls within the requirements of the SEA Directive. Task 1.2 requires the potential environmental significance of implementing the proposed P/P to be gauged according to a series of significance criteria. As the pre-screening indicated that the Action Plan did not provide a framework for development consent for projects listed in the EIA Directive and therefore does not require a full SEA, this second task was not proceeded with and it was therefore not considered necessary to undertake any further stages of the SEA process. The SEA Directive requires that the results of the screening process, as required by Article 3(5) and including the reasons for not requiring an SEA are made publicly available.

ANNEX I PROJECTS REFERRED TO IN ARTICLE 4(1) EIA Directive

1. Crude-oil refineries (excluding undertakings manufacturing only lubricants from crude oil) and installations for the gasification and liquefaction of 500 tonnes or more of coal or bituminous shale per day.

2. (a) Thermal power stations and other combustion installations with a heat output of 300 megawatts or more; (b) Nuclear power stations and other nuclear reactors including the dismantling or decommissioning of such power stations or reactors [1] (except research installations for the

production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load).

3. (a) Installations for the reprocessing of irradiated nuclear fuel; (b) Installations designed: (i) for the production or enrichment of nuclear fuel; (ii) for the processing of irradiated nuclear fuel or high-level radioactive waste; (iii) for the final disposal of irradiated nuclear fuel; (iv) solely for the final disposal of radioactive waste; (v) solely for the storage (planned for more than 10 years) of irradiated nuclear fuels or radioactive waste in a different site than the production site.

4. (a) Integrated works for the initial smelting of cast iron and steel; (b) Installations for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes.

5. Installations for the extraction of asbestos and for the processing and transformation of asbestos and products containing asbestos: for asbestos-cement products, with an annual production of more than 20000 tonnes of finished products, for friction material, with an annual production of more than 50 tonnes of finished products, and for other uses of asbestos, utilisation of more than 200 tonnes per year.

6. Integrated chemical installations, i.e. those installations for the manufacture on an industrial scale of substances using chemical conversion processes, in which several units are juxtaposed and are functionally linked to one another and which are: (a) for the production of basic organic chemicals; (b) for the production of basic inorganic chemicals; (c) for the production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers); (d) for the production of basic plant health products and of biocides; (e) for the production of basic pharmaceutical products using a chemical or biological process; (f) for the production of explosives.

7. (a) Construction of lines for long-distance railway traffic and of airports [2] with a basic runway length of 2100 m or more; (a) Construction of motorways and express roads [3]; (b) Construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road or realigned and/or widened section of road would be 10 km or more in a continuous length.

8. (a) Inland waterways and ports for inland-waterway traffic which permit the passage of vessels of over 1350 tonnes; (a) Trading ports, piers for loading and unloading connected to land and outside ports (excluding ferry piers) which can take vessels of over 1350 tonnes.

9. Waste disposal installations for the incineration, chemical treatment as defined in Annex I to Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste [4] under heading D9, or landfill of hazardous waste, as defined in point 2 of Article 3 of that Directive.

10. Waste disposal installations for the incineration or chemical treatment as defined in Annex I to Directive 2008/98/EC under heading D9 of nonhazardous waste with a capacity exceeding 100 tonnes per day.

11. Groundwater abstraction or artificial groundwater recharge schemes where the annual volume of water abstracted or recharged is equivalent to or exceeds 10 million cubic metres.

12. (a) Works for the transfer of water resources between river basins where that transfer aims at preventing possible shortages of water and where the amount of water transferred exceeds 100 million cubic metres/year; (b) In all other cases, works for the transfer of water resources between river basins where the multi-annual average flow of the basin of abstraction exceeds 2000 million cubic metres/year and where the amount of water transferred exceeds 5 % of that flow. In both cases transfers of piped drinking water are excluded.

13. Waste water treatment plants with a capacity exceeding 150000 population equivalent as defined in point 6 of Article 2 of Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment [5].

14. Extraction of petroleum and natural gas for commercial purposes where the amount extracted exceeds 500 tonnes/day in the case of petroleum and 500000 cubic metres/day in the case of gas. 15. Dams and other installations designed for the holding back or permanent storage of water, where a new or additional amount of water held back or stored exceeds 10 million cubic metres. 16. Pipelines with a diameter of more than 800 mm and a length of more than 40 km: (a) for the transport of gas, oil, chemicals; (b) for the transport of carbon dioxide (CO2) streams for the purposes of geological storage, including associated booster stations.

17. Installations for the intensive rearing of poultry or pigs with more than: (a) 85000 places for broilers, 60000 places for hens; (b) 3000 places for production pigs (over 30 kg); or (c) 900 places for sows.

18. Industrial plants for the production of: (a) pulp from timber or similar fibrous materials; (b) paper and board with a production capacity exceeding 200 tonnes per day.

19. Quarries and open-cast mining where the surface of the site exceeds 25 hectares, or peat extraction, where the surface of the site exceeds 150 hectares.

20. Construction of overhead electrical power lines with a voltage of 220 kV or more and a length of more than 15 km.

21. Installations for storage of petroleum, petrochemical, or chemical products with a capacity of 200000 tonnes or more.

22. Storage sites pursuant to Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide [6].

23. Installations for the capture of CO2 streams for the purposes of geological storage pursuant to Directive 2009/31/EC from installations covered by this Annex, or where the total yearly capture of CO2 is 1,5 megatonnes or more.

24. Any change to or extension of projects listed in this Annex where such a change or extension in itself meets the thresholds, if any, set out in this Annex. [1] Nuclear power stations and other nuclear reactors cease to be such an installation when all nuclear fuel and other radioactively contaminated elements have been removed permanently from the installation site. [2] For the purposes of this Directive, "airport" means an airport which complies with the definition in the 1944 Chicago Convention setting up the International Civil Aviation Organisation (Annex 14). [3] For the purposes of this Directive, "express road" means a road which complies with the definition in the European Agreement on Main International Traffic Arteries of 15 November 1975.

ANNEX II PROJECTS REFERRED TO IN ARTICLE 4(2) EIA Directive

1. AGRICULTURE, SILVICULTURE AND AQUACULTURE (a) Projects for the restructuring of rural land holdings; (b) Projects for the use of uncultivated land or semi-natural areas for intensive agricultural purposes; (c) Water management projects for agriculture, including irrigation and land drainage projects; (d) Initial afforestation and deforestation for the purposes of conversion to another type of land use; (e) Intensive livestock installations (projects not included in Annex I); (f) Intensive fish farming; (g) Reclamation of land from the sea.

2. EXTRACTIVE INDUSTRY (a) Quarries, open-cast mining and peat extraction (projects not included in Annex I); (b) Underground mining; (c) Extraction of minerals by marine or fluvial dredging; (d) Deep drillings, in particular: (i) geothermal drilling; (ii) drilling for the storage of nuclear waste material; (iii) drilling for water supplies; with the exception of drillings for investigating the stability of the soil; (e) Surface industrial installations for the extraction of coal, petroleum, natural gas and ores, as well as bituminous shale.

3. ENERGY INDUSTRY (a) Industrial installations for the production of electricity, steam and hot water (projects not included in Annex I); (b) Industrial installations for carrying gas, steam and hot water; transmission of electrical energy by overhead cables (projects not included in Annex I); (c)

Surface storage of natural gas; (d) Underground storage of combustible gases; (e) Surface storage of fossil fuels; (f) Industrial briquetting of coal and lignite; (g) Installations for the processing and storage of radioactive waste (unless included in Annex I); (h) Installations for hydroelectric energy production; (i) Installations for the harnessing of wind power for energy production (wind farms); (j) Installations for the capture of CO2 streams for the purposes of geological storage pursuant to Directive 2009/31/EC from installations not covered by Annex I to this Directive.

4. PRODUCTION AND PROCESSING OF METALS (a) Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting; (b) Installations for the processing of ferrous metals: (i) hot-rolling mills; (ii) smitheries with hammers; (iii) application of protective fused metal coats; (c) Ferrous metal foundries; (d) Installations for the smelting, including the alloyage, of non-ferrous metals, excluding precious metals, including recovered products (refining, foundry casting, etc.); (e) Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process; (f) Manufacture and assembly of motor vehicles and manufacture of motor-vehicle engines; (g) Shipyards; (h) Installations for the construction and repair of aircraft; (i) Manufacture of railway equipment; (j) Swaging by explosives; (k) Installations for the roasting and sintering of metallic ores.

5. MINERAL INDUSTRY (a) Coke ovens (dry coal distillation); (b) Installations for the manufacture of cement; (c) Installations for the production of asbestos and the manufacture of asbestos products (projects not included in Annex I); (d) Installations for the manufacture of glass including glass fibre; (e) Installations for smelting mineral substances including the production of mineral fibres; (f) Manufacture of ceramic products by burning, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain.

6. CHEMICAL INDUSTRY (PROJECTS NOT INCLUDED IN ANNEX I) (a) Treatment of intermediate products and production of chemicals; (b) Production of pesticides and pharmaceutical products, paint and varnishes, elastomers and peroxides; (c) Storage facilities for petroleum, petrochemical and chemical products.

7. FOOD INDUSTRY (a) Manufacture of vegetable and animal oils and fats; (b) Packing and canning of animal and vegetable products; (c) Manufacture of dairy products; (d) Brewing and malting; (e) Confectionery and syrup manufacture; (f) Installations for the slaughter of animals; (g) Industrial starch manufacturing installations; (h) Fish-meal and fish-oil factories; (i) Sugar factories. 8. TEXTILE, LEATHER, WOOD AND PAPER INDUSTRIES (a) Industrial plants for the production of paper and board (projects not included in Annex I); (b) Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles; (c) Plants for the tanning of hides and skins; (d) Cellulose-processing and production installations.

9. RUBBER INDUSTRY Manufacture and treatment of elastomer-based products.

10. NFRASTRUCTURE PROJECTS (a) Industrial estate development projects; (b) Urban development projects, including the construction of shopping centres and car parks; (c) Construction

of railways and intermodal transhipment facilities, and of intermodal terminals (projects not included in Annex I); (d) Construction of airfields (projects not included in Annex I); (e) Construction of roads, harbours and port installations, including fishing harbours (projects not included in Annex I); (f) Inland-waterway construction not included in Annex I, canalisation and flood-relief works; (g) Dams and other installations designed to hold water or store it on a long-term basis (projects not included in Annex I); (h) Tramways, elevated and underground railways, suspended lines or similar lines of a particular type, used exclusively or mainly for passenger transport; (i) Oil and gas pipeline installations and pipelines for the transport of CO2 streams for the purposes of geological storage (projects not included in Annex I); (j) Installations of long-distance aqueducts; (k) Coastal work to combat erosion and maritime works capable of altering the coast through the construction, for example, of dykes, moles, jetties and other sea defence works, excluding the maintenance and reconstruction of such works; (l) Groundwater abstraction and artificial groundwater recharge schemes not included in Annex I; (m) Works for the transfer of water resources between river basins not included in Annex I.

11. OTHER PROJECTS (a) Permanent racing and test tracks for motorised vehicles; (b) Installations for the disposal of waste (projects not included in Annex I); (c) Waste-water treatment plants (projects not included in Annex I); (d) Sludge-deposition sites; (e) Storage of scrap iron, including scrap vehicles; (f) Test benches for engines, turbines or reactors; (g) Installations for the manufacture of artificial mineral fibres; (h) Installations for the recovery or destruction of explosive substances; (i) Knackers' yards.

12. TOURISM AND LEISURE (a) Ski runs, ski lifts and cable cars and associated developments; (b) Marinas; (c) Holiday villages and hotel complexes outside urban areas and associated developments; (d) Permanent campsites and caravan sites; (e) Theme parks.

13. (a) Any change or extension of projects listed in Annex I or this Annex, already authorised, executed or in the process of being executed, which may have significant adverse effects on the environment (change or extension not included in Annex I); (b) Projects in Annex I, undertaken exclusively or mainly for the development and testing of new methods or products and not used for more than two years.

Appendix H

APPROPRIATE ASSESSMENT SCREENING

In Accordance With The Requirements Of

ARTICLE 6(3)

Of The

EU HABITATS DIRECTIVE

For The

Draft Action Plan relating to The Assessment & Management of Environmental Noise

INTRODUCTION

This is an Appropriate Assessment Screening of the proposed **Draft Action Plan relating to The Assessment & Management of Environmental Noise**

The proposed draft Action Plan has been assessed to ascertain if it is required to be subject to an 'Appropriate Assessment' under the EU Habitats Directive. Based on the 'Methodological guidance on the provision of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, a 'Screening Matrix' and a 'Finding of No Significant Effects Matrix' have been completed.

The principal trigger for undertaking an 'Appropriate Assessment' would be if the proposed draft Action Plan is likely to have significant effects on a Natura 2000 site. For the purposes of Article 6 assessments, Natura 2000 sites are those identified as Sites of Community Importance under the Habitats Directive (normally called Special Areas of Conservation) or classified as Special Protection Areas under the Birds Directive (79/409/EEC).

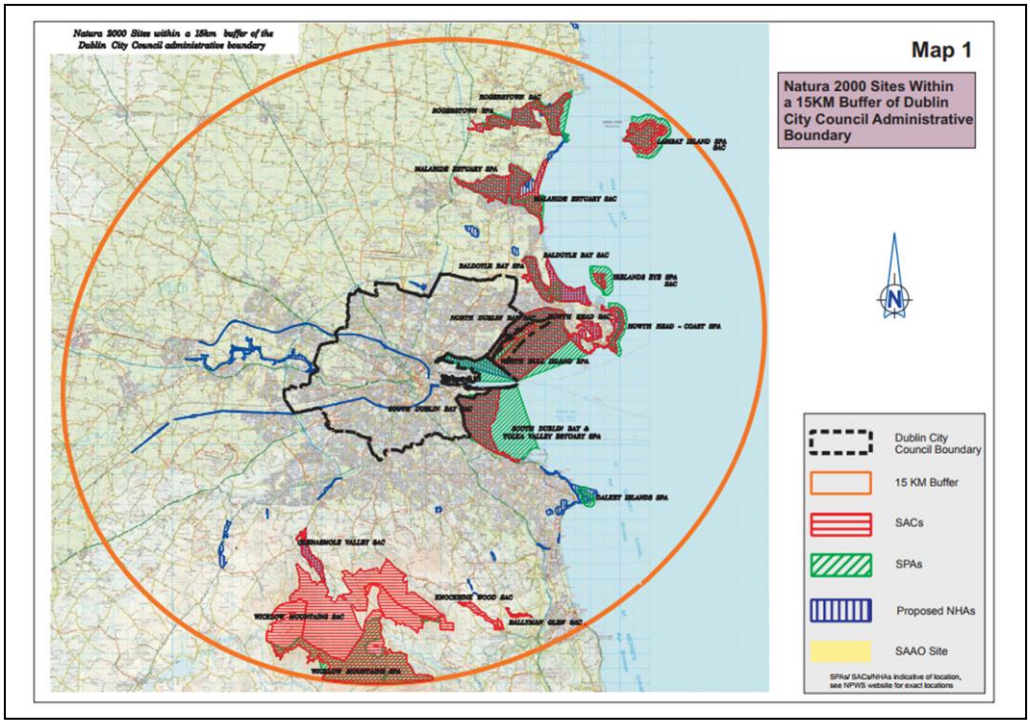
There are no Natura 2000 sites specifically linked to the proposed draft Action Plan.

The Natura 2000 sites within or close to the area covered by the Draft Action Plans and within the Dublin region are as follows:-

1. North Dublin Bay cSAC (IE000206)
2. South Dublin Bay cSAC (IE000210)
3. North Bull Island SPA (IE00406)
4. South Dublin Bay & River Tolka Estuary SPA (IE004024)
5. Howth Head Coast SPA (IE004113)
6. Baldoyle Bay SPA (IE004116)
7. Baldoyle Bay cSAC (IE000199)
8. Howth Head cSAC (IE000202) Irelands Eye cSAC (IE002193)
9. Irelands Eye SPA (IE004117)
10. Malahide Estuary cSAC (IE000205
11. Malahide Estuary SPA (IE004025)
12. Glenasmole Valley cSAC (IE001209)
13. Wicklow Mountains cSAC (IE002122) Dalkey Island SPA (IE004172)
14. Rockabill to Dalkey Islands cSAC (IE003000)

Figure 1 below illustrates all of the designated sites in the wider vicinity of the region covered by the draft Action Plan

Fig. 1



Proposal

It is proposed that this draft Action Plan will replace the current Action Plan 2013-2018. The Plan will provide an overview of regulation, review the results of the latest strategic noise maps for Fingal County Council and set out an approach to the strategic management and control of environmental noise over the next five years. As there is no provision in legislation upon which the actions outlined in the Plan can be enforced, reliance will be made on various other plans and policies such as the Dublin Development Plan, the Draft National Planning Framework 2040 and the Planning Acts, for their implementation. This draft plan will also provide the basis for feedback and input from statutory authorities and the public to help inform this Action Plan in relation to the assessment and management of environmental noise.

Policy Context

The draft Fingal County Council Action Plans relates to the Fingal County Council region. As required by the EU Directive 2002/49/EC relating to The Assessment and Management of Environmental Noise, (known as the 'END' Directive) which was transposed into Irish law by the Environmental Noise Regulations, SI number 140 of 2006, this draft Action Plan is aimed at managing 'Environmental Noise'. Fingal County Council has prepared this draft plan for the Fingal County Council region which will form part of a combined plan for the Dublin Agglomeration i.e. the region covered by Fingal County Council, Dublin City Council, South Dublin County Council and Dún Laoghaire-Rathdown County Council, who are the designated action planning authorities under article 7 of the Environmental Noise Regulations 2006. It is proposed that this plan will be in place on the expiration

of the current plan in November 2018 and will cover the period between December 2018 and November 2023.

Screening Matrix

Brief Description of Project or Plan
It is proposed that this draft Action Plan will replace the current Action Plan 2013-2018. The Plan will provide an overview of regulation, review the results of the latest strategic noise maps for Fingal County Council and set out an approach to the strategic management and control of environmental noise over the next five years.

Brief description of the Natura 2000 sites
The proposed draft Action Plan does not directly affect any Natura 2000 sites. The closest Natura 2000 sites are located within Dublin Bay and include a wide variety of inter-tidal, marine and coastal zoned habitats supporting a range of species including Annex 1 bird species.

Assessment Criteria
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of: The draft Action Plan does not directly affect any Natura 2000 sites. There are no likely direct impacts on any Natura 2000 sites as a result of the proposed plan. **Size and scale;** Any relevant future new actions under the Action Plan will be in line with established plans and policies such as the Dublin Development Plan, the Draft National Planning Framework 2040 and the Planning Acts, for their implementation and is not predicted to have any likely impact on the conservation function of any Natura 2000 site in respect to size or scale. **Land-take;** Not applicable **Distance from Natura 2000 site or key features of the site;** The Draft Action Plan is not predicted to have any likely impact on the key features or the conservation function of any Natura 2000 sites. **Resource requirements (water abstraction etc);** Not applicable.
Emission (disposal to land, water or air);

No predicted likely direct impact on the conservation function of any Natura 2000 site is predicted as a result of the implementation of the proposed draft Action Plan.

Excavation requirements;

Not Applicable.

Transportation requirements;

Not Applicable.

Duration of construction, operation, decommissioning, etc;

Not Applicable.

Other

None

Describe any likely changes to the site arising as a result of:

Reduction of habitat area:

Not applicable

Disturbance to key species;

Not Applicable

Habitat or species fragmentation;

Not applicable

Reduction in species density;

Not Applicable

Changes in key indicators of conservation value

Not Applicable

Climate change: Not Applicable
Describe any likely impacts on the Natura 2000 site as a whole in terms of: **Interference with the key relationships that define the structure of the site;** No predicted likely impact on the conservation functions of any Natura 2000 sites. **Interference with key relationships that define the function of the site;** No predicted likely impact on the conservation functions of any Natura 2000 sites.
Provide indicators of significance as a result of the identification of effects set out above in terms of: **Loss;** Not applicable **Fragmentation;** Not applicable. **Disruption;** Not applicable. **Disturbance;** Not applicable. **Change to key elements of the site (e.g. water quality etc);** Not applicable
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known. No predicted likely impact on the conservation functions of any Natura 2000 sites.

Finding Of No Significant Effects Matrix

Name of Project or Plan:	The implementation of the proposed draft Action Plan relating to The Assessment & Management of Environmental Noise 2018-2023, will provide an overview of regulation, review the results of the latest strategic noise maps for Fingal County Council and set out an approach to the strategic management and control of environmental noise over the

	next five years
Name and location of Natura 2000 sites:	Natura 2000 sites within the Action Plans area and in the wider vicinity are provided in the 'Introduction' above.
Description of the Project or Plan	As provided in the screening matrix above.
Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?	No.
Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?	The proposed draft Action Plan provides for sustainable development in accordance with the Fingal County Council Development Plan 2016-2022 and the principles of proper planning and development. The Fingal County Council draft Action Plan will form part of the Dublin Agglomeration Plan which will be an amalgamation of individual action plans for the 4 local authorities in the Dublin region. It is not considered that the amalgamation of the four action plans which individually have no impact on any Natura 2000 site will in combination have any negative impact on any Natura 2000 site. Therefore it is not predicted that that the proposal will have any impact on the conservation function of any Natura 2000 site.

The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 sites:	No predicted likely impact on the conservation functions of any Natura 2000 sites.
Explain why these effects are not	The draft Action Plan provides for the

considered significant:	sustainable development in accordance with the Fingal County Council Development Plan 2016-2022 and the principles of proper planning and development. It is not predicted that that the proposal will have any potential impact on the onservation function of any Natura 2000 site.
List of Agencies Consulted: Provide contact name and telephone or email address:	
Response to Consultation	

Data Collected to Carry out the Assessment	
Who carried out the Assessment?	Environmental Health Section, Fingal County Council
Sources of Data	Existing Data
Level of Assessment Completed	Desktop Study
Where can the full results of the assessment be accessed and viewed	This document contains the full results of the Appropriate Assessment Screening exercise and will be placed on display in the Appendix of the draft Action Plan during the public consultation period for the draft Action Plan.

Overall Conclusion	The proposed draft Action Plan Relating to The Assessment & Management of Environmental Noise does not significantly alter any policy or objective of the Fingal County Council Development Plan or any other plans adopted by Fingal County Council. However, in line with the precautionary principle, it is considered appropriate to undertake an appropriate assessment screening. Stage 1 screening indicates that implementing the proposed draft Action Plan is not directly connected with, or necessary to the conservation management of the Natura 2000 in the assessment; The implementation of the Action Plant will not have a direct impact on the Natura 2000 sites considered in the assessment; The project, alone or in combination with other projects or plans, is not likely to have a significant effect on the Natura Sites sites considered in the assessment in view of their conservation objectives and will not have any significant cumulative, direct or indirect impacts upon any of the Natura 2000 sites. Therefore it is not considered necessary to undertake any further stages of the Appropriate Assessment process.