

Dublin Agglomeration

Environmental Noise Action Plan

December 2018 – November 2023

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November 2018



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**Dublin Agglomeration Draft Action Plan
Relating to
The Assessment and Management of
Environmental Noise
December 2018 – November 2023
(Draft Noise Action Plan)**

**Public Consultation Document
November 2018**

**Volume 1
Dublin City Council Area**

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Report Control

Report: Dublin City Council Action Plan Relating to the Assessment
And Management of Environmental Noise 2018 - 2023

Region: Dublin City Council Area

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Executive Summary

Noise

Environmental noise, commonly called noise pollution, is among the most frequent sources of complaint regarding environmental issues in Europe, especially in densely populated urban areas and residential areas near highways, railways and airports, - (WHO, European office). People can be 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.);
- Indoor noise sources (ventilation systems, office machines, home appliances and neighbours).

Noise contributes greatly to diminishing people's quality of life. Unwanted sound (noise) of sufficient intensity and duration can cause temporary and/or permanent hearing loss. It can also interfere with speech communication, the transmission of other auditory signals, can disturb sleep and act as a general source of annoyance or disturbance and interfere with the performance of complicated tasks and the opportunity for privacy. In 2011 the European Regional Office of the World Health Organisation published a document entitled 'Burden of Disease from Environmental Noise'. 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 World Health Organisation (WHO). It supports the recommendations as set out in the 'Night Noise Guidelines for Europe' publication and supports this view based on a review of evidence based assessments of the impact of noise on health.

Noise Health Guidelines

Exposure of people to day time noise levels above 50dB(A) can cause health problems(WHO). In general, sound levels in cities can range between 60-70 dB(A), with suburban levels between 50-60 dB(A). The World Health Organisation has set new guideline levels for the avoidance of health impacts from noise from traffic sources. These are a Lden of 53 decibels over a 24 hour period and an Lnight of 45 decibels.

This guidance has just been published (Oct 2018) and is seen as complimenting the Night Time Noise Level Guidance which WHO European Regional Office published in 2009. These Night Time Noise level Guidance presented evidence on the health damage of night time sound exposure and recommended threshold values that, if breached at night, would threaten health. An annual average night 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 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 noise guidelines in the short term and where policy-makers choose to adopt a stepwise approach.

Noise Sources

Noise from transport is by far the most widespread source of noise exposure, 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, August 2007) estimating that approximately 210 million EU citizens are regularly exposed to 55 decibels (dB) or more from road noise. The major contributors to road traffic noise are passenger cars, lorries and buses, with minor contributions from motorcycles. Railway noise is the second most dominant source of environmental noise in Europe, with approximately 9 million people exposed to levels beyond 50 dB 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 road and traffic noise.

Environmental Noise Directive 2002/49/EC

The Environmental Noise Directive requires all European Union (EU) Member States to produce strategic noise maps for the main sources of environmental noise, i.e. major roads, major railways, major airports and all 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 and every subsequent 5 years. The most recent Noise Maps produced for the Dublin City Council area were released in 2017. A summary of the outputs of noise maps can be found in Chapter 5 and Appendix G (p88-p94). Overall there have been small changes over the past five years in the number of people being exposed to undesirable sound levels, particularly at night – with a 2% reduction in this category. However there is still a tranche of people (22%) who are still being exposed to undesirable night-time sound levels. Traffic noise is the dominant noise source with Railway noise having no major impact on overall ambient sound levels. The full 2017 Noise Map report can be found on the Dublin City Council website at the following link:-

<http://www.dublincity.ie/WaterWasteEnvironment/NoiseMapsandActionPlans/Pages/default.aspx>

Noise Limit Values

As there are no national limit values in relation to environmental noise control this draft Action Plan sets out certain criteria in relation to environmental sound levels which will be applied in identification of Quiet Areas and areas that have 'Undesirable' high sound levels or 'Desirable' low sound levels. These are set out below and are fully described in Chapter 6.

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

levels, can be identified from the Day and Night time noise maps where the colour contours range above 55dB(A) for Night time and 70dB(A) for daytime.

In this Action Plan, the following absolute values are used as one criterion for defining a Quiet Area:-

- < 45 dB(A) Lnight
- < 55 dB(A) Lday
- < 55 dB(A) Lden

Desirable Low Sound levels

- < 50 dB(A) Lnight
- < 55 dB(A) Lday

Undesirable High Sound levels

- >55 dB(A) Lnight
- >70 dB(A) Lday

Action Plan to Assess and Manage Noise

On foot of producing Noise Maps, the Environmental Noise Directive requires local authorities to draw up actions plans and include measures within the plan that should notably address priorities which may be identified by the exceeding of any relevant limit value or by other criteria chosen by the Member State and apply in particular to the most important areas as established by strategic noise mapping. These plans are required to be revised every 5 years. This draft Action Plan in relation to the Assessment and Management of Environmental Noise (henceforth called the draft Action Plan) is the third Action Plan for the Dublin City Council area and is required to be produced under EU Directive 2002/49/EC and Irish Regulation 140 of 2006. A review of actions carried out under previous plans was carried out and is included in Chapter 4 of this draft Action Plan.

The current Dublin City Council Action Plan runs to November 2018. This draft Action Plan will commence in December 2018 and run until November 2023. The Dublin City Council Action Plan will form part of and compliment the Dublin Agglomeration Plan which includes the regions covered by Fingal, South Dublin and Dún Laoghaire - Rathdown County Councils and Dublin City Council. This plan recommits to continuing the aims and objectives of previous action plans and sets out in Chapter 7 noise mitigation and protection measure the City Council intends to follow in order to manage, within its area, noise issues and effects, including noise reduction if necessary. The plan will also aim to protect 'Quiet Areas' against an increase in noise. Chapter 7 also sets out in detail the procedures Dublin City Council will adopt when considering mitigation and protection measure. A time frame for such implementation over a 5 year period is set out in Chapter 9. Although some issues may not directly relate to the outputs of the noise map assessment, it is proposed that this plan will be a 'one stop shop' in relation to how Dublin City Council will assess and manage 'noise issues' that come within its remit

Both a pre-screening SEA and AA were carried out. It was determined that neither a strategic environmental assessment nor an Appropriate Assessment was required to be carried out. The pre-screening reports are included in Appendix C and D of this draft Action Plan.

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Introduction

1.1 Background

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 Action Plan is aimed at managing 'Environmental Noise'. Dublin City Council has prepared this plan for the Dublin City Council area which will form part of a combined plan for the Dublin Agglomeration i.e. the region covered by Dublin City Council, Fingal County 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.

Whilst the noise maps and the Environmental Noise Regulations are aimed at developing strategic policy and managing Environmental Noise, it is acknowledged that when most people complain about noise, it relates more to local issues, such as neighbour, entertainment and construction noises. It is therefore proposed that this draft Action Plan will lay out a comprehensive approach to how Dublin City Council will manage all Environmental Noise issues, whether strategic or local, regulated or unregulated. Rather than solely concentrating on strategic issues identified by noise mapping, this plan expands and set out how Dublin City Council deals with local noise nuisances and complaints along with planning, development and traffic management issues. However this plan does not cover noise in relation to Health and Safety in the work place or noise inside any means of transport or due to military activities in military areas.

This document provides an overview of regulation, reviews the results of the latest strategic noise maps for Dublin City, and what was achieved during the 2013-2018 plan. It sets out an approach to the strategic management and control of environmental noise over the next five years. It 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.

1.2 Strategic Environmental Assessment (SEA) Pre-screening

The SEA Directive requires that assessment of the effects of certain plans and programmes on the environment be carried out. The purpose of the SEA process is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.

Article 3 of the Directive states that an environmental assessment shall be carried out for all plans and programmes, (a) which are prepared for agriculture, forestry, fisheries, energy, industry,

transport, waste management, water management, telecommunications, tourism, **town and country planning** or **land use** and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC (the EIA Directive), or (b) which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC (the Habitats Directive).

Article 2 of the Directive states that 'plans and programs' shall mean plans and programs, including those co-financed by the European Community, as well as any modifications to them:

- which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and
- which are required by legislative, regulatory or administrative provisions;

The SEA process includes provision for formal screening, scoping and assessment, where relevant. The SEA Directive is implemented in Ireland through the following Regulations: SI 436 of 2004 (as amended by SI 201 of 2011) for specified land use plans such as development plans, local area plans etc., and SI 435 of 2004 (as amended by SI 200 of 2011) for all other sectoral plans listed in Article 3(a) of the SEA Directive, including Town and Country or Land Use Plans not listed in SI 436. It is noted that Action Plans for the Assessment and Management of Environmental Noise are a form of 'Transport' sectorial plan. Therefore, if an SEA is required for an Action Plan, it would fall under the remit of SI 435.

Having regard to the above, a SEA pre-screening check was carried out for the Draft Dublin City Council Action Plan following the process as outlined in Task 1.1 of the EPA report *Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland (2001-DS-EEP-2/5) - Synthesis Report* (Appendix B; SEA Checklist). This pre-screening showed that there was no need to proceed to a further full screening, applying environmental significant criteria. The SEA pre-screening report can be found in Appendix C and forms part of this draft Action Plan which will go on public display during the public consultation period for the Action Plan.

1.3 Appropriate Screening Assessment

Appropriate Screening Assessment In Accordance With the Requirements of Article 6(3) Of the EU Habitats Directive

The proposed draft Action Plan Relating to The Assessment & Management of Environmental Noise does not significantly alter any policy or objective of the Dublin City Development Plan or any other plans adopted by Dublin City Council. However, in line with the precautionary principle, it was considered appropriate to undertake an Appropriate Assessment screening.

Stage 1 screening indicates that implementation of the proposed draft Action Plan is not directly connected with, or necessary to the conservation management of any Natura 2000 site in the assessment area. The implementation of the Action Plan will not have a direct impact on the Natura

2000 sites considered in the assessment. The Action Plan, alone or in combination with other Action Plans, is not likely to have a significant effect on the Natura 2000 Sites considered in the assessment and will not have any significant cumulative, direct or indirect impacts upon any of the Natura 2000 sites.

It was concluded that there is no possibility of there being a significant effect on a Natura 2000 site and hence there is no requirement for a 'Stage 2 AA' to be carried out for the purposes of Article 6(3). Therefore it was not considered necessary to undertake any further stages of the Appropriate Assessment process. The Appropriate Screening Assessment report can be found in Appendix D and forms part of this Action Plan which will go on public display during the public consultation period for the Action Plan.

1.4 Noise Policy – Purpose and Scope of the 'END' Directive

Under the Environmental Noise Regulations and on foot of Directive 2002/49/EC, the four local authorities, within the agglomeration of Dublin (Dublin City Council, Fingal, Dún Laoghaire-Rathdown and South Dublin County Councils), are required to produce Noise Maps and Action Plans for noise emanating from Major Industry, Roads including Major Roads, Rail including Major Rail and Airports including Major Airports.

This Directive was implemented on foot of an EU Green Paper on '*Future Noise Policy*', which highlighted the need for a high level of health and environmental protection against noise. In the Green Paper, the Commission addressed noise in the environment as one of the main environmental problems in Europe.

1.5 The aims of Directive 2002/49/EC are: -

- 1. To monitor environmental noise problems by requiring competent authorities in Member States to draw up "strategic noise maps" for major roads, railways, airports and agglomerations, using harmonised noise indicators L_{den} (day-evening-night average sound level) and L_{night} (night time average sound level). These maps are to be used to assess the number of people annoyed and sleep-disturbed respectively throughout each member state in the European Union.*
- 2. To inform and consult the public about noise exposure, its effects, and the measures to be considered to address noise problems.*
- 3. To address local noise issues by requiring competent authorities to draw up action plans to reduce noise where necessary and maintain the environmental acoustic quality where it is good. The directive does not set any limit value, nor does it prescribe the measures to be used in the action plans, which remain at the discretion of the competent authorities.*
- 4. To develop a long-term EU strategy, which includes objectives to reduce the number of people affected by noise in the longer term, and provides a framework for developing existing Community policy on noise reduction from source.*

The Directive is also aimed at providing a basis for developing EU wide measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment. The Directive applies to environmental noise to which humans are exposed, in particular in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise sensitive buildings and areas. It does not apply to noise that is caused by the exposed person himself/herself, noise from domestic activities, noise created by neighbours, noise at work places or noise inside means of transport or due to military activities in military areas. The maps are Strategic Noise Maps, and should not be used for the assessment of local noise nuisances. Statutory Instrument S.I. 140 of 2006 – Environmental Noise Regulations transposes the 'END' directive into Irish Law

1.6 Roles and Responsibilities

Under the Environmental Noise Regulations 2006 the 4 Local Authorities within the 'Agglomeration of Dublin' are designated noise-mapping bodies along with Transport Infrastructure Ireland, Irish Rail and Dublin Airport, for the purpose of making and approving strategic noise maps. The local authorities have been designated as the action planning authorities for the following categories within their areas: -

- a) All Roads and Major Roads (national or regional roads with more than 3 million vehicle passes/year) – Local Authorities in consultation with TII
- b) All Rail and Major Rail (Rail with more than 30,000 train passes/year) – Local authorities in consultation with Irish Rail & TII
- c) Major Industrial Processes - Local authorities
- d) All Airports and Major Airport (more than 50,000 take-off/landings per year) – Local Authorities in consultation with Dublin Airport.

1.7 Key Phases

The Environmental Noise Directive sets out a process for managing environmental noise in a consistent manner across the EU and the Irish Regulations set out the approach to meeting the requirements of the Directive. Responsibility for undertaking the phases of work required under the Regulations is shared between the noise mapping bodies and the action planning authorities.

The third round of noise mapping for the Dublin City Council region was completed in June of 2017. A Noise Mapping report for the Dublin City Council region, which covers noise emissions from road sources can be found on the Dublin city council website at this link:- <http://www.dublincity.ie/main-menu-services-water-waste-and-environment/noise-maps-and-action-plans>.

Noise maps for Heavy Rail were completed by Irish Rail and noise maps for Light Rail (Luas) were completed by TII and can be found in Appendix G. Noise maps for major airports (Dublin) were completed by The Dublin Airport Authority.

On foot of carrying out the assessment of noise through the noise mapping process, Action Plans are required to be submitted to the EPA no later than 18 July 2018. These Action Plans are designed to manage, within the agglomeration, noise issues and effects, including noise reduction if necessary. This plan for the Dublin City Council region will form part of and compliment the overall Dublin Agglomeration Action Plan. The plan will also aim to protect quiet areas against an increase in noise. Before producing and implementing Action Plans the Local Authorities must consult with the Environmental Protection Agency and the noise-mapping body for the noise-map involved, i.e. TII, Iarnród Éireann, and the Dublin Airport Authority.

This draft Plan provides a review of the 2013-2018 Action Plan and sets out how Dublin City Council will manage, over the next five years, not only environmental noise from road, rail and major industrial sources, but also local noise nuisances and complaints along with planning, development and traffic management issues. Although some issues may not directly relate to the outputs of the noise map assessment, it is proposed that this plan will be a 'one stop shop' in relation to how Dublin City Council will assess and manage 'noise issues' that come within its remit. An implementation plan provides a time frame on how Dublin City Council intends to go about this over the five years of the plan. It is anticipated that this plan's timeframe will be a continuation of the 2013- 2018 plan and will run to November 2023. Many of the initiatives and action have already been commenced and/or will be continued from the previous two plans, the first plan being introduced in 2008.

The Local Authorities are also responsible for consulting with members of the public and are required under the Directive to demonstrate how they have done so. This draft document is presented for public consultation, providing the opportunity for input and comment by all interested parties.

2. Existing Noise Management Legislation and Guidance

2.1 WHO Noise Health Guidelines

Exposure of people to day time noise levels above 50dB(A) can cause health problems(WHO). In general, sound levels in cities can range between 60-70 dB(A), with suburban levels between 50-60 dB(A). The World Health Organisation has set new guideline levels for the avoidance of health impacts from noise from traffic sources. These are an Lden of 53 decibels over a 24 hour period and an Lnight of 45 decibels.

This guidance has just been published(Oct 2018) and are seen as complimenting the Night time noise level guidance which WHO European Regional Office published in 2009. These Night Time Noise level Guidance presented new evidence on the health damage of night time sound exposure and recommended threshold values that, if breached at night, would threaten health. An annual average night 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 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 noise guidelines in the short term and where policy-makers choose to adopt a stepwise approach.

2.2 National and Local Legislation, Regulations and Guidance

In addition to EC regulations, there is national legislation and guidance and local policy that relate to the management and control of environmental noise. The following provides an overview of the relevant literature.

2.3 Environmental Protection Agency Act 1992

The existing statutory provisions have primarily come about from the Environmental Protection Agency Act of 1992. The Act identifies noise as a form of environmental pollution and contains provisions for dealing with noise 'which is a nuisance, or which would endanger human health or damage property or harm the environment'. Sections 106 to 108 of the 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 requiring measures to be taken to prevent or limit noise from any premises, processes or works;
- 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 to take measures for the prevention or limitation of the noise in question.

The powers set out within the EPA Act 1992 largely relate to the control of noise nuisance, and therefore may be applicable to neighbourhood and construction noise, music, industrial or other such activities. Arising from the Act, Dublin City Council has developed policy statements on how it manages issues arising from the provisions with the 1992 Act. This document that can be found on the Dublin City Council website at <http://www.dublincity.ie/main-menu-services-water-waste-and-environment-air-quality-monitoring-and-noise-control/noise> - and in Appendix E.

2.4 Irish Roads Act 1993

At present there are no limit values for controlling road traffic noise, on either new or existing roads. In the absence of a regulatory assessment method or limit values, the then National Road Authority (NRA) now known as Transport Infrastructure Ireland (TII) published the document '*Good Practice Guidance for the Treatment of Noise and Vibration in National Road Schemes*'-2004. The Guidelines reviewed common practice in Ireland at the time, as well as the relevant approach within the UK, and set out the procedure to be followed in respect of the planning and design of national road schemes. The Guidelines indicates that, for new roads, mitigation measures should be considered for noise levels above a level of 60 dB Lden free-field when the three conditions within the Guidelines are satisfied. Although this is not a statutory limit value, it is considered to be a target for best practice design where mitigation is feasible. In 2014 a '*Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes*' was issued. This guidance document amplifies and supplements the Guidelines, and should be read in conjunction with them.

2.5 Irish Planning Guidance

Local Authorities can set conditions relating to noise as part of a planning permission. However, there is currently no national policy or guidance that addresses the issue of noise during the assessment and conditioning of planning applications.

The Department of Housing, Planning & Local Government, formerly the Department of Environment, Heritage and Local Government, (DoEHLG) published the following documents relating to sustainable development in the urban environment:-

- a) National Planning Framework 2040 which includes Policy Objective 65:- *Promote the proactive 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*. The Top level spatial plans in Ireland will essentially dictate where population increase and economic growth is to be focused so the National Planning Framework and the three Regional Spatial and Economic Strategies (currently being prepared) should mirror objective 65 in the Draft National Plan.
- b) Our Sustainable Future, A Framework for Sustainable Development in Ireland, June 2012
- c) Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities, March 2018.

- d) Sustainable Residential Development in Urban Areas: Guidelines for Planning Authorities, May 2009;
- e) Urban Design Manual: A best practice guide. A companion document to the Planning Guidelines on Sustainable Residential Development in Urban Areas, May 2009.

The document dealing with Design Standards for New Apartments calls for '*attention at the design and construction stages to prevent undue noise transmission between units*'. However, there is no guidance setting appropriate design goals, or the assessment methodology to be employed, other than reference to Part E of the Building Regulations. The Guidelines for Sustainable Residential Development highlight the need to 'Deliver a quality of life which residents and visitors are entitled to expect, in terms of amenity, safety and convenience'. They go on to state that 'Privacy is an important element of residential amenity'. Whilst they are not mentioned specifically, it is appropriate to consider environmental noise and noise transfer between dwellings in respect of amenity and privacy.

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

2.6 'Scheduled Activities'

Certain activities that are required to be licensed may be subject to controls relating to sound 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)*' dated January 2016. This document contains typical Limit Values for Noise from Licensed Sites as follows:

- Daytime (07:00 to 19:00hrs) – 55dB L_{Ar,T};
- Evening (19:00 to 23:00hrs) – 50dB L_{Ar,T};
- Night time (23:00 to 07:00hrs) – 45dB L_{Aeq,T}.

This document supersedes the EPA publications, '*Guidance Note for Noise In Relation To Scheduled Activities*', 2012\2006 and '*Environmental Noise Survey Guidance Document*', 2003. It provides background information and clear guidance on the theory of environmental noise and on the principle of Best Available Techniques (BAT). As part of the review of the 2012 noise maps and production of the 2017 maps, an assessment of sound emissions from scheduled licensed activities and licensed waste plants in the Dublin City Council areas did not highlight any issues with noise levels. As the EPA is the designated competent authority to oversee the management and control of noise emission from these activities, any action that requires to be undertaken falls to them.

2.7 Building Regulations 1997-2017

The current Irish Building Regulations call for certain constructions to offer '*reasonable resistance*' to both airborne and impact sound. Regulation E1 aims to ensure that dwellings achieve reasonable

levels of sound insulation from sound transmission emanating from attached buildings or differently occupied parts of the same building. Regulation E2 aims to protect dwelling occupants from noise produced from reverberation in common internal areas which provide direct access to a dwelling or dwellings. The Regulations specifically states Part E does not address environmental noise through the building facade from external sources such as aircraft, trains, road traffic or industry.

2.8 Regional or Local Legislation or Guidance

This document is a draft Action Plan which aims to manage environmental noise generated mainly by road traffic in the Dublin City Council Area. Currently there is no regional or local legislation relating to noise. However, there are a number of guidance documents that are relevant in the context of action planning:-

2.8.1 Regional Planning Guidelines

The Regional Planning Guidelines for the Greater Dublin Area 2010-2022 set out the planned direction for growth within the Greater Dublin Area up to 2022 by giving regional effect to national planning policy under the National Spatial Strategy (NSS). In this, it is stated 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.

2.8.2 Development Plans and Local Area Plans

Transportation, environment and development control policies and objectives that aim to reducing the negative and harmful effects due to exposure to environmental noise are contained in the Development Plans and Local Area Plans. Dublin City Councils current Development Plan 2016-2022 sets out certain objectives in relation to noise management and includes the following:-

It is an Objective of Dublin City Council:-

- a) SIO23: To implement the Dublin Agglomeration Environmental Noise Action Plan (2013–2018) in co-operation with the other local authorities in Dublin and the Irish Aviation Authority.
- b) SIO24: To protect the designated 'Quiet Areas' within the city from increased exposure to noise.
- c) SIO25: To support new technologies and practices as a power source in transport to reduce noise.
- d) SIO26: To protect residents of mixed-use developments from noise emanating from other uses such as shops, offices, nightclubs, late night busking, public houses and other night time uses through the planning system.
- e) SIO27: To give careful consideration to the location of noise-sensitive developments, including the horizontal and vertical layout of apartment schemes, so as to ensure they are protected from major noise sources where practical.

- f) SIO28: To support and facilitate the monitoring and enforcement by the environmental health department of noise reduction measures in areas experiencing excess noise.
- g) SIO29: To take cognisance of the Dublin Agglomeration Environmental Noise Action Plan 2013–2018 during the development and implementation of any policies for the city and before any major planning developments commence within Dublin.

2.8.3 Transportation Policy for the Greater Dublin Area

There are ongoing sustainable policies being implemented at a regional or local level that aim to increase the mode share of sustainable travel modes in the Dublin region with a resultant reduction in noise and air pollution levels arising from less private vehicular traffic on roads: These are as follows:

- a) **Transport strategy for the Greater Dublin Area, 2016 to 2035.** The Strategic vision for the Greater Dublin Area in 2035 is “To contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.”
- b) The SEA carried out on the Transport Strategy indicates that ‘*The Strategy facilitates significant improvements in sustainable mobility and associated positive effects relating to energy usage, emissions to air (including greenhouse gas emissions and noise) and human health*’. However there is no precise detail as to how these positives effects on noise are to be achieved.
- c) **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.
- d) **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.
- e) **National Protocol for Dealing with Noise Complaints for Local Authorities 2016**
Dublin City Council has adopted the national protocol in relation to noise complaint management. This policy can be found on the Dublin City Council website at this link:- <http://bit.ly/2BIIdUS>

2.9 Dublin Agglomeration Action Plan Relating to the Assessment & Management of Environmental Noise 2013 - 2018

There are currently no national criteria in relation to noise limit values. In 2009, the World Health Organisation’s European Office published guidance in relation to night time sound levels (Night Noise Guidelines for Europe). In this it stated that, ‘considering the scientific evidence on the thresholds of night noise exposure indicated by L_{night} , outside, as defined in the Environmental Noise Directive (2002/49/EC), an L_{night} , outside of 40 dB should be the target of the night noise guideline (NNG) to protect the public, including the most vulnerable groups such as children, the chronically ill and the elderly. An L_{night} , outside value of 55 dB 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'.

In 2009, the EPA issued guidance notes on the development of noise action plans. The guidance on sound values where and action should be invoked, are in terms of average night time and 24hour values. In the current action plan they are expressed as average day and night time values. The EPA guidance suggests a desirable night time level of 45dB(A) and a 24Hr Lden value of 70dB(A) for road traffic noise.

Based on the foregoing, the current Action Plan proposes an Lnight 'Desirable Level of 50dB(A) and a 'Undesirable Level' of 55dB(A) and are in line with the recommended interim target. In addition, daytime noise levels greater than 70 decibels are considered to be undesirable.

3. Description of the Action Planning Area

3.1 Introduction

Extent of Action Planning Area

Figure 3.1 shows a map of the four Local Authorities in the Dublin Agglomeration with Dublin City Council placed in the middle. Figure 3.2 shows a map of the key transport corridors in the Greater Dublin Area.



Figure 3.1 Map of the Dublin Agglomeration inclusive of Dublin

Noise Maps and Action Plans are required to be developed for agglomerations with more than 100,000 inhabitants, but also for places near major roads, which have more than three million vehicle passages a year, major railways which have more than 30,000 train passages per year and major airports which have more than 50,000 movements per year. Noise maps have been produced for all roads, major roads, heavy rail (Irish Rail) and Light rail (TII) in the Dublin City Council area. These maps cover the long term average periods for daytime (Lday), night time (Lnight) and 24 hours (Lden) and were published in June 2017. The maps for noise from roads sources can be found on the Dublin City Council website at this link:- <http://bit.ly/1AldL1E> or in Appendix G (p88-p90) Heavy Irish Rail noise maps and light rail – Luas, can also be found in Appendix G (p91 – p94).

Noise maps were also produced by the Dublin Airport Authority for Dublin Airport web link:-

(<https://www.dublinairport.com/about-us/-community-affairs/contour-maps>). A small portion of the Lden 55-59 decibel band and the Lnight 50-54 decibel band encroach to a small degree into the Dublin City Council Area. No maps were produced for major industrial activity, as an assessment of individual plants located in the more heavily populated areas of Dublin City indicated that sound emissions at the boundary of the sites were below the reporting threshold required in the directive. This is not surprising as these plants are controlled by scheduled activity licences which already include controls in relation to sound emissions.

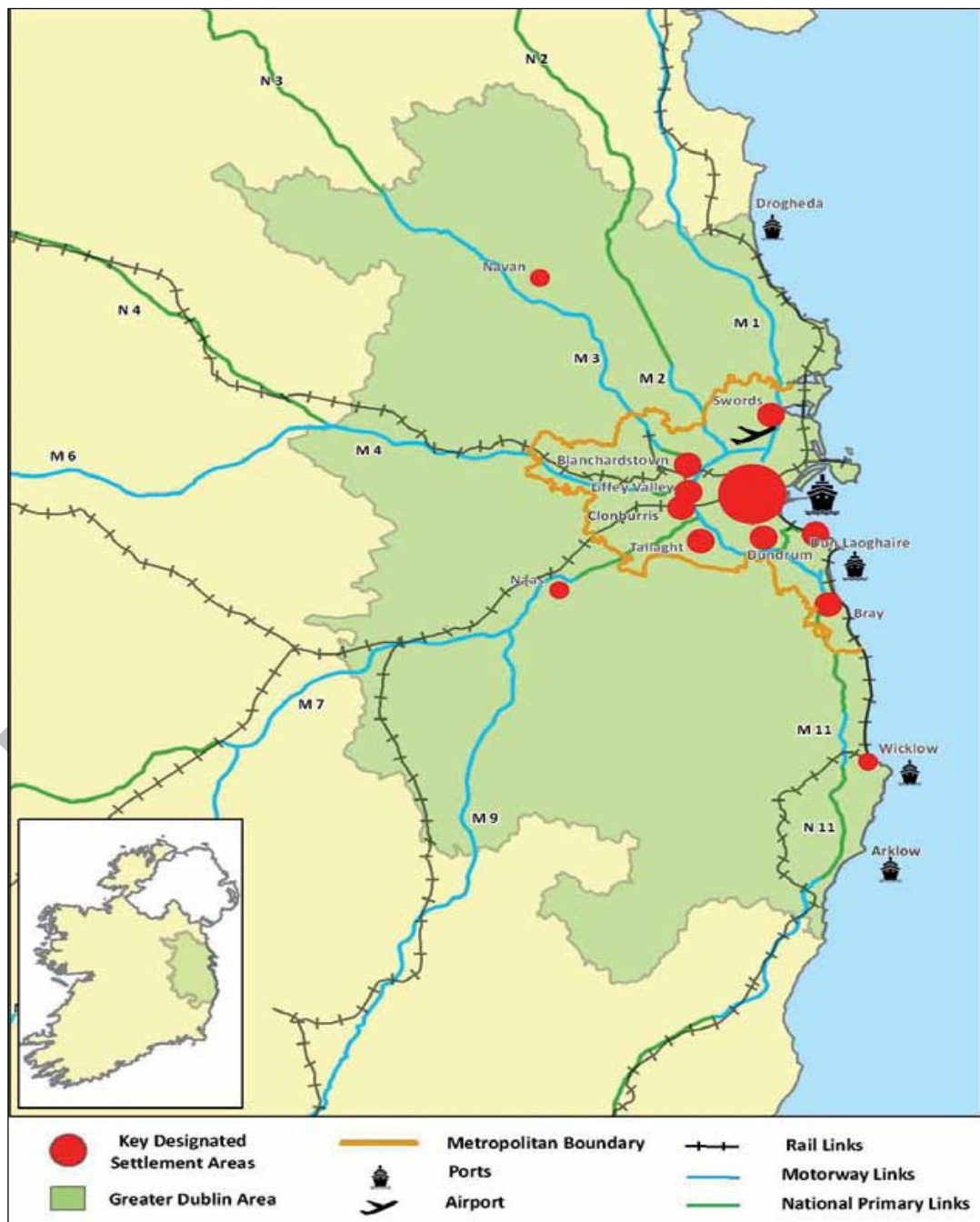


Fig. 3.2 Greater Dublin Area – NTA GDA Transport Strategy

3.2 Description of Topography

The Dublin City Council is a coastal city, located on the east coast of Ireland. Its area covers approximately 117Km². A number of large rivers and canals flow through it such as the River Liffey, Tolka and the River Dodder, and the Royal and Grand canals. Dublin City Council is the largest populated local authority in Ireland, covering an area that stretches from Donaghmede in the northeast to Terenure in the south of the City and bordered by the Phoenix Park to the west and Dublin Bay to the east.

3.3 Extent of Action Planning Area

Census 2016 shows 554,554 people live in the Dublin City Council area, while the An Post's, Geodirectory database indicates there are approximately 244,000 habitable dwellings, which are predominantly two story semidetached buildings. The majority of multi-dwelling units are within the canal cordon that is the area bounded by the Royal Canal on the north side of the City and the Grand Canal on the south side of Dublin. Dublin' city centre is divided by the river Liffey.

3.4 Road & Rail Extents

Within its boundaries there are just over 35Km of Irish Rail track and just under 19Km of Luas track. The entire rail track within the Dublin City Council area is designated as major rail. Approximately 1280Km of road was inputted into the noise model, 38% of which was designated as Major Road i.e. national or regional roads carrying more than 8219 vehicles per 24 hour. The main form of public transport is by bus, but commuting traffic is heavily dominated by the use of private cars. (See Fig 3.3)

The Modal split break down for 2016 was: - Rail - 22%; Bus - 27%;
Car - 32%; Cycle - 6%;
Walk - 11%; Other - 3%;

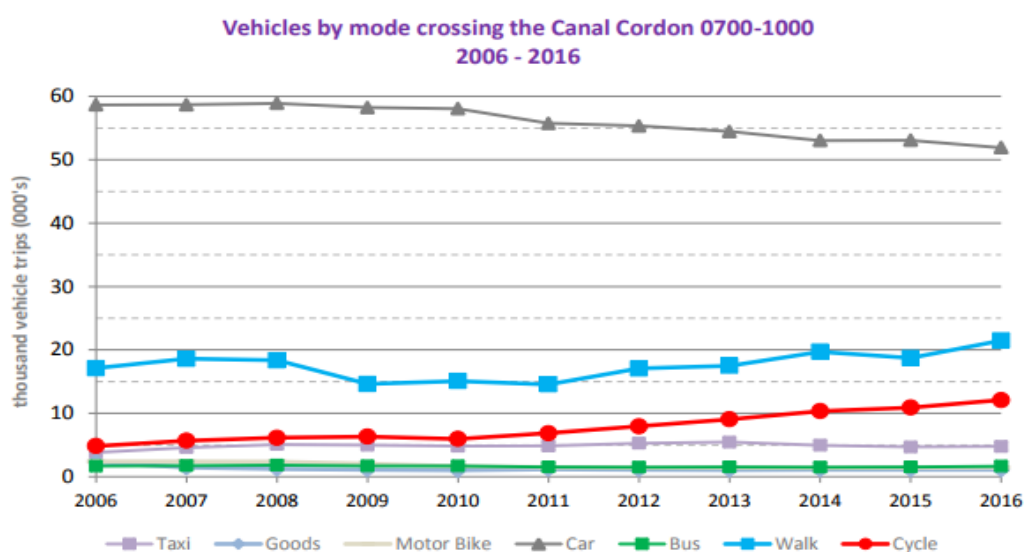


Figure 3.3 - Vehicle, cyclist and pedestrian crossing the Canal Cordon by mode of travel 2006 - 2016

There is a light electric rail (Luas) with the two original lines (Red & Green) being connected in 2017 with a new Luas 'cross city' section. This provides access from Tallaght in South Dublin County Council to the City centre where a connection can be taken to Cherrywood in Dun Laoghaire to the south of the city or Broombridge to the north west of the city. Heavy rail depart from two main stations in Dublin City - Connolly Station to the north of the City and Heuston Station to the south west of the City. An electrified rail service (Dart) runs along the east coast northward through Fingal and southwards through Dún Laoghaire-Rathdown county council areas. There is approximately 169Km of designated cycle paths in the region projected to increase to 269Km by 2035 (See Fig 3.4)

Figure 5.10 – Metropolitan Cycle Network



Figure 3.4 – NTA Transport Strategy for the Greater Dublin Area 2016 - 2035

3.5 Noise Sensitive Locations

Dublin City Council oversees approximately 1500 hectares of parks and open spaces, 54 playgrounds, four beaches, 18 outdoor gyms, 23 sports and recreational centres, 8 golf and pitch & putt courses and 23 all weather football pitches. The Office of Public Works manage and maintain some major parks within Dublin, such as the Phoenix Park to the west of the City and St. Stephens Green which is in the City Centre of Dublin. Noise sensitive areas include 8 designated 'Quiet Areas' which are all parks and are owned and managed by Dublin City Council. Within Dublin City there are two nature reserves, one main river with associated boat clubs and river walks and two canals with associated green spaces and walks. There are 152 places of worship, 53 hospitals including nursing and convalescence homes, 343 educational institutions, and 272 childcare/pre-primary facilities.

4. Responsible Authority for Action Planning

4.1 Name and contact details for the Responsible Authority

Dublin City Council and the County Councils of Dún Laoghaire-Rathdown, Fingal and South Dublin are the designated Action Planning Authorities under the noise regulations and are responsible for the preparation and implementation of the Action Plan for the Dublin Agglomeration. This draft plan has been prepared by Dublin City Council for the Dublin City Council region and will be included in, and complement the 'Action Plan Related to the Assessment and Management of Environmental Noise 2018 - 2023' for the Dublin Agglomeration.

The address for Dublin City Council in relation to strategic noise mapping and action planning in the Dublin City Area is: -

Dublin City Council – The Traffic Noise & Air Quality Unit, Block 2, Floor 6, Civic Offices, Wood Quay, Dublin 8

Address of other relevant local authorities:-

1. Traffic Section, Dún Laoghaire-Rathdown Co. Co., 1 Harbour Square, Crofton Road, Dun Laoghaire, Co. Dublin.
2. Fingal County Council – Environmental Health Section, Grove Road, Blanchardstown, Dublin 15
3. South Dublin County Council – Environmental Health Section, County Hall, Tallaght, Dublin 24.

4.2 Description of existing noise reduction measures

The Action Plan for 2013-2018 set out a number of noise reduction and prevention measures as part of the plan which were to be acted on over the relevant 5 year period. Paragraph 4.4 and sub-paragraphs set out a review of the actions taken. It is intended that in this draft Action Plan similar actions identified in the previous plans will continued to be implemented and/or extended or their implementation improved on, where possible.

4.3 Noise Limit Values

There are no specific noise limit values currently in place within each Local Authority except for those outlined in Chapter 2. In general, Local Authorities may only specify advisory levels. This plans sets out desirable\undesirable sound levels which are primarily based on the 'WHO Night Noise Guidelines for Europe (2009)' and 'WHO Guidelines for Community Noise (1999)'.

4.4 Review of Dublin Agglomeration Environmental Noise Action Plan December 2013 – November 2018

This is the 2nd review and third production of an action plan for the assessment and management of Dublin City's environmental noise. The first was produced in 2008, which was reviewed and a new plan produced in 2013 for a five year period, finishing in November 2018. Broad objectives were set out in both the previous Action Plans with detailed sub objectives. As the 2007 and 2012 noise maps showed noise from traffic sources to be the dominant sound source within the Dublin City Council area, measures were outlined to prevent environmental noise and reduce, avoid or relocate the various types of traffic noise sources. Many of the objectives in the Action Plan were addressed through pre-existing frameworks, which involved the implementation of various transportation, environmental and development control policies for Dublin City. For example, many traffic related policies such as encouraging a move by commuters to cycling, walking and the use of public transport have a direct positive acoustical benefit by reducing the growth in traffic noise sources. Therefore this draft Action Plan mirrors many of the aims in the first and second Action Plans. The following sections in this chapter provide an overview of the main actions implemented within the Dublin City Council area as part of the Action Plan 2008 to 2013.

4.4.1 Ambient Sound Monitoring Network

Dublin City Council currently operates a permanent ambient sound monitoring network which was established under the original 2008-2013 Action Plan. The monitoring units are designed to operate continuously, recording sound levels and statistical information to allow analysis of trends in sound emissions. The units are equipped with a Class 2 microphone, specifically designed for long term outdoor use. The purpose of the network is to measure outdoor ambient sound levels continuously in the City, at sites which are representative of typical sound levels to which citizens are being exposed. The number of monitoring sites has increased over the years from twelve to fourteen sites.

The following are the current locations:

- a) Ashtown, Navan Road. D7, Private House
- b) Ballyfermot Road, D10, Civic Centre
- c) Ballymun Road, D11, Library
- d) Bull Island, D3, Interpretative Centre
- e) Chapelizod Road, D8, Dublin City Council Rowing Club
- f) Howth Road, D5, Raheny Library
- g) Blessington Basin, Blessington St, D1.
- h) Millmount Avenue, D9, Drumcondra Library
- i) Percy French Road, D12, Walkinstown Library
- j) Ringsend, D4, Irishtown Stadium
- k) Woodstock Gardens, Ranelagh, D6, Senior Citizens Residential Scheme
- l) Chancery Park, D7, Public Park, Dublin
- m) Dolphins Barn, D12, Fire Station,

n) Mellows Park, D11, Parks Depot, Finglas,

Dublin City Council produces annual reports relating to its noise monitoring that can be accessed at the following link:- <http://dublincitynoise.sonitussystems.com/> along with real time monitoring results. Hourly 'tweets' were also commenced over the past 4 years, with a 'twitter handle' @dublincitynoise. This was an effort to further promote the site and provide more information on the environment for those who wish to receive it.

4.4.2 Traffic Noise reduction and prevention measures

As part of the Action Plan 2008-2013, and 2013 – 2018, broad objectives were set to reduce traffic density, to reduce traffic speeds and to reduce the volumes of Goods vehicles in Dublin city centre. A number of transportation policies and projects were introduced, in line with 'Smarter Travel, A Sustainable Travel Future', the National Transport Policy 2009 – 2020, that positively contributed to a reduction in sound levels. The following are some specific measures carried out in Dublin City Council over the period of the 2013 -2018 Action Plan:-

- The continued designation of an inner cordon within the city which has almost eliminated all heavy goods vehicle (HGV) within that area between the hours of 7am-7pm. Restrictions have been placed on new planning applications in certain areas, in relation to deliver of goods by HGV to shops before 7am in the morning. Following a slight decline between 2014 and 2015, the number of goods vehicles crossing the cordon in the AM peak period increased by 1% in the period 2015 to 2016. Overall, the volume of goods vehicles crossing the cordon has remained broadly unchanged since 2009. Over the longer period from 2006 to 2016 however, the number of goods vehicles crossing the cordon has decreased by over 52%. The majority of that decrease, 70%, occurred in the period 2006-2007, and coincided with the opening of the Dublin Port Tunnel in 2006 and the implementation of the HGV Management Strategy in 2007.
- Dublin City Council has engaged in reducing driving speeds through the provision of appropriate traffic calming measures and thus reducing sound emissions, e.g. continued operation of the College Green Bus Gate.
- For new roads schemes and major resurfacing projects, lower noise surfaces were considered and applied where considered to be appropriate. Stone Mastic Asphalt (SMA) has a better noise reduction performance than Hot Rolled Asphalt (HRA). In 2017 approximately 60% of all road surface restorations used SMA which amounted to 47% of all road surface area restored.
- Monitoring and preserving 8 Quiet Areas which were designated as Quiet Areas by the Minister for Environment and Local Government. The noise maps for 2017 show that these 8 areas continue to remain quiet areas.
- Introduction of 30kph zones and traffic calmed areas – Bye laws were introduced to reduce traffic speeds from 50 to 30Km per hour throughout the Canal Cordon area except for a number of main roads. In May 2017 this was further extended to a number of areas throughout Dublin outside the Canal Cordon. Lowering speed limits typically reduces noise by 2 – 3 decibel for a speed reduction of 20 km/h at speeds equal or lower than 50 km/h.

- A before and after study of 40 locations around the City where speed limits were reduced was carried out. This consisted of measurement periods of 3 days at each of the 40 locations before and after the speed limits were changed. However no clear conclusion could be drawn from the measurements as to whether the change had a positive effect on the ambient sound levels in the areas that measurements took place.
- Development of Cycle Greenways and shared pedestrian/cycle routes; - Cycling has continued its steady trend of increasing usage and now represents a mode share of 6%, up half a percent from 2015. Whilst overall cycle numbers are up 150% on 2006 levels, the cycle mode share has more than doubled in the same period and has increased year on year since 2010.
- Improved public transport with the expansion of the Luas Network - with the Cross City LUAS coming into operation in December 2017
- Implementation of bus priority measures - on the North Quays on Customs House Quay and from Ormond Quay to Bachelors Walk, which has improved overall public bus journey times.
- Traffic avoidance plans that combine walking, cycling and public transport - There was an increase of 11% in the number of cyclists crossing the canal cordon from 2015 to 2016. There has been a steady year on year growth in the number of cyclists crossing the cordon since 2010. In 2016 over 12,000 cyclists crossed the cordon in the AM peak period. This represents an increase of 150% when compared with 2006, and represents an increase of over 50% in the last four years. Reversing the trend of 2014 to 2015; the number of pedestrians crossing the canal cordon increased from 18,727 people in 2015 to 21,473 in 2016, an increase of almost 15%. 2016 is the first year on record that the number of pedestrians crossing the cordon in the AM peak has exceeded 20,000. In the period 2006 to 2016, there has been a 25% increase in the number of pedestrians crossing the cordon during the AM peak period. (See Fig 4&4.1)
- Traffic congestion management through management and optimisation of the availability of parking spaces. - In the period 2006-2016 the peak year for cars crossing the canal cordon was in 2008 with almost 59,000 vehicles. The 2016 figure represents a decrease of 12% or 6,989 cars since this peak.
- Promotion of the sustainable electric vehicles with Dublin City Council providing 35 dedicated EV only bays located on-street and the ESB providing 34 charging points.
- Facilitate the introduction of car share clubs – Two Car Clubs are operational on-street and have availed of 115 Car Club Permits. There are currently 19 dedicated car club only bays in the City.

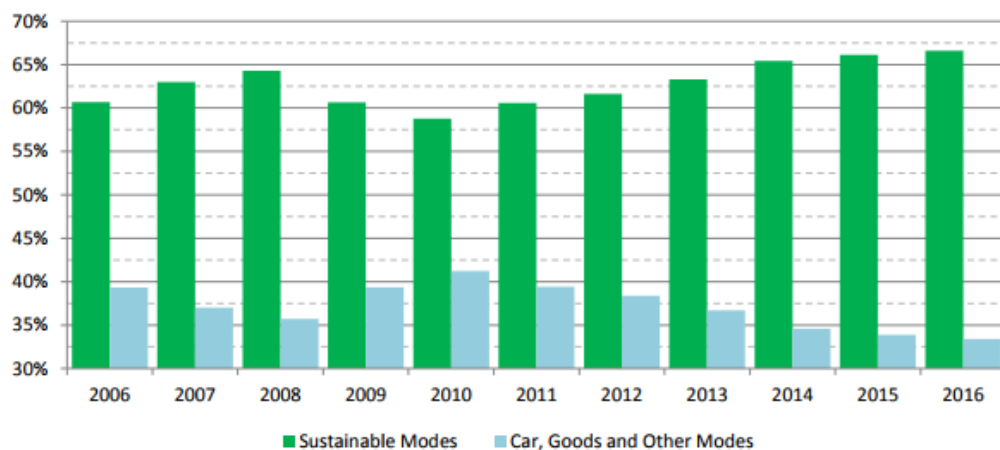


Figure 2.6 – Mode share of people crossing the Canal Cordon by sustainable modes 2006-2016

Fig. 4 Sustainable Modes

- Sustainable travel infrastructure projects and traffic management schemes that promote access by all sustainable travel modes: - Dublin's City bike Scheme had 68,074 subscribers, who made 4,355,437 journeys in 2017. Since the scheme began in 2009, people have travelled for an estimated 39 million kilometres in the capital.

The graphs below show the trend in trips by sustainable modes over the 10 year period 2006 – 2016.

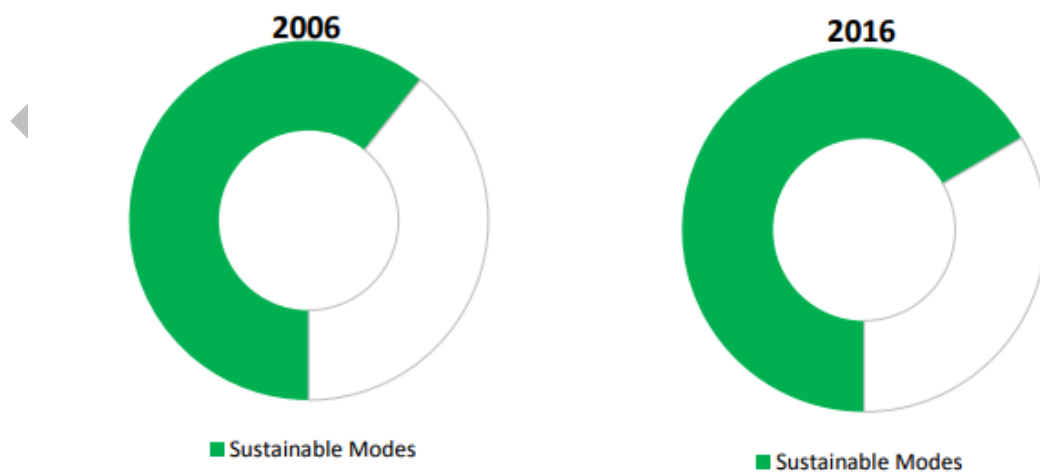


Fig. 4.1 Trends in Sustainable Modes

This summary review is mainly based around the management of different modes of transport used for commuting, as the noise mapping phase has indicated that the main source of noise in the capital is from Traffic. Therefore any action that will take individual noise sources (vehicles) off the road or reduce their use will have a positive impact, no matter how small, in reducing noise and improving the overall environmental noise quality within the City.

4.4.3 City Development Plan

During the period of the Action Plan 20013-2018, Dublin City Council introduced a new development plan for their area running until 2022. Transportation, environment and development control policies and objectives that aim to reduce the negative and harmful effects due to exposure to environmental noise are contained in the Development Plan (see para.2.72)

4.4.4 '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 action plan is to reduce human exposure to high sound levels, another important goal is to preserve areas, which are still 'tranquil' or quiet.

BOX 1.

A 'quiet' European city: the case of Annecy, France

The French city of Annecy provides a valuable example of how to achieve urban noise reduction. This city has recently experienced a significant increase in population size, associated with concerns regarding noise pollution. Noise abatement has been a political priority in Annecy from the earliest emergence of the problem, beginning by banning heavy goods vehicles from the city centre in the 1970s and reducing speed limits from 50 km/h to 30 km/h. The local authority has also invested in **lower-noise public service vehicles** and **moved glass recycling facilities underground** (The SMILE Consortium, 2003), although the major focus has been on traffic noise.

Analysis in the 1990s revealed that 75% of journeys relied on cars and that a significant proportion of city centre traffic was transit-based. As a result, several targets were set in Annecy, including the reduction of transit traffic and the promotion of cycling, walking and public transport use. To achieve this, **private vehicles were banned** from the city centre, **one-way streets** and **bus lanes** were developed and **pedestrianised areas** were expanded. Benefits were soon observed, including reduced travel time for buses, reduced car traffic, improved road safety and increased pedestrian access to the city centre (The SMILE Consortium, 2003).

The city was nominated for a '**Golden Decibel**' award by the French National Council for Noise Reduction in 1992 and has since had a progressive noise policy (Murphy and King, 2014). More recently, the **LIFE+Urbanecy** project was launched to reduce the environmental impact of deliveries and improve quality of life in Annecy, partly by reducing traffic noise in the city centre (Pure Annecy, 2016).

While Annecy has adopted a wide range of noise abatement measures to successfully reduce noise pollution in the city centre, some of the noise has essentially been shifted to other areas (Murphy and King, 2014; The SMILE Consortium, 2003). This emphasises the importance of a holistic approach to noise abatement, involving a comprehensive suite of mitigation approaches and careful planning to consider the knock-on effects of measures.

*Extract from Science for Environment Policy: Noise Abatement approaches. – issue 17
European Commission*

As part of the first Action Plan eight designated quiet areas were approved by the Minister for Environment as Quiet Areas. These are.

- Blessington Basin, Blessington St.
- Edenmore Park, Raheny.
- Mount Bernard Park, Shandon Park, Phibsborough.
- Dollymount SAA – Terrestrial Area Only(excluding slob lands)
- St. Annes Park, Raheny
- Palmerston Park, Dartry, (Relatively Quiet Area)
- Ranelagh Gardens, Ranelagh (Relatively Quiet Area)
- The Cabbage Gardens, Cathedral Lane, D2, (Relatively Quiet Area)

The current 2017 Noise Maps indicate that these areas still remain 'Quiet Areas' as defined in the original proposal.

4.4.5 Rail

The assessment of the impact of noise from both heavy (Irish Rail) and light rail (Luas) carried out during the 2017 noise mapping process shows that noise from this source has limited impact on the overall environmental noise levels in the Dublin City Council Area. Full details on population exposure and changes in the noise levels are given in the next chapter. As part of the previous Action Plan 2013-2018, there was an objective for rail operators to produce a sound impact assessment and apply mitigation measures, as 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 was carried out as part of the Environment Impact statement for the major rail projects carried out in the Dublin Area i.e. Luas Cross City.

4.4.6 Dublin Airport

Responsibility for the reduction of aircraft noise on local communities close to Dublin Airport is shared by the Irish Aviation Authority (IAA) the Dublin Airport Authority and the airlines that operate there. It is proposed that a standalone Action Plan for Dublin Airport will be developed by Fingal County Council for 2018 – 2023.

5 Summary of the results of the Noise Mapping 2017

5.1 Introduction

Noise mapping entails the calculation of sound levels at a number of 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. The Environmental Noise Directive ('END') indicates a preference for calculation rather than measurement for the production of 'noise maps'

Noise maps are developed by inputting data into 'noise mapping' software. This data includes long term average traffic volumes, the types of vehicles on the road, traffic speeds, road widths, type of road surface, road incline, road barriers, buildings, walls, ground contours and land use data. Similar data is inputted for the railway calculations, except vehicle and road information is substituted with rail track and train information. All this data is used in the calculations and is known as the 'noise model'. It forms a '3 D' representation of the Dublin City Council area. In Dublin City all these data sets were continually enhanced and updated over the intervening 5 year period between each round of the noise mapping process. Some of the data sets are created 'in house' such as the traffic volumes, building heights, ground contours and ground type. Others are commercial products such as the 'Geo Directory' building & address points, OSI map details and publically available data such as CSO census data. The Environmental Noise Regulations prescribes two methods that can be used for the assessment of noise from road sources. These are CRTN (Calculation of Road Traffic Noise) and the 'Interim Method' as described in the Environmental Noise Directive. The calculation method used to calculate the noise model was the 'Calculation of Road Traffic Noise – Method 2' using the proprietary 'B&K Predictor' software ver. 11.21.

Across this noise model, sound levels were calculated, using the inputted data, at every 10 metre spacing and every 2.5 metres around the façade of each individual building. There are no actual sound level measurements included in the model. Computation time for the model can be extensive. For example, for the Dublin City Council area alone, it would have taken one computer two months. However, when spread over a network the final calculations took 3 weeks. Once the calculations are complete, the values at every 10 metre spacing and around each building facade are designated individual colours, which are then displayed on a map. This enables large amounts of data to be presented visually in a relatively simple and understandable manner.

5.2 Public Perception

Most people are affected to some extent by noise as they go about their daily routine. The type, the level, and time of the sound occurrence - the context, plays a major role in how people perceive the impact of sound. At its simplest, noise is unwanted sound. So for example, 30,000 people could attend a rock concert and enjoy the music, while residents in the vicinity may consider the music 'noise' as it may occur at, what they may consider, an unreasonable time, at an inappropriate venue or the music maybe of such a volume as to impinge on their enjoyment of their favourite TV

programme or even sleep. So the old adage of 'One man's music is another man's noise' is still valid. People can become accustomed to noise from certain sources and blot it out. However this is becoming increasingly more difficult as sound levels all around us are increasing all the time. Noise can disrupt people's conversations, interfere with rest and sleep thus increasing stress levels, disturb concentration and impinge on all kinds of daily activities.

While the Noise Maps may indicate desirable\ undesirable levels in particular areas, there is a possibility that people's perceptions may be different. Some people may like the 'buzz' of a noisy, energetic city. Others can become accustomed to certain levels of noise, which may then become the accepted 'norm'. It is therefore important that all the public has the opportunity to express their views and that actions are not based solely on what a computer noise model has produced.

5.3 Objectives of Noise Mapping

The objectives of Noise Mapping are as follows: -

- To comply with the requirements of EU Directive 2002/49/EC and S.I. No. 140 of 2006
- To identify and quantify the scale of the noise problem in Dublin City Council area by providing information on environmental noise levels.
- To provide information to the public on the level of noise throughout the Dublin City and the location of 'Hot Spots'.
- To assist the City Council in the process of setting realistic targets for noise reduction if required.
- To provide a tool, permitting the more effective use of planning controls to reduce noise from new noise sources and to identify and protect and create areas of low sound levels.
- To be a tool, whereby action plans to reduce noise from existing sources can be developed, analysed and costed.
- To be a means of monitoring the effectiveness of planning controls and action plans for reducing noise.
- To be capable of monitoring trends in environmental noise.
- To provide a platform for further research into the effects of environmental noise in the Dublin City Council area.

5.4 Noise exposure levels

The 'Noise Maps' show colour coded areas in the Dublin City area, based on sound levels, in 5 bands. These increment in 5 decibels. The Night time band starts at 50 decibels and the 24 Hour band starts at 55 decibels. The EU Directive and the Irish regulations do not give an indication as to what level of 'noise' is acceptable. This is left to each member state. At this point in time, Ireland does not have any statutory limit values, as is the case for air pollution. In the absence of limit values, one could assume that the closer the calculated noise level is to the highest band of noise set out in the Directive the more undesirable it is. Conversely, the closer the calculated noise is to the lowest band of sound set out in the Directive the more desirable it is.

The results of a sound assessment can be expressed in different ways depending on the method of assessment. Each method is represented by its own 'sound indicator'. So for example an average measurement over a 24 hour period is called a 24 LEQ (pronounced L, E, Q), whilst measurements of sound from traffic over an 18hr period is designated by an L10 18 Hour value. Other common indicators are Lmax – maximum sound level over a specific period; SEL- sound exposure level, and L95 – the sound level exceeded for 95% of the measurement period. However, whatever the method of assessment, the unit of measurement for all sound measurement is the decibel (dB).

The Noise maps for the Dublin City Council area can be found in Appendix G, (p88-p94) of this report. More detailed Dublin City Council's noise maps are available on Dublin City Council website at the following link:- <http://bit.ly/1AldL1E>

5.5 Noise Level indicators

BOX 2.

The decibel

Noise is measured in decibels (dB). It is also referred to in A-weighted decibels (dB (A)).

The A-weighting filter is a method of summing sound energy across the frequency spectrum of sounds audible to humans, and is used to estimate the human ear's response to sound.

There are two important indicators of noise:

Lden: The day, evening and night noise indicator. A measure of all the averaged (continuous equivalent) sound pressure level over a year, and

Lnight: The night time noise indicator, which averages (continuous equivalent) sound pressure level over one year, focussing on the hours between 23:00 and 07:00.

This corresponds to 8 hours, the recommended period of sleep for adults.

A natural environment (birds, trees and wind) is associated with a typical average **Lden** value of **40 dB** and an **Lnight** of **30 dB**.

An **Lnight** value of **40 dB** is the limit suggested by the World Health Organization to avoid negative health effects on humans.

EU Member States are required to report noise above an Lden of 55 dB and Lnight of 50 dB, under the Environmental Noise Directive.

3 dB is the minimum sound level typically considered perceptible by humans, and starting from 5–10 dB humans can clearly acknowledge a different acoustic environment.

*Extract from Science for Environment Policy: Noise Abatement approaches. – issue 17
European Commission*

There are no limits on permissible or impermissible sound exposure levels set down in Irish Statute law, in relation to environmental noise outside of the work place. However there are standards used by other countries, which are used here, such as the *Calculation of Road Traffic Noise* (Welsh Office). Sometimes references are made in relation to World Health Organisation Guidance for the protection of human health against environmental noise exposure. Industrial Pollution, Prevention and Control licenses (IPPC licenses) issued by the Environmental Protection Agency normally contain specific

limits in relation to the sound levels produced by the industrial process at the boundary of the industrial site.

5.6 Strategic Noise Maps – Report and Statistics for Dublin City Council.

The full details of Dublin City Council's noise maps are produced in the report – 'Noise Maps, Reports and Statistics, Dublin City Council 2017 Noise Mapping Project' and can be found on the Dublin City Council website at the following link:- <http://bit.ly/2EQOa5l> The most current details of noise complaints and their source and investigation can be found in the 'Air Quality Monitoring & Noise Control Unit's Annual Reports' which can be found on the Dublin City Council website at the following link:- <http://bit.ly/1O82gyq>

5.7 Population exposure to sources of Traffic Noise, Dublin City Council

The population and dwelling exposure to noise from road traffic in the Dublin City Council area is set out in Table 1. In summary, the statistics from noise modelling for the Dublin City Council area indicate that: -

- Overall there have been small positive changes over the past five years in the number of people being exposed to undesirable sound levels, particularly at night – with a 2% reduction in this category. However there is still a tranche of people (22%) who are still being exposed to undesirable night-time sound levels. Traffic noise is the dominant noise source with Railway noise having no major impact on overall ambient sound levels.

The full 2017 Noise Map report can be found on the Dublin City Council website at the following link:- <http://www.dublincity.ie/WaterWasteEnvironment/NoiseMapsandActionPlans/Pages/default.aspx>

Digital maps can be downloaded from this site and overlaid on Google Earth for ease of use. Set out in fig. 5 and fig. 5.1 are the percentage comparisons of population exposure between the 2007, 2012 noise maps and the 2017 noise maps.

Table 1
Estimated Total Number of People in relevant 5dB bands

All Road Sources Dublin City Council in dB(A)	Lden 24Hr All Road Values	Lday Day All Road Values	Levening Evening All Road Values	Lnight Night All Road Values	No. Of QFs All Road QF	Lden QF No of People with Quiet Façade(QF) All Road	Lnight QF No of People with Quiet Façade All Road	Lden Area Area Exposed All Road	No. of Dwellings Exposed (Lden) All Road
0-44	2200	3000	5100	319000	0	0	100		1100
45-49	16600	21600	25300	57700	0	0	300		7500
50-54	210200	248300	264900	54600	0	100	8300		89200
55-59	139300	105300	96300	83300	100	200	30800		61800
60-64	48400	61000	72600	35100	1200	2700	20900		21200
65-69	92700	87100	73700	4800	15400	32400	3000		42300
70-74	42400	27100	16000	100	12300	26200	0		19700
>55	324700	281200	258700	123200	29900	63200	54500	43.25	145900
>65	137600	115200	90100	4800	28600	60300	2900	11.48	63200
>=70	45100	28300	16700	0	13200	28000	0		21000
>=75	2700	1300	600	0	900	1800	0	0.36	1300
Total	554500	554700	554500	554600	29900	63400	63400		244100
Major Road Sources Dublin City Council in dB(A)	Lden 24Hr Major Road Values	Lday Day Major Road Values	Levening Evening Major Road Values	Lnight Night Major Road Values	No. Of QFs Major Road QF	Lden QF No of People with Quiet Façade(QF) Major Road	Lnight QF No of People with Quiet Façade Major Road	Lden Area Area Exposed Major Road	No. of Dwellings Exposed (Lden) Major Road
0-44	208900	232800	271800	428800	0	0	700		98500
45-49	130300	118100	102800	28500	0	0	1200		60000
50-54	73500	68600	56500	30600	200	400	13800		29900
55-59	36400	33100	27900	48200	200	700	33000		15300
60-64	21700	23800	30300	16300	1600	3400	12200		7700
65-69	51400	54200	50300	2100	15800	33800	1500		19100
70-74	30200	22800	14300	100	10500	22500	0		12600
>55	141700	134800	123300	66500	28800	61800	46500	23.02	55500
>65	83800	78000	65200	2200	27000	57800	1400	7.71	32500
>=70	32300	23900	15000	0	11300	24100	0		13400
>=75	2100	1200	600	0	800	1600	0	0.31	800
Total	554500	554600	554500	554600	29100	62400	62400		243900



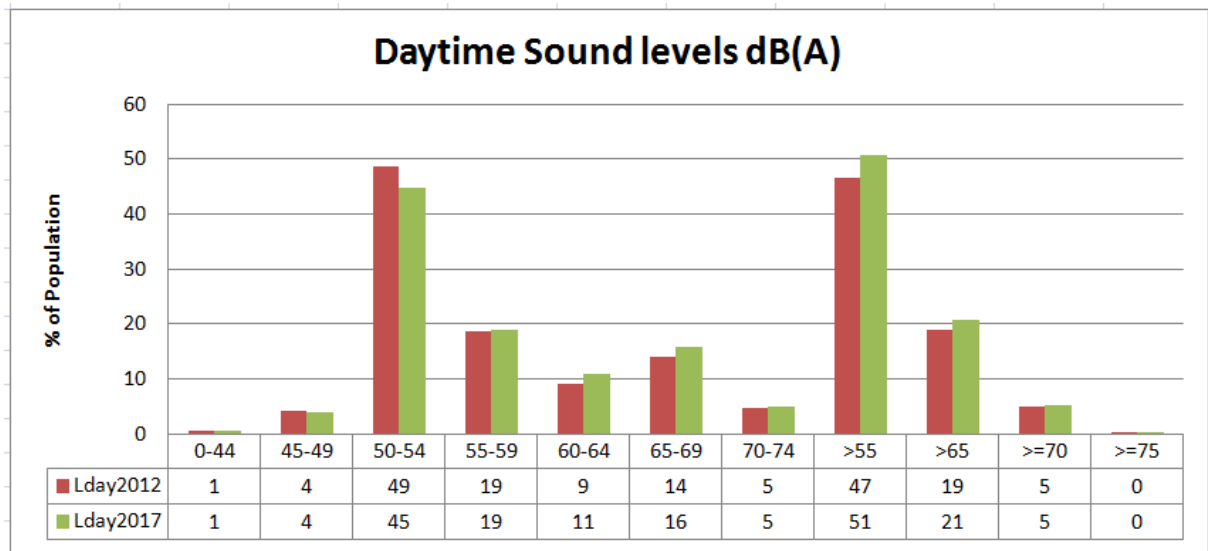


Fig. 5

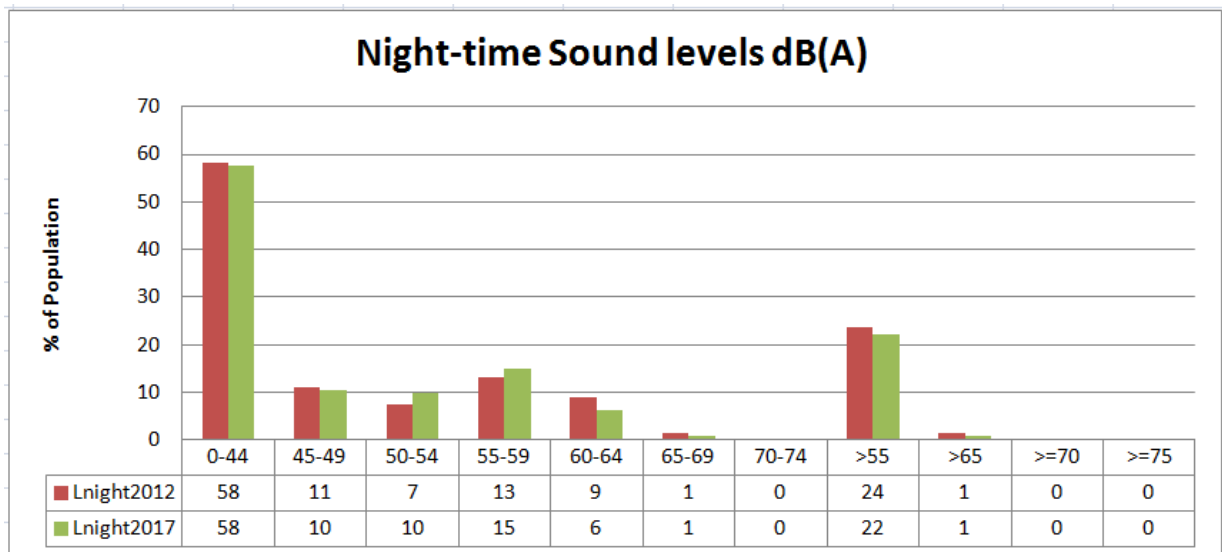


Fig. 5.1

5.8 Population exposure to sources of Heavy Rail & Luas Noise, Dublin City Council 2017

In general, noise exposure levels from rail sources in the Dublin area are low. In Table 2, it can be seen that the number of people exposed to the undesirable night time levels above 55 dB(A) from the Luas is 1300, i.e. 0.23% of the total population. The noise maps were completed before the LUAS Cross City Project was complete and as such do not show the impact of this portion of the light rail system. Similarly in Table 3, it can be seen that the number of people exposed to the undesirable night time levels above 55dB (A) from Heavy Rail is also 1300, i.e. 0.23% of the total population.

Table 2

Major LUAS Sources Dublin City	Lden 24Hr Major LUAS Values	Lday Day Major LUAS Values	Levening Evening Major LUAS Values	Night Night Major LUAS Values	No. Of QFs Major LUAS QF	Lden QF No of People with	Night QF No of People with	Lden Area Area Exposed Major	No. of Dwellings Exposed (Lden)
0-44	538100	540700	542900	546800	700	2100	4700		236200
45-49	6200	5000	3600	2800	700	1500	1400		3000
50-54	3400	2900	3000	3700	600	1400	2700		1600
55-59	2400	3600	3600	900	700	1500	500		1100
60-64	3700	1900	1100	300	1300	2700	200		1700
65-69	500	300	300	100	100	200	100		200
70-74	200	200	100	0	0	100	0		100
>55	6900	5800	5100	1300	2100	4600	700	2.05	3200
>65	700	500	400	100	100	300	100	0.38	300
>=70	300	200	100	0	0	200	0		100
>=75	100	0	0	0	0	100	0	0.01	0
Total	554600	554600	554600	554600	4100	9600	9600	2.44	243900

Table 3

Major Rail Sources Dublin City Council in dB(A)	Lden 24Hr Major Rail Values	Lday Day Major Rail Values	Levening Evening Major Rail Values	Night Night Major Rail Values	No. Of QFs Major Rail QF	Lden QF No of People with Quiet Façade(QF) Major Rail	Night QF No of People with Quiet Façade Major Rail	Lden Area Area Exposed (Km2) Major Rail	No. of Dwellings Exposed (Lden) Major Rail
0-44	531900	534100	536400	544500	3100	7000	11100		234100
45-49	6800	6700	6600	4900	500	1300	2700		3100
50-54	6100	5200	4400	3800	1300	2900	2800		2800
55-59	4400	5200	4700	1300	900	2200	900		1900
60-64	4700	3300	2400	100	1500	3700	100		1900
65-69	700	100	100	0	200	500	0		300
70-74	0	0	0	0	0	0	0		0
>55	9700	8500	7100	1300	2600	6300	900	2.60	4100
>65	700	100	100	0	200	500	0	0.83	300
>=70	0	0	0	0	0	0	0		0
>=75	0	0	0	0	0	0	0		0
Total	554600	554600	554600	554600	7500	17600	17600	3.43	244100

5.9 Limitations of the maps/results

As previously stated, noise maps are derived from computer modelling. The computation method of the traffic model used for the Dublin City Council area was based on the British method for the calculation of road traffic noise. This method calculates the sound for traffic emissions over an 18-hour period from 06.00Hrs to 24.00Hrs. The method has been widely used and accepted in most of the Environmental Impact Assessments for major infrastructural developments within this state.

However with the introduction of two EU sound indicators - LDEN and Lnight, which cover a full 24 hour and 8 hour night time periods respectively, a conversion had to be applied to convert the original 18 hour sound values to the new 24 hour and night time periods.

In order to assess whether this conversion is robust, long term measurements from the Dublin City Council ambient sound monitoring network were compared with the 2017 modelled results. Overall, the majority of the yearly measurements for the LDEN and Lday periods fell within the equivalent 5dB bands calculated by the model. For the Lnight period the model underestimates when compared to measured values. This could be due to weather impacts, such as wind and rain, having a greater impact on measurements due to the sound from traffic sources becoming less dominant at night. There is also a known weakness in the conversion method used in the modelling method to convert 18hour calculated values to 8 hour night time values, particularly where low traffic flows exist. Set out in Table 4 is a comparison of average network measured values with average modelled values.

Table 4

	Day dB(A)	Night dB(A)	Lden dB(A)
Measurement	56.57	51.11	59.25
Modelled	58.81	47.87	59.81
Difference	2.24	-3.24	0.56

Whilst the computer modelling may identify quiet areas or areas with undesirable high sound levels, this in itself may not indicate that priority action is required. As information is not readily available in relation to noise mitigation measures at a local level, it may be prudent to carry out local surveys in order to confirm what action is necessary.

6 Noise Management Area identification

6.1 Introduction

Low environmental sound levels contribute significantly to the good health and quality of life for the population in the Dublin City Council area. Co-ordinated and sustained effort is required to protect those areas that have low environmental sound 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 sound levels or the reduction in undesirably high levels, thus providing respite from the noisy 'hustle and bustle' often experienced in the busy urban environment.

6.2 Confirmation of onset of Assessment Thresholds

The results of the strategic noise maps provide an indication of the extent of environmental noise exposure in an area. However, the noise maps do not necessarily indicate where noise mitigation measures are required or where they would be more cost effective. For this reason it is necessary to set out an approach which seeks to identify locations where noise mitigation measures are necessary and cost effective. Initially, some form of noise level needs to be identified for the onset of the process for the assessment of need. The following section outlines the levels to be used for the assessment of noise mitigation measures for road traffic in the Dublin City Council area.

6.2.1 Areas with desirable low and undesirable high sound levels

Previous Action Plans set out desirable and undesirable sound levels. These are set out below and are not change for this draft Action Plan.

Desirable Low Sound levels

- < 50 dB(A) Lnight
- < 55 dB(A) Lday

Undesirable High Sound levels

- > 55 dB(A) Lnight
- > 70 dB(A) Lday

6.2.2 Protection Thresholds for Quiet 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.

A Quiet Area could be an area with low sound levels or an area that should not be exposed to high sound levels due to the type of area or the nature of the activities that take place within it. An area may also be perceived to be quiet although the sound levels may be relatively high. However, in

general natural sounds can be soothing regardless of their level. For instance sound levels on St Stephens Green East range between 65-69 decibels, while sound levels in the centre of the Park, range from 55 to 59 decibels. Whilst still relatively high, people use this park at lunch and other times to recreate and escape from the hustle and bustle of city life. Some quiet areas may not be noise sensitive at night as they are not in use as an amenity at this time, e.g. parks closed at night.

In this Draft Action Plan, the following absolute values are used as one criterion for defining a Quiet Area.

- < 45 dB(A) *L*_{night}
- < 55 dB(A) *L*_{day}
- < 55 dB(A) *L*_{den}

A second criterion to cover what are perceived as 'Relatively Quiet Areas' will also be used. These types of locations are defined by their proximity to areas of high sound levels, and which provide a perceived area of tranquillity. Both quantitative and qualitative assessments will be used to identify these types of locations. During the implementation of the action plan, potential locations will be identified that have noise levels below these criteria and their land use zoning will be identified. If appropriate or necessary, locations could be identified as quiet areas where the existing noise levels are to be preserved or reduced if possible.

6.3 Application of a Decision/Selection Criteria matrix

Different sources of noise cause different reactions for the same sound level due to the context within which the sound is heard. Box 3 displays people's response to different sources and levels of sound. It is therefore necessary to develop a ranking that seeks to identify locations where noise mitigation measures are necessary, feasible and will be cost effective. To do this, a noise decision support matrix is used, with details shown in Table 5

Box

Although fewer people are exposed to air traffic noise than that from road or rail, it is reported to cause greater annoyance (Guarinoni *et al.*, 2012; ISO, 2016; Münzel *et al.*, 2014) (Figure 5).

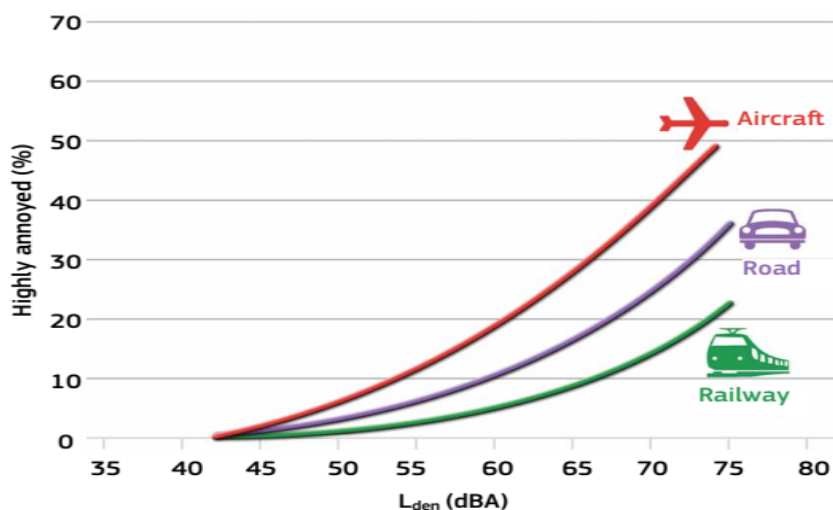


Figure 5: Percentage of people highly annoyed by aircraft, road and rail noise. The curves were derived for adults on the basis of surveys (26 for aircraft noise, 19 for road noise, and 8 for railways noise) distributed over 11 countries. Source: adapted from Münzel *et al.*, 2014.

A decision support matrix is a chart which enables identification, analysis and rating of the strength of relationships between various sets of information. It enables a number of different factors to be examined, such as the noise exposure level, the type of noise receptor, the type of noise source and the number of people affected. It also facilitates assessing the relative importance of each.

As part of this Action Plan a value of **17 or more** – similar to the previous Action Plans, is used as the point where priority action should be considered - either to reduce excessive sound levels or to preserve low sound levels where they exist.

Table 5 - Noise Decision Support Matrix				
Decision Selection Criteria		Score Range day	Score Range Night	Subtotal
Noise Band dB(A)	<55	3	4	
	55-59	2	2	
	60-64	1	3	3
	65-69	2	4	2
	70-74	3	5	
	>=75	4	6	
Type of location	City Centre	1	1	
	Commercial	1	2	
	Residential	2	3	
	Noise Sensitive Location	3	3	6
	Quiet Area	3	3	
	Recreational open space	2	2	
Type of Noise	Road	2	3	5
	Rail	1	2	
			Total	16

For example an address, which falls within the Sound level 65-69dB in the day (2) and 60-64dB at night (3), in a noise sensitive area for day and night (3+3) and exposed to sound from predominantly traffic day and night, (2+3) will give an overall total of 16, as can be seen in Table 5. The following sections outline the results of the application of the decision support matrix analysis in the Dublin City Council area.

6.4 Results from the Matrix analysis - Residential

Arising from the noise mapping process, it is possible to identify the number of residential properties exposed to the various bands of sound levels. Although not defined as noise sensitive locations, residential properties are ranked just 1 point below noise sensitive locations in the decision matrix. Therefore it is essential to know the sound exposure level at each property. The following sections outline noise exposure data for residential dwelling in the Dublin City Council region with the number of households exposed rounded up or down to the nearest 100.

6.4.1 Residential Areas – Dublin City Council Noise Exposure Bands

Table 6 provides details of noise exposure levels for various bands arising from all traffic for the 244,100 residential dwellings in the Dublin City Council Area.

Table 6 - Household Noise exposure levels – Dublin City Council 2017				
Decibels dB(A)	Lday Number households exposed	Lday % households exposed	Lnight Number households exposed	Lnight % households exposed
0-44	1400	0.6	138100	56.6
45-49	9700	4	25200	10.3
50-54	106400	43.6	24200	9.9
55-59	46500	19	38000	15.6
60-64	27000	11.1	16300	6.7
65-69	39800	16.3	2300	0.9
70-74	12700	5.2	0	0
>75	600	0.2	0	0

Analysis of the noise decision support matrix for the Dublin City Council Area shows the following: -

- In total, 45.8% (111,669) of residential properties have been identified as having a score of 17 or greater thus suggesting priority action should be considered. The equivalent percentage in the Action Plan 2013 to 2018 was 53.4% (130,398).
- The 45.8% is broken down as follows:-
- 45.5% (110,981) of properties are in areas with exposure to low sound levels,
- 0.3% (688) of properties are exposed to high sound levels. Applying this to the population statistics equates to potential annoyance from high sound levels for approximately 1420 people – a reduction of 426 residential dwellings and 710 people, on the previous plan.

The areas exposed to low sound values and therefore prioritised for preservation of the good environmental sound quality, can be identified from the Day and Night time noise maps in Appendix

G, where the colour contours are transparent in both maps i.e. below 45dB(A) at night and below 55dB(A) during the day. Similarly, areas to be prioritised for action to be taken to reduce high sound levels, can be identified from the Day and Night time noise maps where the colour contours range above 65dB(A) for Night time and 70dB(A) for daytime. Maps that identify areas in the city with desirable and undesirable sound levels can also be found in Appendix G.

6.5 Results from the Matrix analysis – Noise Sensitive Locations, Dublin City Council

Certain locations and building types are considered to be more sensitive to noise pollution than others. The main priority of the Environmental Noise Directive is to reduce environmental noise exposure in residential areas. It is also recommended that competent authorities designate buildings, such as educational and health care facilities, as being noise sensitive. In accordance with this guidance, an assessment using the Noise Support matrix was carried out on areas which were considered to be noise sensitive.

For the Dublin City Council area the recreational open spaces available to the City's population can be broken down into approximately 1500 hectares of parks and open spaces, 54 playgrounds, four beaches, 18 outdoor gyms, 23 sports and recreational centres, 8 golf and pitch & putt courses and 23 all weather football pitches. The Office of Public Works manage and maintain some major parks within Dublin, such as the Phoenix Park to the west of the City and St. Stephens Green, which is in the City Centre of Dublin. The noise sensitive areas include 8 designated 'Quiet Areas' which are all parks and are owned and managed by Dublin City Council, two nature reserves, one main river with associated boat clubs and river walks and two canals with associated green spaces and walks. There are 152 places of worship, 53 hospitals including nursing and convalescence homes, 343 educational institutions, and 272 childcare/pre-primary facilities.

- Using the decision making matrix and address points associated with these locations, most have been found to have a score of less than 17. Those areas that have achieved a score of 17 are open green space/parks characterised by their remoteness from any heavily trafficked roads, the currently designated 8 'Quiet Areas', and large portions of the Royal Canal and to a lesser degree some portions of the Grand Canal.

7 Noise Mitigation and Protection Measures

For an Action Plan relating to noise management to be comprehensive and effective it needs to be dovetailed and integrated in a sustainable way with all the other policies and plans produced and/or being implemented by the City Council. For the Dublin City Council area this includes the City Development Plan, Smarter Travel – *A Sustainable Transport Future 2009-2020*, the *Greater Dublin Area* Transport strategy, 2016 to 2030, Dublin City Council HGV Management Strategy, Local Area Regeneration Plans, Planning Control, Noise Abatement policy, Traffic Management strategies, the Climate Change Strategy for Dublin City, the Air Quality Management Plan, the Energy Action Plan, the Biodiversity Action Plan, the Refurbishment policy of Dublin City Council housing stock and Fleet Management policies. The early integration of actions in the noise action planning with the aforementioned processes enables a more efficient and comprehensive planning and evaluation to be carried out.

7.1 Managing Areas and General Noise Mitigation

The general principles of sound mitigation apply in relation to action planning. These are, 1) control or mitigate the noise source, 2) intervene with the sound pathway, and 3) protect the receiver. So for instance, treating the sound path between receiver and source by inserting a barrier could mitigate sound from traffic on a roadway. By reducing the traffic numbers on the road, the source sound levels could be reduced. A house receiving exposed to the sound levels could be treated with dual glazing or a new house could be located further away from the source.

In general, no one design intervention can provide a solution in an area and often a range of measures will be needed. In order to minimise the costs of noise prevention and noise reduction:-

- In the case of existing noise sources or sensitive buildings affected by noise, noise mitigation will 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 will be taken into account from the very beginning of the planning process.
- Where a new noise source is being created, consideration will be given as to whether it is absolutely necessary, and whether the benefits really outweigh the disadvantages. If this is the case then consideration will be given to the relocation of the noise source so that it causes the minimum possible disturbance. This approach will be adopted as part of the 'General Principles for deciding on action on noise mitigation in relation to Planning & Development'.

7.2 General Principles for deciding on action to mitigate Environmental Noise

As part of this draft Action Plan, a strategic approach will be undertaken to managing environmental noise. This includes actions to manage environmental noise, primarily from road traffic, as this is the

dominant sound source. Noise nuisances will be dealt with separately under the *General Principles for deciding on action to mitigate Noise Nuisances* – see paragraph. 7.3. In line with previous Action Plans, the following principles will be adhered to when deciding on the appropriate actions to reduce sound levels and to maintain noise levels where they are considered satisfactory:-

- a) This draft Action Plan will be part of, and compliment the Dublin Agglomeration Action Plan Relating to the Assessment and Management of Noise 2018-2023
- b) Focus will mainly be on actions to manage environmental noise, primarily from road traffic as this is the dominant sound source, but also from rail, aircraft and industrial sources, where required.
- c) The plan shall address priorities that have been identified by the relevant noise limit value being exceeded or other relevant criteria established by the Environmental Protection Agency 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 sound levels are defined as areas with a night time level less than 50 decibels and/or a daytime level less than 55 decibels.
 - Undesirable high sound levels are defined as areas with a night time level greater than 55 decibels and a daytime level greater than 70 decibels.
 - Absolute values of below 55dB(A) daytime and below 45 decibels at night time or below an Lden of 55dB(A) will be one criterion for defining a Quiet Area.
- d) A second criterion for perceived or 'Relatively Quiet' areas will be used. These areas will be defined by their proximity to areas of high sound levels, but which provide a perceived area of tranquillity. Both quantitative and qualitative assessments will be used to identify these areas.
- e) Areas that require mitigation measures will be prioritised using the referenced decision support matrix. For this Action Plan the higher number achieved the higher the priority for action. A value of 17 or more has been chosen as the point where priority action should be considered. (See Chapter 6 and sub paragraphs)
- f) A step-by-step approach will be taken and will be in accordance with the current policies and practices of Dublin City Council and relevant agencies.
- g) The Dublin City Council will strive to be a model of best practice that in turn can influence other bodies through the support of Smart Cities and being 'early adopters' of new quieter and less polluting vehicles.

7.3 General Principles for deciding on action to mitigate Noise Nuisances

Dublin City Council will follow the guidance as set out in the 'National Protocol for Dealing with Noise Complaints for Local Authorities' which complements its own policies as set out below. The purpose of this Guidance is to provide a structured, consistent process for Local Authorities to follow when they are engaging with complaints of noise pollution. The aim is that the process described will be a model of best practice for Local Authorities in this often difficult area of complaint management. Details of this guidance can be found on Dublin City Council's website at the following link:-

<https://bit.ly/2BIldUS>

7.4 Dublin City Council's Noise Nuisance Policy

Noise Pollution Complaints

Dublin City Council's Air Quality Monitoring and Noise Control Unit deal with noise complaints from members of the public. These mainly relate to complaints about commercial enterprises operating within Dublin City Council's functional area. The Unit also carries out monitoring at various outdoor music events within the city, and report these results as required. As well as its regulatory role, it also has an advisory role to a number of other departments within Dublin City Council. Information on Dublin City Council's Noise Nuisance Policy can be found in Appendix E

7.5 Noise outside the remit of Dublin City Council and the Draft Action Plan relating to the Assessment and Management of Environmental Noise 2018 - 2023

- **Aircraft Noise Complaints**

Aircraft noise is exempt from the EPA Act 1992. Contact the Dublin Airport Authority to advise them of your complaint. A separate Action Plan is to be developed by Fingal County Council in consultation with the Dublin Airport Authority.

- **Traffic Noise Complaint**

In general Dublin City Council does not have the legislative authority to investigate complaints about traffic emissions. Public Transport emission queries are dealt with by An Gardaí Síochána at the Carriage Office, Dublin Castle, Dame St, Dublin 2.

- **Noise from Road Works**

All road works must have a permit that is issued by The Road Works Control Unit of the Environment and Transportation Department, Dublin City Council. The times permitted for road works vary depending on the permit.

- **Dog Barking Complaint**

Complaints in relation to excessive barking can be dealt with under Section 25 of the Control of Dogs Act 1986. Under Section 25 of this act a decision as to whether any case of dog barking constitutes a nuisance is an issue for the District court to adjudicate on. An individual wishing to make a complaint to the district court regarding barking dogs can download the relevant form from the following link:-

http://www.dublincity.ie/sites/default/files/content/RecreationandCulture/AnimalWelfare/Documents/Barking_Dogs_-_Notice_to_make_a_complaint_to_the_District_Court%5b1%5d.pdf.

For further advice on properly serving this notices as required under section 25 of the Control of Dogs Act contact your local district court office.

- **Noise caused by public transport – LUAS / Dublin Bus**

Complaints arising from traffic noise on the public road fall outside the legislative control of Dublin City Council. However, complaints regarding noise from public transport depots can be investigated.

- **Noise from beer gardens/smoking areas**

Complaints arising from noisy patrons in outdoor smoking areas or beer gardens are not dealt with by the Air Quality Monitoring & Noise Control Unit. A private action can be taken under Section 108 of the EPA Act 1992. Contact your local district court office for the required form.

- **Noise disturbance from individuals on the public thoroughfare**

Noise nuisance caused by individuals behaving in a loud or rowdy manner fall outside the legislative control of Dublin City Council. When such instances occur on a public thoroughfare, they may become a public order offence and maybe dealt with by An Garda Síochána. Contact your local Garda station.

- **Neighbour in a private owner- occupied house.**

Domestic and neighbour noise nuisance are not dealt with by Dublin City Council. Advice on how to deal with this situation can be found by checking the Dublin City Council website under the heading 'Noisy Neighbour Complaint'

7.6 Noise and the Planning and Development Process

The planning system has the potential to exercise a significant influence on the control of future exposure to environmental noise and can play a key role in the improvement of amenity. The appropriate use of the planning system can help avoid, or minimise, the adverse impacts of noise without placing unreasonable restrictions on development. Scope exists within planning and development management process to manage increased levels of noise arising from new development where exposure levels can be harmful to health. Set out in the following paragraphs are how Dublin City Council has integrated actions on noise into the Planning and Development process.

7.6.1 General Principles for deciding on action in relation to Planning & Development Planning Policy and Noise Mitigation

The overarching vision for planning and development within Dublin City is contained within the current Dublin City Development plan 2016-2022. The Development Plan sets out policies and objectives to guide how and where development will take place in the city over the lifetime of the Plan. It provides an integrated, coherent spatial framework to ensure the city is developed in an inclusive way which improves the quality of life for its citizens, whilst also being a more attractive place to visit and work. This Plan was adopted by Dublin City Council at a Special Council meeting on 23rd September 2016. The Plan came into effect on 21st October 2016. In order to protect and preserve the quality of the environment, including the prevention, limitation, elimination, abatement or reduction of environmental noise pollution, Dublin City Council has included the objectives outlined in paragraph 2.7.2 of this draft Action plan, in the current City Development Plan.

7.6.1.1 Development Standards – City Development Plan (CDP) 2016-2022

Acoustic Privacy (CDP- 16.10.3)

Acoustic privacy is a measure of sound insulation between dwellings and between external and internal spaces. Development should have regard to the guidance on sound insulation and noise reduction for buildings contained in BS 8233:2014. The following principles are recommended for minimising disruption from noise in dwellings:

- Utilise the site and building layout to maximise acoustic privacy by providing good building separation within the development and from neighbouring buildings and noise sources
- Arrange units within the development and the internal layout to minimise noise transmission by locating busy, noisy areas next to each other and quieter areas next to quiet areas
- Keep stairs, lifts, and service and circulation areas away from noise-sensitive rooms like bedrooms. Particular attention should be paid to the siting and acoustic isolation of the lift motor room. Proposals close to noisy places, such as busy streets may need a noise impact assessment and mitigation plan.

7.6.1.2 Mixed Use Development (CDP – 16.10.11)

In order to minimise noise disturbance, sound insulation shall be incorporated between individual units and to the building in order to reduce the transmission of impact and airborne noise between units and/or premises and to or from the external environment. The scheme of sound/acoustic insulation will be submitted with the planning application for development.

7.6.1.3 When considering planning applications the following will be taken into consideration:-

- Take-ways(CDP- 16.25)

In order to maintain an appropriate mix of uses and protect night-time amenities in a particular area and to promote a healthier and more active lifestyle, it is the objective of Dublin City Council to prevent an excessive concentration of take-aways and to ensure that the intensity of any proposed take-away is in keeping with both the scale of the building and the pattern of development in the area. The provision of such facilities will be strictly controlled, having regard to the following, where appropriate: - The effect of noise, general disturbance, hours of operation, litter and fumes on the amenities of nearby residents.

- Restaurants (CDP - 16.29)

The effect of noise, general disturbance, hours of operation and fumes on the amenities of nearby residents.

- Betting Offices(CDP – 16.27)

The effect on the amenities of the area by reason of noise, hours of operation and litter.

- Street Furniture (CDP – 16.30)

The effects on the amenities of adjoining premises, particularly in relation to hours of operation, noise and general disturbance.

- Night Clubs/Licensed Premises/ Casinos/Private Members' Clubs (CDP -16.32)

Noise emanating from and at the boundaries of these establishments are issues which will need to be addressed in planning applications for such establishments. Noise insulation and reduction measures, especially relating to any mechanical ventilation or air-conditioning, will be required to be submitted with any such planning application.

- Hours of Work(CDP -16.35)

On sites where noise generated by construction would seriously affect residential amenity, the site and building works must be carried out between 0700 and 1800 hours Monday to Friday only, and between 0800 and 1400 hours on Saturdays only. No works shall be carried out on Sundays or bank holidays. However, deviation from these times may be permitted in exceptional circumstances, where prior written approval has been received from Dublin City Council. Such approval may be given subject to conditions pertaining to the particular circumstances being set by Dublin City Council.

- Noise (CDP – 16.36)

Dublin City Council will have regard to the Dublin Agglomeration Noise Action Plan 2013–2018 when assessing planning applications (see also Section 9.5.8). Where it is considered that a proposed development is likely to create a disturbance due to noise, a condition may be imposed by the planning authority on any planning permission limiting the hours of operation and level of noise generation.

- Petrol Stations (CDP – 16.37)

Petrol stations will only be permitted in residential areas, where it can be demonstrated that no significant damage to residential amenities will occur by reason of factors such as noise, visual obtrusion, safety considerations or fumes/smells. Any car-washing/drying facilities should be sited so as not to cause nuisance.

7.6.1.4 Traffic Management

Increasing volumes of traffic affect air quality and the acoustic environment. The challenge is how to manage demand for limited road space and thus minimise traffic congestion, where possible, resulting in improved air quality and reduced noise emissions. The aim is to manage these issues through specific transport measures, as outlined in the Transport and Traffic chapter of the City Development Plan.

Traffic in the city can have environmental and safety impacts which need to be addressed and minimised through measures such as traffic calming, layout/road re-design, and through monitoring of polluting emissions such as noise. The launch of the Design Manual for Urban Roads and Streets (DMURS) jointly by the Department of Environment, Community and Local Government and Department of Transport, Tourism and Sport places a new focus on the role of streets in sustainable place-making and encourages layouts that are suited to all users. It is the policy of Dublin City Council to support the sustainable principles set out in the DMURS.

7.6.1.5 Land Use Zoning

- City Centre Zone(CDP – 14.8.5)

Land-Use Zoning Objective Z5: To consolidate and facilitate the development of the central area, and to identify, reinforce, strengthen and protect its civic design character and dignity. The primary purpose of this use zone is to sustain life within the centre of the city through intensive mixed-use development. The strategy is to provide a dynamic mix of uses which interact with each other, help create a sense of community, and which sustain the vitality of the inner city both by day and night. As a balance and in recognition of the growing residential communities in the city centre, adequate noise reduction measures must be incorporated into development, especially mixed-use development, and regard should be given to the hours of operation (see CDP - 16.36).

- Land-Use Zoning Objective Z6,(CDP – 14.8.6)

Proposed uses (e.g. civic amenity/recycling centres) with the potential to create significant disamenity to adjoining properties/sites must demonstrate to the satisfaction of the planning authority that such disamenity will be controlled to an acceptable level. The impacts on any existing uses or permissible future use and the nature/ sensitivity of such uses will be taken into account in determining the planning application. In some cases, measures such as site re-design, provision of noise insulation or perimeter landscape buffers, containment of yard operations within a building, or comprehensive boundary treatment may help control potential negative externalities. An EIA \EIAR may be required in some cases.

7.6.1.6 Planning Applications under the Planning and Development Act 2000 - 2006

Under the Planning and Development Act 2000-2006 a local authority under section 34(1) of the 2000 Act 'may decide to grant the permission subject to or without conditions, or to refuse it. Set forth in Appendix F are extracts from the Planning and Development Act 2000-2006 and how Dublin City Council will consider relevant planning applications in relation to potential noise impacts arising from such proposed planning applications.

7.7 Managing 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, the next stage is to confirm that the noise levels assessed by the strategic noise mapping are experienced by the population and residential dwellings within the areas being addressed. Prior to the review of potential noise mitigation measures, and any subsequent commitment of budget to undertake any necessary actions, it is considered appropriate to confirm the noise levels indicated by the strategic noise maps. This may be undertaken in two ways. Firstly, by undertaking a review of the strategic noise models and refining them, if appropriate, and secondly by undertaking field survey work and/or using the noise monitoring network to measure noise levels prior to the commencement of any works.

The review and possible refinement of the strategic noise model may help to reduce the uncertainty in the calculated noise levels within the area under review, and will benefit any subsequent use of

the model to assess the potential level of noise reduction benefit which may be delivered to the residents by potential mitigation measures. Field survey work can provide information on whether the properties being assessed have noise sensitive rooms exposed on the most exposed facades, or whether noise mitigation measures are already present which may not be indicated within the calculation model.

7.8 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 value, it is considered prudent and more effective to actually use the planning process to help preserve the nature and level of the existing sound environment.- see paragraph 7.6.1- *'Principles for deciding on action in relation to Planning & Development'*

7.9 Management of Areas between the 'Desirable\Undesirable' Thresholds

With the twin focus on mitigation of noise for the most exposed residents, and preservation of the least exposed areas, there is a risk that the majority of households, which sit between these two categories, are not provided for within the action planning process. To avoid detrimental levels of long term noise exposure consideration will be given to the current and future likely impacts of any new developments not only on the ambient sound environment, but on the population close to or within a development, when considering an application for planning approval.

7.10 Management of Future Developments and their Noise Impacts

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 noise mitigation strategies into the development, planning and local area planning processes will help to ensure that the existing noise climate is preserved where appropriate. Future developments will be managed in line with - *'General Principles for deciding on action in relation to Planning & Development'* as set out paragraph 7.6.1 and related paragraphs.

7.11 Assessment of Options and Cost Benefit Analysis

Due to the lack of a robust Irish Unit Cost for road noise, it is challenging to include noise in a cost-benefit analysis. The EC *'Working Group on Health and Socio-Economic Valuation of Noise 2003'* produce an interim value which was to be reviewed. However a more recent CEDR Report – *'Technical Report 2017-03 State of the art in managing road traffic noise: cost-benefit analysis and cost-effectiveness analysis'* concludes that values provided by the EC are not robust. Still, the unit cost values for road noise provided by the EC are the only 'official' general European values available at this moment for the use in CBA. As was found with the previous Action Plan using this 'official' figure provides a very low 'benefit' price in relation to an overall cost in implementation of any potential noise mitigation measures. In general 'noise benefits' outweighed the cost where noise

mitigation measures 'piggy backed' on other projects which were undertaken and for which the primary aim was not noise mitigation i.e. relaying of sewers or drains where a quieter road surface could replace the older road surface.

Box 4

Cost-effectiveness issues

As well as their ability to reduce noise pollution, the cost-efficiency of abatement approaches is a critical consideration for decision makers, who are often operating within tight budgetary limits. Important considerations include the cost of implementation, as well as the cost of maintenance/renewal, the availability of resources and relevant funding schemes. An important decision-support tool is cost-benefit analysis, which can help to prioritise different noise abatement options and ensure that limited funds are spent to greatest effect (Kloth *et al.*, 2008). The European EPA Network Interest Group on Traffic Noise Abatement (Blokland and Peeters, 2016) recently made a suite of recommendations for traffic noise abatement, including developing a standard procedure for cost benefit assessment and making decisions on investment open to the public. Cost varies widely between local noise abatement measures.

Noise barriers have an estimated cost of €300 per m² (Kloth *et al.*, 2008), with a varying cost to benefit ratio depending on the specifics of the site, such as the population density and the type of barrier. Tunnels are both the most expensive and most effective form of noise barrier. Overall, noise barriers are considered the least cost-effective approach, despite their significant noise abatement ability (Guarinoni *et al.*, 2012).

For façade insulation, costs are generally high compared to other measures, but comparatively little when implemented in new buildings with high thermal insulation standards (Kloth *et al.*, 2008). It has been estimated that the average cost, per apartment, for insulation is around €28 000 (Kaeboe *et al.*, 2011). Façade insulation may be more cost-effective than low noise road surfaces (Klæboe *et al.*, 2011), which have an estimated cost of €3.5 per m² (Nijland *et al.*, 2003). Their respective benefits however depends on how densely populated an area is (with insulation being more effective in less densely populated areas).

Low noise tyres are considered particularly cost-effective, due to their significant noise abatement but minimal side effects. Quiet tyres can reduce noise by around 4 dB at no additional cost (Nijland *et al.*, 2003).

Traffic management measures are some of the most affordable measures. Static signs to impose speed limits or ban heavy goods vehicles for example are relatively cheap, with an estimated cost of €300 per sign (Kloth *et al.*, 2008).

Broadly speaking, the most cost effective approach is often to use a combination of strategies. Overall, comparisons of the (discounted) costs and benefits of road and rail traffic noise abatement measures suggest that the benefits are higher than the costs in all cases (Nijland *et al.*, 2003)

*Extract from Science for Environment Policy: Noise Abatement approaches. – issue 17
European Commission*

The CEDR Report indicates that cost effectiveness analysis(CEA) '*is most useful when you know the outcome you desire (for example noise reduction), one main objective for the project, and the determination for which a set of alternative solutions achieves the greatest noise reduction for the costs (for example, the use of noise barriers compared to noise reducing asphalt). It is also useful in cases where major outcomes are either intangible or otherwise difficult to monetize*' as may be the case for CBA. In summary it states, '*CEA can be used as a second-best option when a full CBA is not achievable or as a final step, when the objectives of the projects have been identified and the*

only remaining question is to find the least-cost option (Gorlach, undated) for example to fulfil required noise guidelines. The disadvantage of cost-effectiveness analysis is that it does not identify the benefits of actions or society's willingness to pay for improving the environment'.

7.12 Review of possible mitigation Measures

To create an effective overall plan for the reduction of road traffic noise, Dublin City Council will consolidate individual plans and measures into a single set of measures. Examples of this consolidated approach include the following:-

1. Traffic avoidance plans that combine walking, cycling and public transport
2. Speed reduction plans involving partial access zones, smoothing traffic flows and reducing driving speeds.
3. Traffic flow relocation i.e. diverting traffic along non-residential, less sensitive routes.
4. Mitigation of noise black spots by optimising traffic signals and traffic management.
5. Traffic congestion management through management and optimisation of the availability of parking spaces.
6. Plans for road surface improvements and road maintenance.
7. Transport mobility plans
8. Control of speed limits
9. HGV Management (including deliveries)
10. Promotion of the sustainable electric vehicles

BOX 5

As the sources and severity of noise pollution continue to grow, there is a need for new approaches to reduce exposure. The complex and pervasive problem of noise pollution has no single solution; it requires a combination of short-, medium- and long-term approaches and careful consideration of the nature of the noise source. There are many sources of noise pollution, each requiring tailored abatement measures.

*Extract from Science for Environment Policy: Noise Abatement approaches. – issue 17
European Commission*

7.12.1 Screening noise

Noise barriers are less effective at reducing disturbance than reducing the volume of traffic. Nonetheless, noise barriers do reduce the disturbance if the average sound level is reduced by at least 4 dB (A)¹. Furthermore, the design of the noise barriers proves very important to their acceptance by residents. Roadside noise barriers maybe only acceptable on thoroughfares where pedestrians do not need to cross. It would be unpractical to place noise barriers along streets, which are traversed by pedestrians along their entire lengths.

a) Dublin City Council will consider noise screening where necessary by: -

¹ SMILE Project – Guidelines for Road Traffic Noise Abatement

1. Use of appropriate building structures for screening. Roadside Noise Barriers will only be considered in the context of new construction projects and schemes and as far as Roads Design and Construction Schemes are concerned will be considered only in the context of the TII Guidelines for the Treatment of Noise and Vibration in National Road Schemes.

7.12.2 Planning and Development

When new dwellings are being constructed or where areas are being rejuvenated, it is important that dwellings, both houses and apartments, are designed, orientated and located in such a way that each apartment has at least one or two quiet rooms on the least exposed façade to sound from traffic. This is in line with SIO27 of the City Development Plan 2016 – 2022.

b) Dublin City Council will consider using the Planning Process, where necessary:

1. To integrate actions under the draft Action Plans with the City Development Plan.
2. To require applicants for any major new developments to produce a sound impact assessment, and mitigation plan where Dublin City Council considers the development will have a serious negative impact on pre-existing environmental sound levels within their area.
3. To ensure that future developments are designed and constructed in such a way as to minimise noise disturbances. 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 should be a consideration at the design stage.
4. 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 within future developments and the inclusion of road design layouts to achieve low speed areas where appropriate.
5. To recognise that residential streets have multi-function uses (e.g. movement, recreation) for pedestrians, cyclists and vehicles, in that priority order. The noise maps may be used to identify and classify the priority areas and streets.
6. To reduce / avoid traffic congestion by decentralising relevant amenities into local areas.
7. To interpose less sensitive use buildings between noise source and buildings\properties with sensitive uses.
8. The early integration of the action planning into planning processes in order to enable a more efficient and comprehensive planning and evaluation to be carried out.
9. Dublin City Council will apply the '*General Principles for deciding on action in relation to Planning & Development*' as outlined in this draft Action Plan.

7.12.3 Soundproof Glazing

Soundproofing with dual or triple glazing or equivalent products are a possibility for further protection against noise, if no other measures can be applied or if the effect of other measures is insufficient. However, windows must be kept closed to be effective. Assisted ventilation is therefore required to avoid poor ventilation and the associated problems of condensation and dampness.

c) Dublin City Council will consider requiring the sound proofing of: -

1. All windows on the most exposed façade, in all new residential developments, where noise maps have indicated undesirable high sound levels. This may also lead to a requirement to install assisted ventilation.

7.12.4 Changing road surfaces

Renewing road surfaces or replacing rough paving with more smooth or low noise surfaces is an action that can be considered, in order to reduce sound levels and noise impact. This option may not be suitable in all cases, depending on the nature of traffic on the road. Therefore each situation will have to be assessed as to whether the option is suited to the circumstances under consideration.

d) Dublin City Council will consider where appropriate, improvement or changes in road surfaces during the routine maintenance cycle, where necessary by: -

1. Improving road surfaces.
2. Using low-noise road surfaces. For new roads schemes, low noise surfaces will be considered as part of the overall design and in keeping with current design guidelines.

7.12.5 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 mainly concentrate on strategic issues identified by the noise mapping. Systems are already in place to deal with noise nuisances, including neighbour, entertainment and construction noises – see paragraph 7.4 *Dublin City Council's Noise Nuisance Policy*, which Dublin City Council will continue to adopt.

7.12.6 Traffic Management

Traffic management measures provide for some of the most affordable mitigation measures. For example, static signs to impose speed limits or ban heavy goods vehicles for example are relatively cheap, with an estimated cost of €300 per sign (Kloth et al., 2008). Dublin City Council will continue to support the implementation of the following National and Regional Strategies and will seek to raise awareness of their potential impact on the environment. Integration of noise mitigation measures into their implementation will be sought where it is considered necessary.

- **Transport strategy for the Greater Dublin Area, 2016 to 2035.** The Strategic vision for the Greater Dublin Area in 2035 is “To contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods.”
- **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.

- **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.

e) Dublin City Council will endeavour to reduce traffic density through: -

1. Promoting public transport, including QBC's in conjunction with transport providers.
2. Traffic management including smoothing traffic flows.
3. Promoting and encouraging environmentally friendly means of transport, e.g. walking and cycling
4. Parking management
5. Implementation of fiscal measures where\when appropriate.
6. Support of the NTA's Transport Strategy for the Greater Dublin Area 2016-2035
7. Adoption of sustainable urban mobility strategies
8. Adoption of best practice / guideline documents and policy in Transportation Planning.

f) Dublin City Council will endeavour to reduce the percentage of heavy goods vehicles on relevant streets by: -

1. Continually review access by designating restricted heavy goods vehicle (HGV) to certain areas in the City.
2. Continually keeping under review HGV access bans and restrictions at certain times (night time delivery restrictions or limits)

g) In order to reduce noise emissions due to vehicle speed Dublin City Council will where appropriate: -

1. Reduce excessive driving speeds through the provision of appropriate traffic calming measures (Noise levels to be taken account of in the prioritisation / assessment of future Traffic Calming Schemes).
2. Continually keep under review the Dublin City Council Speed Bye-Laws and seek further opportunities to reduce vehicle speeds within the Dublin City Council area.
3. Encourage design in accordance with best consultation practice design guidelines (i.e. Draft Guidelines for Planning Authorities, "Sustainable Residential Development in Urban Areas, February 2008) and other DoEHLG guidance documents.

h) Dublin City Council will strive to be a model of best practice that in turn can influence other bodies by: -

1. Including low-noise and low-emission vehicles as a criterion in invitations to tender for their transport fleet services.
2. Continuing to facilitate the introduction of Electric Charge Points in conjunction with the relevant government departments and through the Planning Process.

3. Facilitating the introduction of 'car share clubs' and public bike schemes.
4. By striving to be a model of best practice that in turn can influence other bodies, through the support of 'Smart Cities' concepts and being 'early adopters' of new quieter and less polluting vehicles.

7.12.7 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 action plan is to reduce human exposure to high sound levels, another important goal is to preserve areas, which are still 'tranquil' or quiet.

i) **Dublin City Council will continue to assess areas within their area:-**

1. As part of this draft Action Plan, there will be an ongoing process of identifying Quiet Areas, where appropriate, and forwarding them to the Minister for Communications, Climate Action and Environment for consideration to designate them as such.

7.13 Measures to prevent noise and reduce, avoid or relocate noise from aircraft sources

Under EU Regulation 598/2014, Fingal County Council will be appointed as the Competent Authority – effectively the Dublin Airport Noise Regulator. It will be a matter for the Regulator to set out noise mitigation measures or abatement objectives for the airport to follow - in accordance with the ICAO Balanced Approach, and to oversee the implementation of any such measures by the DAA. Dublin City Council will support the Fingal County\Meath Action Plan for Dublin Airport, and the International Civil Aviation Organization (ICAO) 'Balanced Approach' method to noise management.

7.14 Rail Sound Sources

Dublin City Council fully supports the concept for the Metro Link project. This project should succeed in providing an alternative high class means of commuting into and through the Dublin City Council area with an opportunity for the reduction in the number of private vehicles entering into the City at peak times. This will entail a review of the current noise limit criteria set down in the previous rail order for the LUAS Green Line. This project will require an Environmental Impact Assessment along with an associated EIAR, to be produced.

j) **Dublin City Council will require other stakeholders i.e. Iarnród Éireann and TII:**

1. To produce a sound impact assessment and apply mitigation measures when\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 City Council area. 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 City Council area. This assessment should form part of any EIA required.

7.15 Miscellaneous

- k) **Dublin City Council will carry out a review of the Action Plan at least every 5 years, or a partial review more frequently, if required. To support this review it will: -**
1. Maintain a permanent, long-term sound monitoring network to support the decision making process in relation to environmental matters.
 2. Put systems in place that will capture, maintain and update the data required to carry out a review of the noise maps and action plans every 5 years, as required by legislation.

7.16 Selection of most appropriate mitigation/protection measures

For the locations where noise has been identified by the 2017 Noise Maps and prioritised by the Decision Matrix process as being a priority issue, the following actions will be considered:-

1. Once the extent of the existing noise impact has been confirmed for the locations under review, a list of potential noise mitigation actions will be drawn up, investigated and costed.
2. A noise model including the proposed interventions will be run to assess the impacts in the area under investigation. Various abatement measures may be tested to assess the best overall reduction in noise levels on the relevant exposed population.
3. The abatement measure will be ranked in order of effectiveness and cost.
4. A determination will then be made as to the feasibility of implementing any of these potential noise mitigation actions. For example there may be a request for the provision of noise barriers in an urban/city centre area. However this action may not be feasible if there is a public bus lane in existence which requires access to the kerbside to discharge passengers to the footpath.
5. The required works will be managed in line with paragraph 7.1
6. Where this is not feasible, more consideration will be given to actions that give the most noise reduction for money available to the project.
7. Any suitable actions as outlined in paragraph 7.12 '*Possible mitigation Measures*' which do not require a direct financial input will be considered ahead of actions that attract a financial cost.
8. Implementation of the identified abatement measures will be subject to the availability of budgets.
9. A cost analysis may be undertaken - either a Cost Benefit Analysis (CBA) or a Cost Effectiveness analysis (CES) in order to maximise value for money and deliver benefit from investment, but this will not be used as an overriding criteria for inaction

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

8.1 Public Consultation

In preparing and revising this draft Action Plan, Action Planning Authorities must ensure the following:

- The public is consulted about proposals for Action Plans;
- The results of the public participation are taken into account;
- The public is informed of the decisions taken; and
- Reasonable time frames are provided allowing sufficient time for each stage of public participation.

In accordance with the Environmental Noise Regulations, Action Planning Authorities shall for the purpose of making and approving plans consult with the Environment Protection Agency and the noise mapping bodies for the noise maps involved i.e. Iarnród Éireann and Transport Infrastructure Ireland or the relevant roads authority.

Adverts have been placed in the Irish Times and Irish Independent seeking feedback and the draft plan is also placed on the Dublin City Council Consultation web portal. Copies of the draft Noise Action Plan will be placed in Dublin City Council Offices.

The draft Action Plan is to be presented to Dublin City Council's Strategic Policy Committee on Environment and Transportation for comment and feedback.

The following Bodies/Agencies have been notified of the public consultation process

- Department of Communications, Climate Action and Environment
- Department of Transport, Tourism and Sport
- National Transport Authority
- Environmental Protection Agency
- Health Service Executive
- Iarnród Éireann
- Transport Infrastructure Ireland

8.2 Responses to the Public Consultation

Submission made during the Public Consultation will be reviewed and considered and included in the Action Plan where appropriate.

8.3 Next steps

Following the Public Consultation process the action plan will be amended and sent to the City Manager for approval. The finalised Action Plan and maps will be sent to the full City Council for noting and placed on the Dublin City Council website.

9 Action Plan Implementation

9.1 Objective of the draft Action Plan

The key objective of the Dublin City Council Action Plan Relating to the Assessment and Management of Environmental Noise 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 undertaking a balanced approach in the context of sustainable development. It is proposed that this draft Action Plan will be implemented through a staged process over 5 years with Dublin City Council endeavouring to follow the time frame set out below in relation to the programme of works and to the implementation of the Action Plan.

9.2 Proposed Action Plan measures

A number of strategic measures are proposed as part of this draft Action Plan (See chapter 7) to prevent noise and reduce, avoid or relocate the various types of noise source. As per the previous plan, these measures focus mainly on road traffic sound emissions, as the noise maps have shown it to be the major sound source in the Dublin City Council Area. This will be the third Action Plan produced for the Dublin City Council area. Many of the actions commenced over the past two plans will continued to be implemented and recommitted to in this plan. The current and past policy and direction in relation to the principals of avoidance, prevention and reduction, where necessary, on a prioritised basis of the harmful effects, including annoyance, due to long term exposure to environmental noise will continue to be implemented.

9.3 Implementation Plan

As with previous Action Plans Dublin City Council will follow the minimum time frame set out below in relation to the implementation of the 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.

Throughout the 5 years of the Plan Dublin City Council will:-

- Continue to track the implementation of Regional Strategies such as *Transport strategy for the Greater Dublin Area, 2016 to 2030*; *Smarter Travel – A Sustainable Transport Future 2009-2020* and the *National Cycle Policy Framework 2009-2020*, so as to ensure opportunities to introduce noise mitigation in conjunction with their implementation are not missed.
- Continue to implement Dublin City Council's Noise Nuisance Policy
- Continue to assess planning applications using the General Principles for deciding on action in relation to Planning & Development Planning.
- Carry out yearly reviews of Action Plan in order to assess progress and whether new developments need to be included in the Action Plan.

1. First year of Plan:

- Continue implementation of any carried over processes already commenced under the previous two Action Plans
- Identify from noise maps where priority action is required at a local level
- Carry out a more refined local environmental sound assessment in areas identified as high priority to confirm the outputs of the noise mapping process.

2. Second Year of Plan

- Identify sustainable action that can be taken to mitigate high sound levels where confirmed.
- Prepare cost for the implementation of the required actions and source budget resources
- Identify Quiet Areas where appropriate and prepare submissions for approval by the Minister

3. Third to Fifth Year of Plan

- Commence implementation of the relevant actions as identified in year two of the Action Plan and where the current business plan and expenditure as agreed, allows

4. Year Four of Plan.

- Produce new noise maps.

5. Year Five of Action Plan

- Carry out an evaluation and review of the impact of current Action Plan and include this review in the new revised Action Plan.

10. Summary and Conclusions

This draft Action Plan has been prepared as required by the Environmental Noise Regulations 2006, Statutory Instrument 140 of 2006 and as far as practicable is in line with the 'EPA Guidance Notes for Noise Action Planning. These Regulations give effect to EU Directive 2002/49/EC relating to the Assessment and Management of Environmental Noise.

The objective of the draft Dublin City Council's Action Plan relating to the Assessment and Management of Environmental Noise 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 in the context of sustainable development.

This draft Action Plan primarily considers the long term environmental noise impact from road traffic noise sources, and sets out an approach to review and take action to reduce noise impact near to the major sources assessed during the strategic noise mapping in 2017. The draft Action Plan also sets out a number of proposals for the prevention and avoidance of environmental noise levels detrimental to human health, to be implemented through the planning process, these being applicable throughout the Dublin City Council Area. The Action Plan also sets out relevant policies on how Dublin City Council will address non transport related noise complaints.

The review carried out on the implementation of actions under the 2013 – 2018 plan shows progress was made on all actions with the exception of designating more 'Quiet Areas' for approval by the Minister for Communications, Climate Action and Environment.

Appendix A

Glossary of Acoustic and Technical Terms

1.2 Sound and Effects of Noise

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. 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 1.1 provides an overview of common sound levels on the dB (A) scale as outlined in the TII Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004. From this, we can see that the sound in a bedroom is about 35 dB(A) and the sound in a busy office is about 60 dB(A).

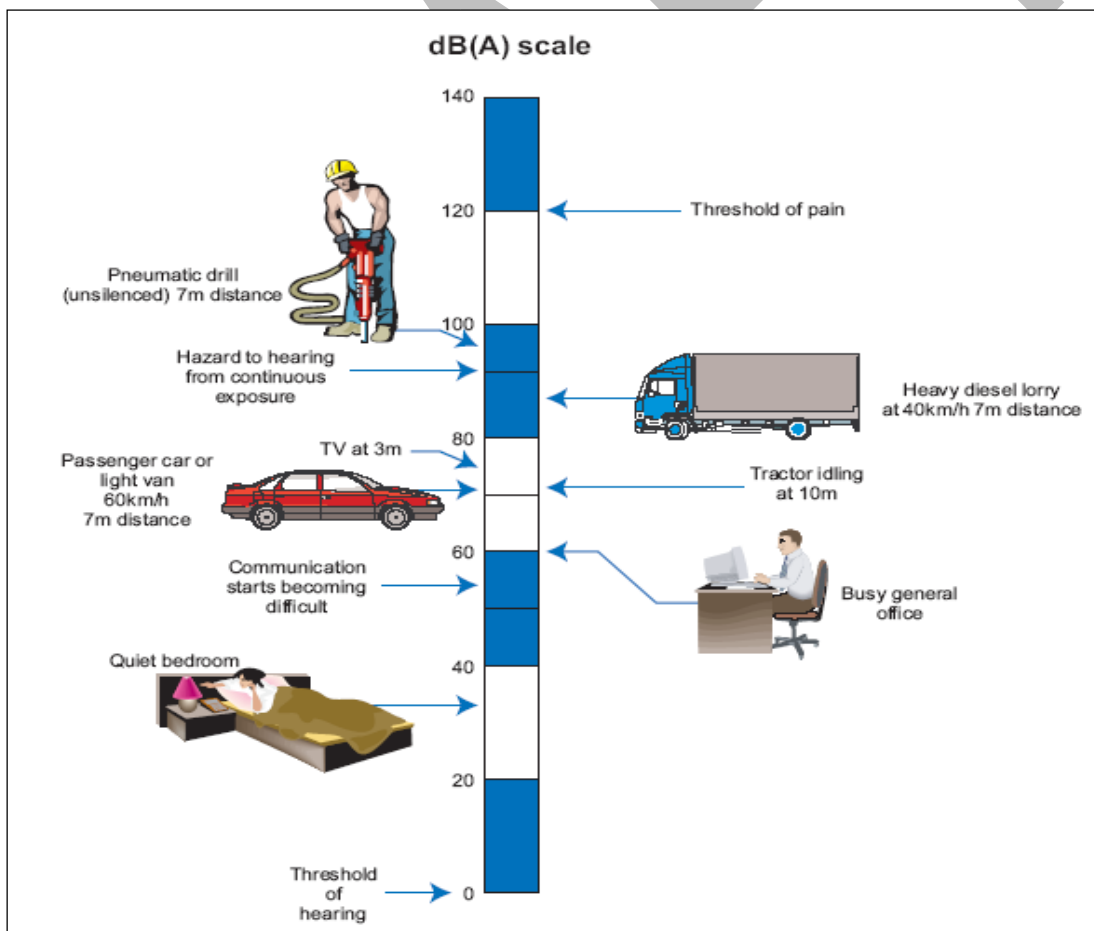


Figure 1.1 Levels of Typical Common Sounds on the dB(A) Scale (NRA, 2004)

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.

Lden: (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:

$$L_{den} = 10 * \log 1/24 \{12 * 10^{(L_{day}/10)} + 4 * 10^{((L_{evening}+5)/10)} + 8 * 10^{((L_{night}+10)/10)}\}$$

Daytime: Between the hours of 7am and 7pm

Lday: (day-noise indicator) shall mean the noise indicator for annoyance during the day period. This is the long term average value in decibels for the daytime period over a year.

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

Levening: (evening-noise indicator) shall mean the noise indicator for annoyance during the evening period. This is the long term average value in decibels for the evening time period over a year.

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

Lnight: (night-time noise indicator) shall mean the noise indicator for sleep disturbance. This is the long term average value in decibels for the night-time period over a year.

'Major intensification': An Action(s) that is likely to lead to a breach of any statutory sound limit, or national guide value or standard, or an action(s) that leads to and increase in sound levels above the undesirable sound 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.

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Appendix B

Bibliography and References

Legislation

European Communities (Access to Information on the Environment) Regulations 2007, (S.I. No. 133 of 2007).

European Communities (Noise Emission by Equipment for Use Outdoors) (Amendment) Regulations 2006, (S.I. No. 241 of 2006).

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

Planning and Development (Strategic Environmental Assessment) Regulations 2004, (S.I. No. 436 of 2004).

Environmental Protection Agency Acts 1992 and 2003.

Environmental Protection Agency Act, 1992 (Noise) Regulations, 1994 (S.I. No. 179 of 1994).

First Schedule to the Air Pollution Act 1987 (Marketing, Sale and Distribution of Fuels) Regulations 1998 (S.I. No. 118 of 1998).

European Commission (2003). Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information. OJ L 41, 14/02/2003, Luxembourg 2003.

European Commission (2002). Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise. OJ L 189, 18/07/2002, Luxembourg 2002.

Irish Publications

Department of the Environment, Heritage and Local Government, Sustainable Residential Development in Urban Areas - guidelines for Planning Authorities, May 2009.

Department of the Environment, Heritage and Local Government, Urban Design Manual: A best practice guide. A companion document to the Planning Guidelines on Sustainable Residential Development in Urban Areas, May 2009.

Department of the Environment, Heritage and Local Government, Sustainable Urban Housing: Design Standards for New Apartments - Guidelines for Planning Authorities, Draft Update, December 2017.

Department of the Environment, Heritage and Local Government, European Communities (Access to Information on the Environment) Regulations 2007 (S.I. No. 133 of 2007) - Guidance for Public Authorities and others in relation to Implementation of the Regulations, 2007.

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

NRA, Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, October 2004.

NRA, Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes, March 2014.

EPA Publications

Environmental Protection Agency, Guidance Note for Strategic Noise Mapping for the Environmental Noise Regulations 2006, Version 2.0 August 2011 – revised in 2017 for Round 3 Noise Mapping

Environmental Protection Agency, Guidance Note for Noise in relation to Scheduled Activities, 2016.

Environmental Protection Agency, Environmental Quality Objectives – Noise in Quiet Areas (2000-MS-14-M1), Environmental RTDI Programme 2000 – 2006. (Authors Waugh, D., Durucan, et. al.), 2003.

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Appendix C

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 Dublin City '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 Dublin City 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 Dublin City Action Plans relates to the Dublin City 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'. Dublin City Council has prepared this draft plan for the Dublin City Council region which will form part of a combined plan for the Dublin Agglomeration i.e. the region covered by Dublin City Council, Fingal County 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.

A SEA pre-screening was carried out to determine whether the *Draft Dublin City 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)². 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:

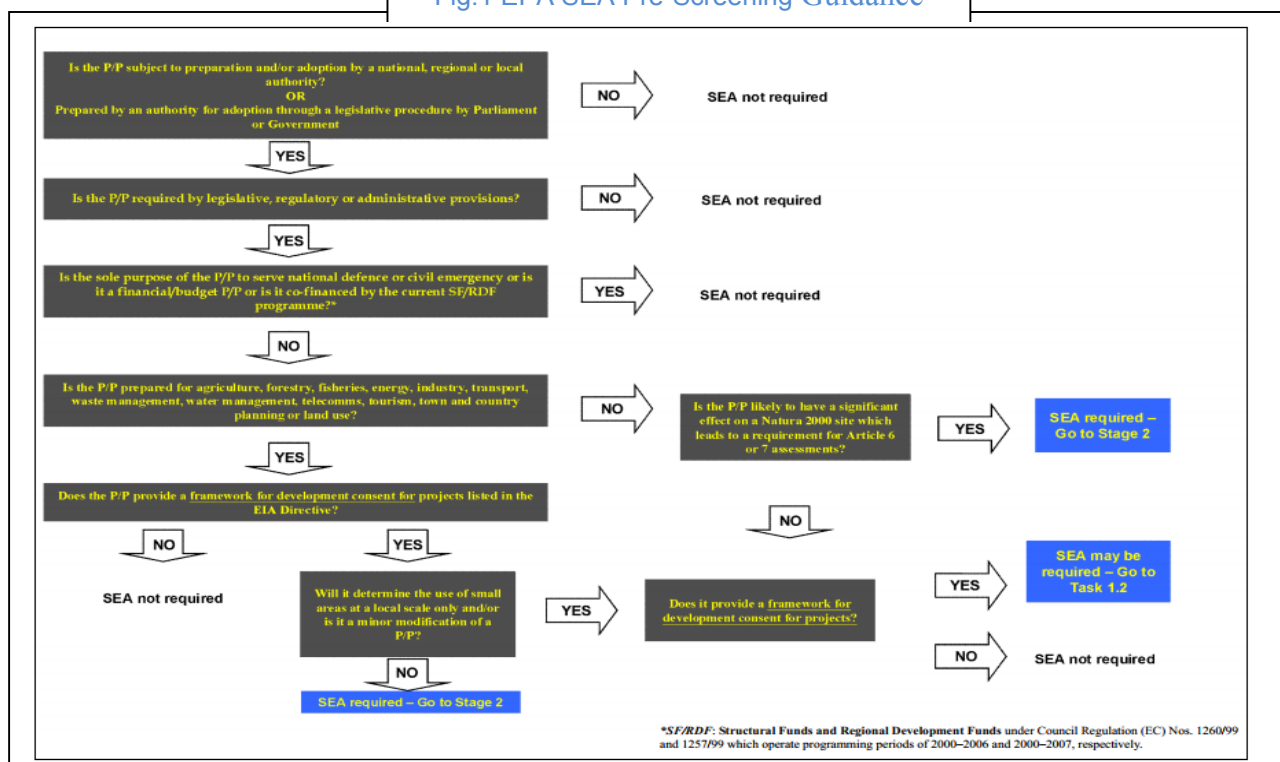
1. P/P applies to one or more of the 11 sectors quoted in the SEA Directive and provides a framework for development consent of projects requiring EIA. It should, therefore, be taken forward to Stage 2.
2. P/P will significantly affect a Natura 2000 site and, therefore, requires an assessment under the 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 and the decisions taken, would be kept on all relevant files.
4. The P/P is not screened-out and may require more detailed checks to be undertaken (this will apply to a smallscale P/P or minor modifications of a P/P). This may involve the application of "Environmental Significance Screening Criteria" as described below

Extract from 'Development of SEA methodologies for plans and programmes in Ireland'- EPA

² Can refer to the '*Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland (2001-DS-EEP-2/5)*' - Synthesis Report

https://www.epa.ie/pubs/advice/ea/EPA_development_methodology_SEA_synthesis_report.pdf

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 Dublin City 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.

	<p>The draft Action Plan informs how Dublin City Council fulfils its obligations under the Environmental Noise Directive 2002/49/EC which provides the objective of assessing and managing environmental noise. The draft Dublin City 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:-</p> <ul style="list-style-type: none"> • The Dublin City 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. <p>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.</p>
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?	<p>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.</p>

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.

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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. INFRASTRUCTURE 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 transshipment 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.

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Appendix D

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)

Fig. 1

Network 2000 Sites within a 15km buffer of the



It is proposed that this draft Action Plan will replace the current Action Plan 2013-2018. The Plan will

100

The draft Dublin City Action Plans relates to the Dublin City Council region. As required by the EU

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 Dublin City 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
<p>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:</p> <p>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.</p> <p>Size and scale;</p> <p>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.</p> <p>Land-take;</p> <p>Not applicable</p> <p>Distance from Natura 2000 site or key features of the site;</p> <p>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.</p> <p>Resource requirements (water abstraction etc);</p> <p>Not applicable.</p>
<p>Emission (disposal to land, water or air);</p> <p>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.</p> <p>Excavation requirements;</p> <p>Not Applicable.</p>

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 Dublin City 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 Dublin City Development Plan 2016-2022 and the principles of proper planning and development. The Dublin City 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 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	No predicted likely impact on the conservation functions of any Natura 2000 sites.

in combination) is likely to affect the Natura 2000 sites:	
Explain why these effects are not considered significant:	<p>The draft Action Plan provides for the sustainable development in accordance with the Dublin City Development Plan 2016-2022 and the principles of proper planning and development.</p> <p>It is not predicted that that the proposal will have any potential impact on the onservation function of any Natura 2000 site.</p>
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?	Traffic Noise & Air Quality Unit, Dublin City Council
Sources of Data	Existing Data
Level of Assessment Completed	Desktop Study
Where can the full results of the assessment be accessed and viewed	<p>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.</p>

<p>Overall Conclusion</p>	<p>The proposed draft Action Plan Relating to The Assessment & Management of Environmental Noise does not significantly alter any policy or objective of the Dublin City Development Plan or any other plans adopted by Dublin City 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;</p> <p>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.</p> <p>Therefore it is not considered necessary to undertake any further stages of the Appropriate Assessment process.</p>
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Appendix E

Dublin City Council's Noise Nuisance Policy

Noise Pollution Complaints

Dublin City Council's Air Quality Monitoring and Noise Control Unit deal with noise complaints from members of the public. These mainly relate to complaints about commercial enterprises operating within Dublin City Council's functional area. The Unit also carries out monitoring at various outdoor music events within the city, and report these results as required. As well as its regulatory role, it also has an advisory function for a number of other departments within Dublin City Council.

Co-operation of complainants

In order for the Air Quality Monitoring and Noise Control Unit to fully investigate a complaint, a certain level of co-operation is required from the complainant, this may include some or all of the following;

- a) The maintenance of log sheets which are to be filled in as and when the noise nuisance occurs.
- b) Access to the complainant's home for the purposes of monitoring. Monitoring may have to be carried out on more than one occasion.
- c) Should the complaint result in court action, complainants should be aware that their complaint will no longer be anonymous.

Investigation of complaints

- a) Dublin City Council will endeavour to resolve the issues with regard to any noise complaint within its remit.
- b) It is imperative in all cases that the procedures established to determine nuisance are followed in accordance with law and best practice.
- ◀ c) These procedures may include observation, recording, inspections, sound monitoring, analysis, discussion and prosecution. A considerable expenditure of time and resources may be involved in the resolution of noise nuisance issues.
- d) During the course of a complaints investigation, the use of sound level meters may be required for monitoring purposes. These specialised devices need to be operated under certain conditions which may depend on time, weather, environmental or technical factors.
- e) Noise nuisance may occur at any time including out of normal office hours, weekend or holiday periods and monitoring may be required at these times. **It should be borne in mind that the provision of service during such times is subject to the availability of equipment and resources at that time.**
- f) Dublin City Council will endeavour to arrange monitoring at an early stage and this may include home installation of a D.A.T. (Digital Audio Tape) recording device.
- g) The determination of noise nuisance may not always be clear-cut. This is due, in part, to the subjective perception of what constitutes "*reasonable cause for annoyance*".

- h) The *complete elimination* of sources of noise nuisance which are the subject of complaint is generally not possible. In most cases, the reduction of noise to an acceptable level is considered reasonable and cases may be deemed to be resolved at this stage.

Construction site causing noise

Dublin City Council investigates complaints regarding noise nuisance caused by construction sites. Construction sites, by their very nature, can create a great deal of noise, with some activities e.g. pile driving, causing particular disturbance. The aim of investigations is to determine compliance with the principles of best practice with regard to the minimisation of noise from the site.

Construction site work starting early in morning or continuing late into the evening:

The permissible hours of operation of a building site within Dublin City are;

Monday to Friday 07.00 – 18.00

Saturday 08.00 – 14.00

Sundays and Public Holidays No noisy work on site.

These hours are often specifically conditioned at the planning permission stage, and therefore are enforced by the Planning Enforcement Section of Dublin City Council. You can search for a Planning Application at the following link: -

<http://www.dublincity.ie/swiftlg/apas/run/wphappcriteria.display>

In the event that a planning condition has not been applied regarding hours of operation, the Air Quality Monitoring and Noise Control Unit will deal with the complaint.

To complain about a construction site causing noise contact Dublin City Council's Customer Services

Noise from plant operating at a commercial premises

Dublin City Council deal with complaints regarding noise nuisance caused by plant noise, this can include extractor fans, refrigeration compressors, air handling units etc. In order to determine nuisance, measurements generally must be taken in the complainant's home both in the presence and the absence of the noise.

Music noise from a public house / nightclub

Dublin City Council investigates complaints regarding noise nuisance caused by the playing of amplified music at public houses / nightclubs. Generally this type of complaint arises when a licensed premises is playing music to an intrusive level, until late at night. A complainant, in this instance, will usually be requested to keep a written record of the noise nuisance as it occurs.

Noise arising from outdoor music events

Monitoring is usually carried out by the Air Quality Monitoring and Noise Control Unit at outdoor events. Results are usually available through the Planning Decisions section or for smaller events

(with attendance of less than 5000 persons), contact the Environmental Health Officers through Customers Services.

Noise from security alarms

The Environmental Health Officers can deal with noise from an alarm if it is being repeatedly activated. A warning letter can be sent to the premises causing the nuisance but no access can be gained to the property to disable an activated alarm. Intruder alarm systems should be designed, installed and maintained in compliance with Irish Standard EN50131/1:2006 A nominated key-holder or neighbour should have access to the property in case of activation. [Guidelines on how to prevent noise nuisance from activated alarms can be found here](#) (.doc).

Note:

This list is not an exhaustive list. An Environmental Health Officer will advise you if your complaint falls under Dublin City Council's remit.

Noise outside the remit of Dublin City Council

Aircraft Noise Complaints

Aircraft noise is exempt from the EPA Act 1992. You may contact the Dublin Airport Authority to advise them of your complaint.

Traffic Noise Complaint

In general Dublin City Council does not have the legislative authority to investigate complaints about traffic emissions. Public Transport emission queries are dealt with by An Gardaí Síochána at the Carriage Office, Dublin Castle, Dame St, Dublin 2.

Noise from Road Works

All road works must have a permit that is issued by The Road Works Control Unit of the Environment and Transportation Department, Dublin City Council. The times permitted for operation of road works vary depending on permitted type of road.

Dog Barking Complaint

Complaints in relation to excessive barking should be made to the District Court.

Noise caused by public transport – LUAS / Dublin Bus

Complaints arising from traffic noise fall outside the legislative control of Dublin City Council. However, complaints regarding noise from public transport depots can be investigated.

Noise from beer gardens/smoking areas

Complaints arising from noisy patrons in outdoor smoking areas or beer gardens are not dealt with by the Air Quality Monitoring & Noise Control Unit. A private action can be taken under Section 108 of the EPA Act 1992.

Noise disturbance from individuals on the public thoroughfare

Noise nuisance caused by individuals behaving in a loud or rowdy manner fall outside the legislative control of Dublin City Council. When such instances occur on a public thoroughfare, may become a public order offence and maybe dealt with by An Garda Síochána. You can get contact details of your local Garda Station at the following link: - <https://www.garda.ie/en/Contact-Us/Station-Directory>

Neighbour in a private owner-occupied house.

Domestic and neighbour noise nuisance are not dealt with by Dublin City Council. Advice on how to deal with this situation can be found by following this link: - <http://www.dublincity.ie/main-menu-services-water-waste-and-environment-air-quality-monitoring-and-noise-control-noise/noisy>

Appendix F

Planning and Development Act

Under the Planning and Development Act 2000-2006 a local authority under section 34(1) of the 2000 Act 'may decide to grant the permission subject to or without conditions, or to refuse it. Set forth are extracts from the Planning and Development Act 2000-2006 and how Dublin City Council will consider relevant planning applications in relation to potential noise impacts arising from such proposed planning applications.

Under the Planning and Development Act 2000-2006 a local authority under section 34(1) of the 2000 Act *'may decide to grant the permission subject to or without conditions, or to refuse it.*

Under section 34(4)(c) - *Conditions under subsection (1) may, without prejudice to the generality of that subsection, include all or any of the following -*

(c) conditions for requiring the taking of measures to reduce or prevent -

(i) the emission of any noise or vibration from any structure or site comprised in the development authorised by the permission which might give reasonable cause for annoyance either to persons in any premises in the neighbourhood of the development or to persons lawfully using any public place in that neighbourhood, or

(ii) the intrusion of any noise or vibration which might give reasonable cause for annoyance to any person lawfully occupying any such structure or site;

The 4th Schedule of the 2000 Act under section 191 sets out 'Reasons for the Refusal of Permission which Exclude Compensation' and includes:- **The proposed development —**

5(b) is in an area where it is necessary to limit the risk of there being any serious danger to human health or the environment.

9. The proposed development would cause serious air pollution, water pollution, noise pollution or vibration or pollution connected with the disposal of waste.

10. In the case of development including any structure or any addition to or extension of a structure, the structure, addition or extension would -

(f) endanger the health or safety of persons occupying or employed in the structure or any adjoining structure, or

(g) be prejudicial to public health.

The 5th Schedule of the 2000 Act under section 191 sets out 'Conditions which may be Imposed, on the Granting of Permission to Develop Land, without Compensation

and includes :-

16. Any condition relating to the protection and conservation of the environment including the prevention of environmental pollution and the protection of waters, groundwater, the seashore and the atmosphere.

17. Any condition relating to measures to reduce or prevent the emission or the intrusion of noise or vibration.

In carrying out an assessment of a planning application consideration will be given to the overall good acoustic design of the development in relation internal and external sound levels, the external amenity area sound levels and assessment of other relevant issues that could potential give rise to annoyance caused by noise to persons in any premises in the neighbourhood of the development or to persons lawfully using any public place in that neighbourhood or to any person lawfully occupying any such structure or site, both currently and in the future.

Each relevant planning application will be assessed in relation to the potential impact it may have on the sound environment both locally and throughout the Dublin City region. In general, the Dublin City Noise Maps will be used to initially screen relevant planning application's to identify whether the location falls within a desirable\undesirable noisy area. Should this be the case the nature\type of development will be assessed as to the likely acoustical impact the development will have on the receiving environment. Consideration will also be given to the impact the receiving acoustical environment will have on the development and/or occupiers of the development.

If the likely impact is considered insignificant (no change in the sound environment) then some conditions could be applied to controlling any potential future deterioration of the environmental acoustic quality.

If the impact is likely to be low to medium (increase in sound at the boundary of the proposed development or people within the development are exposed to undesirable noise levels) and it is considered mitigation or avoidance measures will prevent any increase in environmental noise levels or protect any potential user of the proposed development from undesirable environmental noise, planning conditions may be attached to the application. These conditions may require measures to be taken to reduce or prevent -

- (i) the emission of any noise or vibration from any structure or site comprised in the development authorised by the permission which might give reasonable cause for annoyance either to persons in any premises in the neighbourhood of the development or to persons lawfully using any public place in that neighbourhood, or*
- (ii) the intrusion of any noise or vibration which might give reasonable cause for annoyance to any person lawfully occupying any such structure or site;*

These conditions may include but are not limited to:-

- Decibel limits at specified locations at specified times/days;
- Decibel limits above background noise levels at specified locations at specified times/days;
- Prescribed hours of operation;
- Requirement for the implementation of a noise management plan;
- Self-monitoring requirements.
- Requirement for the provision of an Acoustic Design Statement, describing measures taken within the design and layout of the proposed development to protect from noise persons in

any premises in the neighbourhood of the development or persons lawfully using any public place in that neighbourhood, or for any person lawfully occupying any such structure or site in the proposed development;

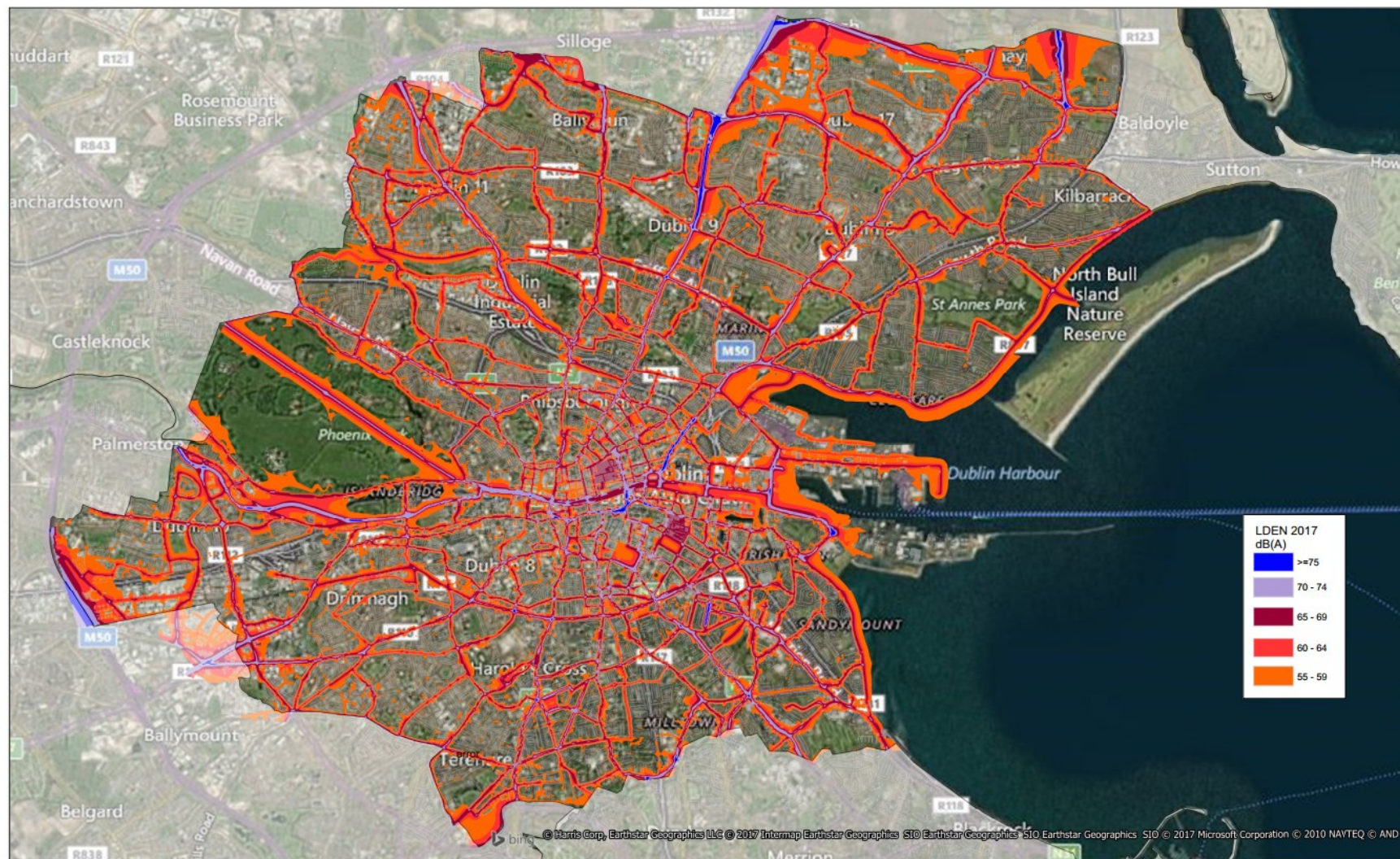
If it is considered that the granting of a planning application for a development would likely lead to a significantly high risk of environmental noise being produced or will likely expose any person lawfully occupying any structure or site in the proposed development to noise that maybe prejudicial to public health or a serious danger to human health by way of serious noise pollution, consideration will be given to recommending refusal of the application.

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Appendix G

Dublin City Council Noise Maps

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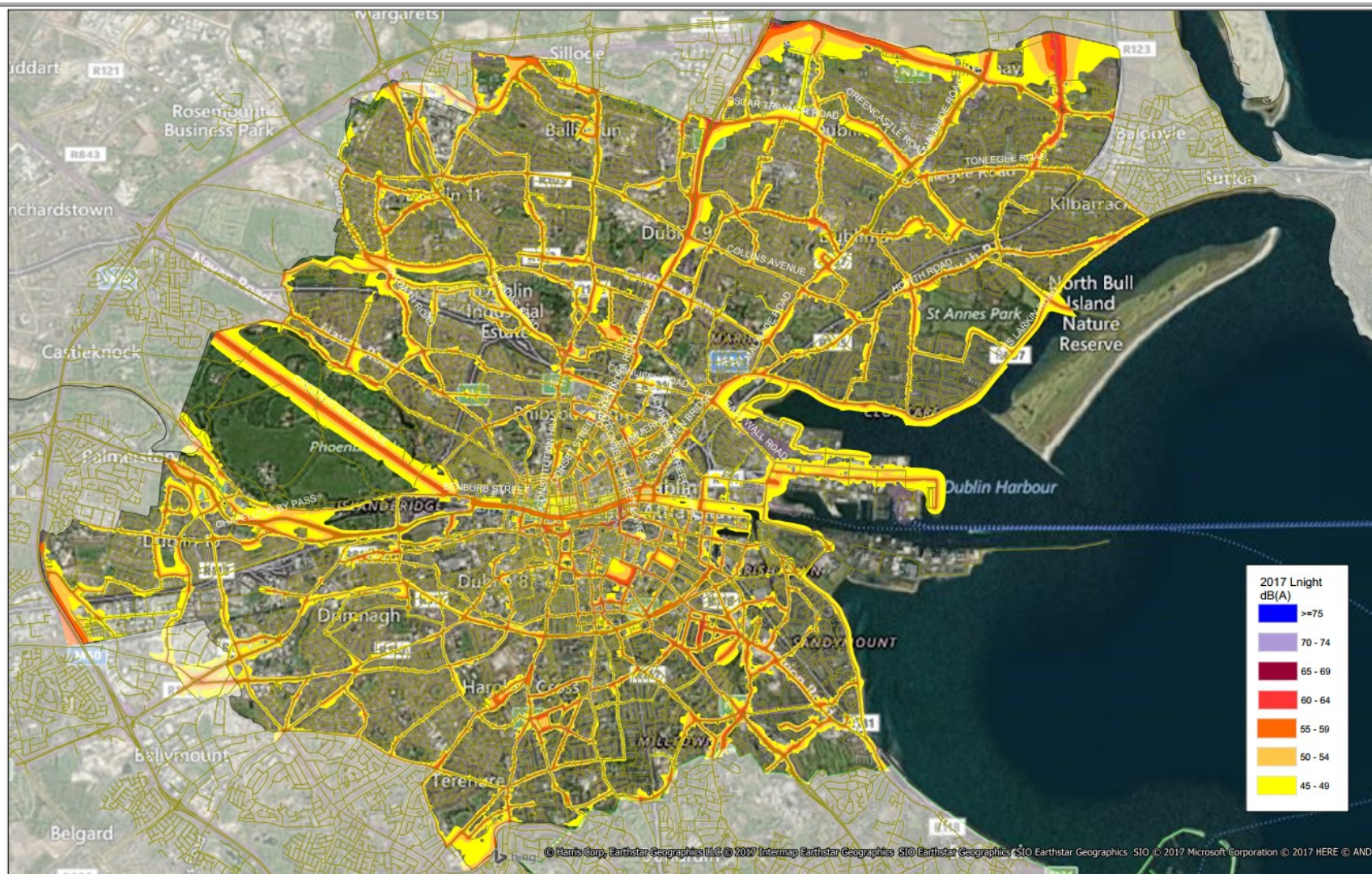


Project: Strategic Noise Mapping 2017
Produced by the Traffic Noise & Air Quality Unit
Environment & Transportation Department
Dublin City Council

0 2.5
 kilometres
Title
LDEN dB(A) - Dublin City
Dublin City Council

This strategic noise map presents a graphical representation of weighted predicted annual average (Lden) road traffic sound levels in Dublin City Council. The map has been developed in accordance with S.I. No. 140 /2006 (the Environmental Noise Regulations) and is a representation of the average environmental sound levels over one complete year. This map forms part of a national noise mapping strategy which can be primarily used as a strategic tool for large scale planning or policy matters and is not suitable for local noise assessments.

 **Comhairle Cathrach**
Bhaile Átha Cliath
Dublin City Council



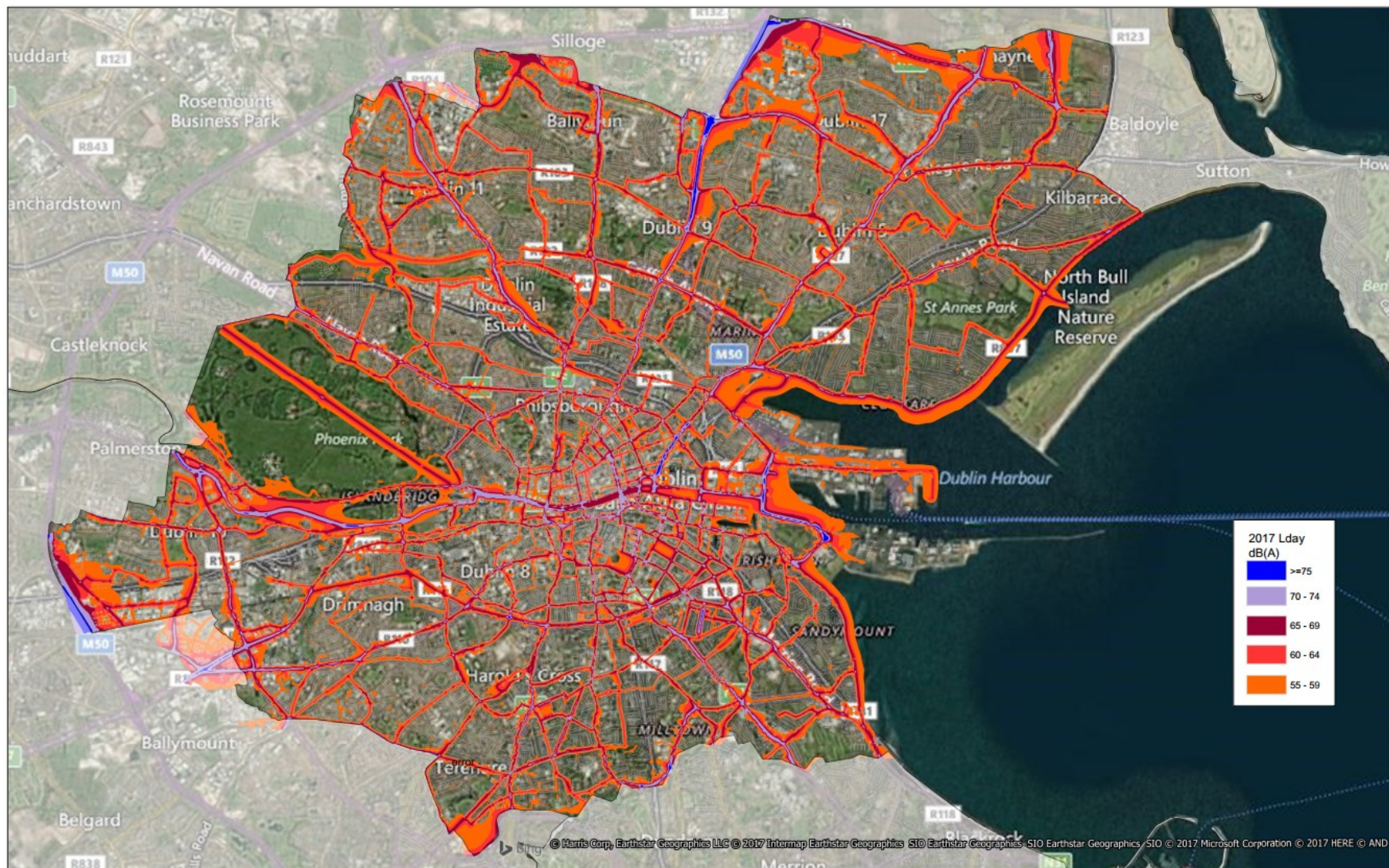
Project: Strategic Noise Mapping 2017
Produced by the Traffic Noise & Air Quality Unit
Environment & Transportation Department
Dublin City Council

0 2.5
kilometres

Title
Lnight dB(A) - Dublin City
Dublin City Council

This strategic noise map presents a graphical representation of weighted predicted annual average (Lnight) road traffic sound levels in Dublin City Council. The map has been developed in accordance with S.I. No. 140 /2006 (the Environmental Noise Regulations) and is a representation of the average environmental sound levels over one complete year. This map forms part of a national noise mapping strategy which can be primarily used as a strategic tool for large scale planning or policy matters and is not suitable for local noise assessments.

 **Comhairle Cathrach**
Bhaile Átha Cliath
Dublin City Council



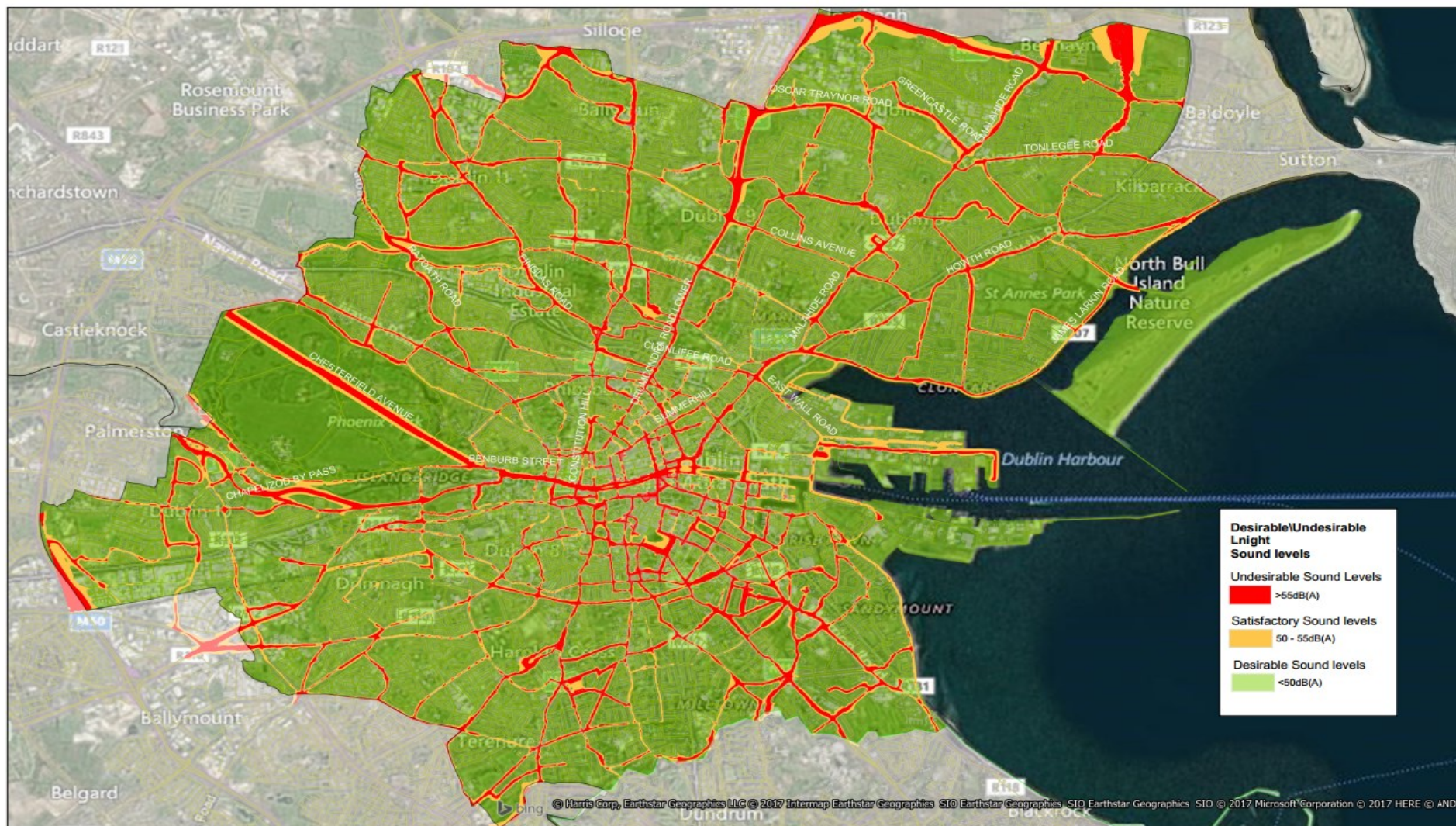
Project: Strategic Noise Mapping 2017
Produced by the Traffic Noise & Air Quality Unit
Environment & Transportation Department
Dublin City Council

0 2.5
 kilometres

Title
Lday dB(A) - Dublin City
Dublin City Council

This strategic noise map presents a graphical representation of weighted predicted annual average (Lday) road traffic sound levels in Dublin City Council.
 The map has been developed in accordance with S.I. No. 140/2006 (the Environmental Noise Regulations) and is a representation of the average environmental sound levels over one complete year. This map forms part of a national noise mapping strategy which can be primarily used as a strategic tool for large scale planning or policy matters and is not suitable for local noise assessments.

 **Comhairle Cathrach**
Bhaile Átha Cliath
Dublin City Council

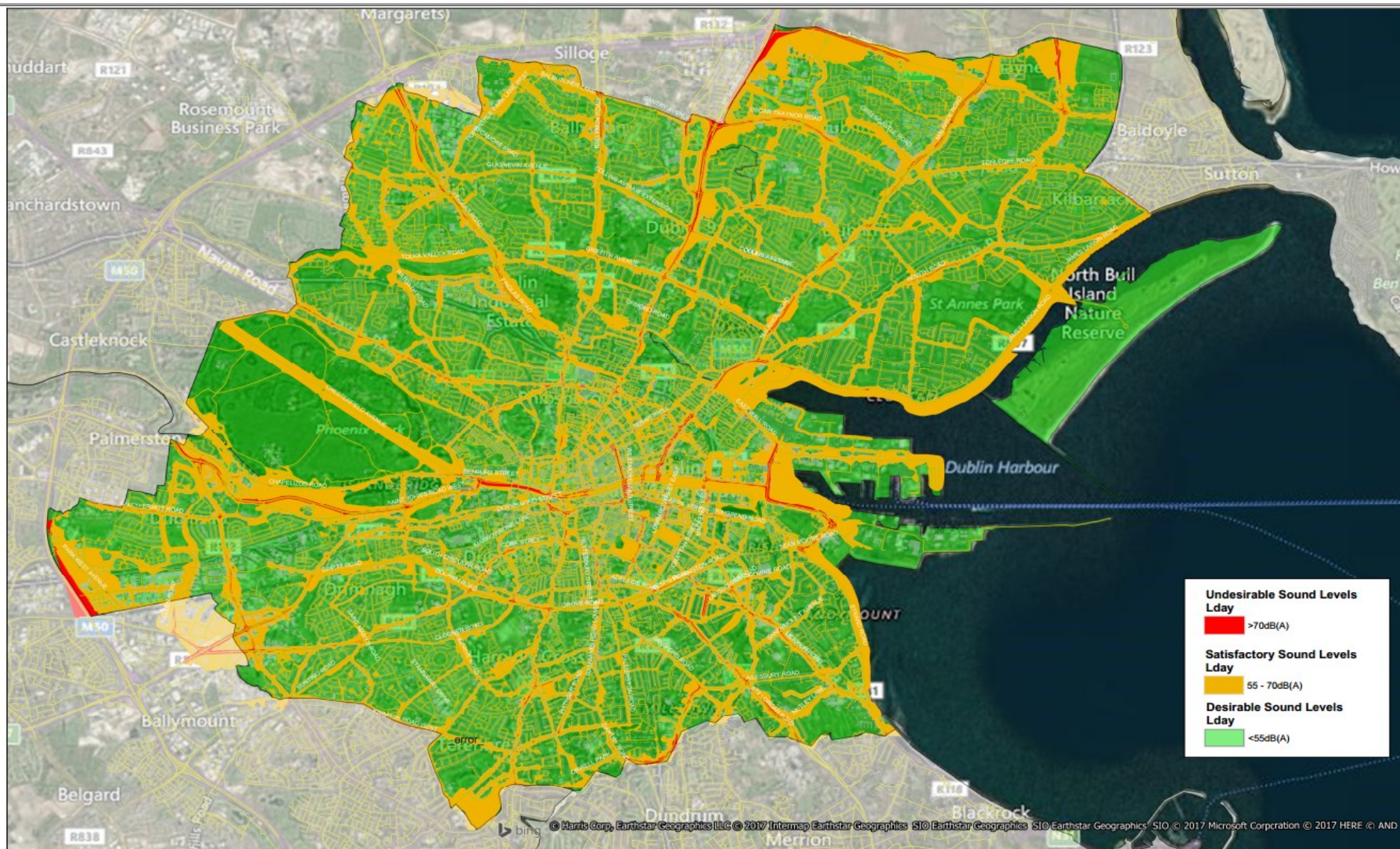


Project: Strategic Noise Mapping 2017
Produced by the Traffic Noise & Air Quality Unit
Environment & Transportation Department
Dublin City Council

Title
Desirable/Undesirable Night dB(A)
Dublin City Council

This strategic noise map presents a graphical representation of weighted predicted annual average (L_{night}) road traffic sound levels in Dublin City Council. The map has been developed in accordance with S.I. No. 140/2006 (the Environmental Noise Regulations) and is a representation of the average environmental sound levels over one complete year. This map forms part of a national noise mapping strategy which can be primarily used as a strategic tool for large scale planning or policy matters and is not suitable for local noise assessments.

 **Comhairle Cathrach**
Bhaile Átha Cliath
Dublin City Council

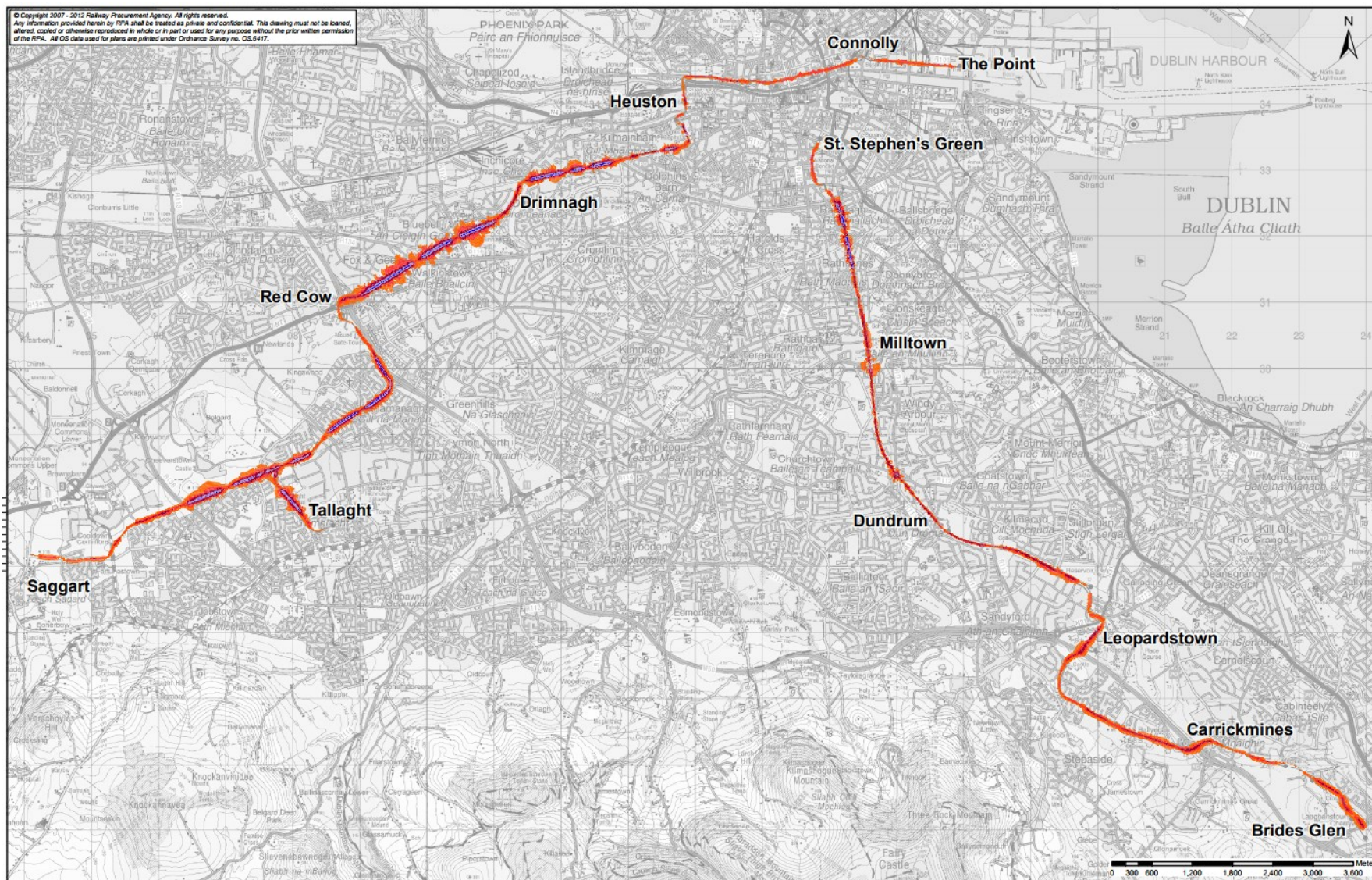


Project: Strategic Noise Mapping 2017
Produced by the Traffic Noise & Air Quality Unit
Environment & Transportation Department
Dublin City Council

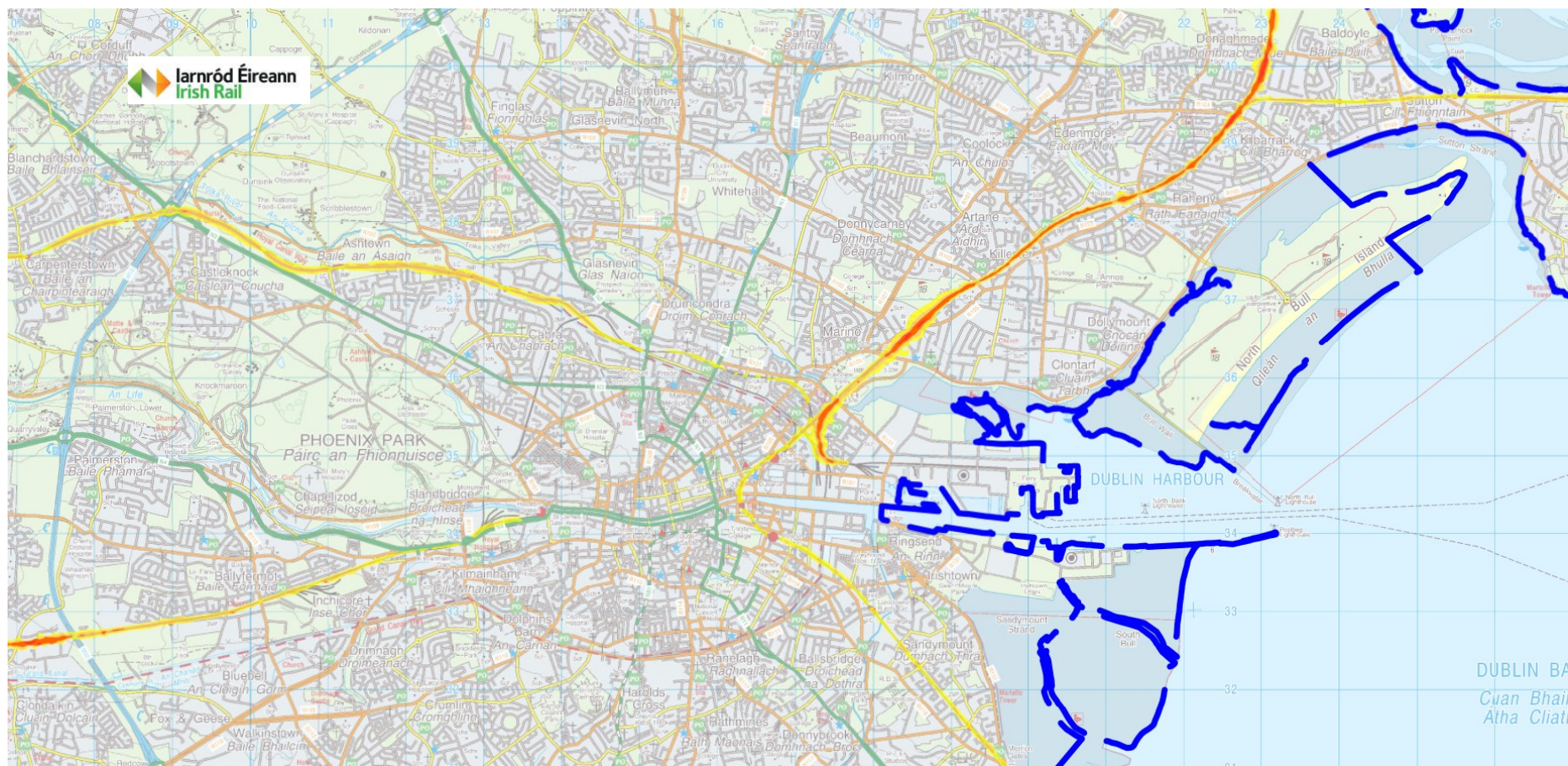
Title
Desirable/Undesirable Sound levels
(Lday dB(A))
Dublin City Council

This strategic noise map presents a graphical representation of weighted predicted annual average (Lday) road traffic sound levels in Dublin City Council. The map has been developed in accordance with S.I. No. 140/2006 (the Environmental Noise Regulations) and is a representation of the average environmental sound levels over one complete year. This map forms part of a national noise mapping strategy which can be primarily used as a strategic tool for large scale planning or policy matters and is not suitable for local noise assessments.

 **Comhairle Cathrach**
Bhaile Átha Cliath
Dublin City Council

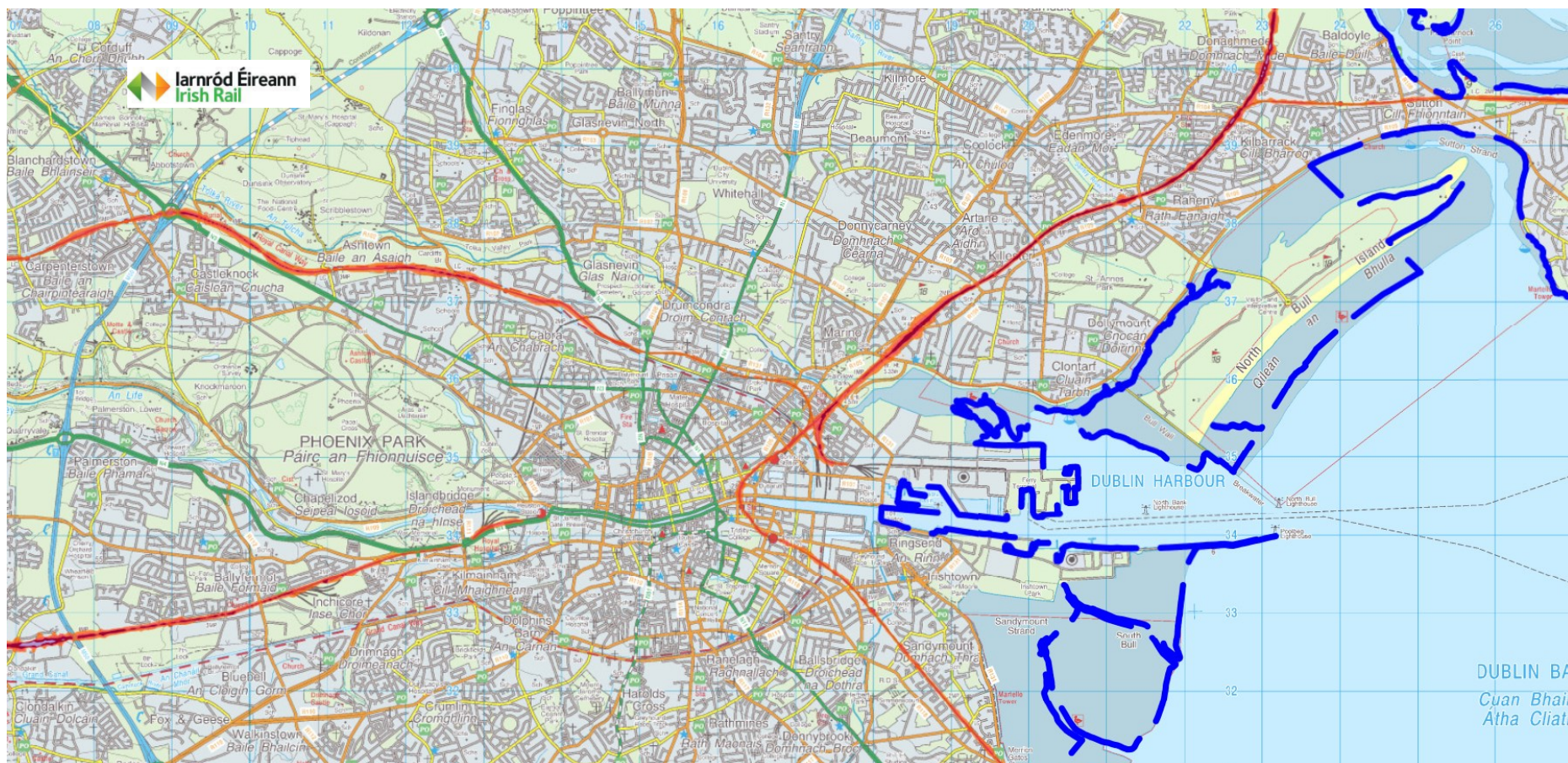


Lden 2017 – All & Major Light Rail, Luas, Dublin Agglomeration



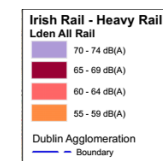
Night 2017, Irish Rail - All Heavy Rail, Dublin Agglomeration

Night is the night time noise indicator and is used in the assessment of sleep disturbance. It is the average noise level calculated over all night periods, 23:00 to 07:00, for one year. The map above indicates the Night decibel (dB) bands reported for Strategic Noise Mapping 2017.



Lden 2017, Irish Rail - All Heavy Rail, Dublin Agglomeration

Lden is the calculated day-evening-night noise level and represents the noise indicator for overall annoyance. It is calculated over all day-evening-night periods for one year. The day period is from 07:00 to 19:00, the evening period is from 19:00 to 23:00 and the night period is from 23:00 to 07:00. The Lden indicator contains extra weighting for the evening and night periods as noise is generally more annoying during these periods. The map above indicates the Lden decibel (dB) bands reported for Strategic Noise Mapping 2017



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Comhairle Cathrach
Bhaile Átha Cliath
Dublin City Council