

Industry

Noise Action Plan

Round 2

Environmental Noise Regulations
(Northern Ireland) 2006

July 2013

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Summary

Annex V of the Environmental Noise Directive requires that Action Plans must include the detail under the various headings below. This information has been summarised from the main body of the plan for the purpose of complying with the Environmental Noise Regulations (Northern Ireland) 2006 in order to assist with EU reporting requirements.

A description of the agglomerations, the major roads, major railways or major airports and other noise sources taken into account.

The Belfast Agglomeration comprises the urban areas of Belfast, Castlereagh, Carrickfergus, Lisburn, Newtownabbey and North Down Local Government Districts. The Agglomeration extends to 198km² and generally forms a continuous area with the exception of the urban areas around Bangor, Carrickfergus and Carryduff. Much of the Belfast agglomeration is in a valley, surrounded by high ground to the West, South and East.

With regard to industrial noise, 111 industrial sites were mapped in the round 2 mapping exercise, compared to 104 in round 1. 36 of these 111 sites are governed by the IPPC regime, 63 were located in the port/harbour and 12 are waste sites.

Of the 36 IPPC sites, 30 are part A processes, 1 is a part A landfill site and 5 are part B sites. Details of all Part A and B activities are listed in Appendix 2.

The authority responsible.

The Regulations state that the Competent Authority for drawing up Action Plans for industry is the Department of the Environment (DOE). The Northern Ireland Environment Agency (NIEA) has responsibility for the control of PPC Part A industrial noise and as such this action plan has been drafted in conjunction with NIEA as it will be responsible for implementation of the plan for those sites.

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The legal context

The Environmental Noise Directive is implemented in Northern Ireland by the Environmental Noise (Northern Ireland) Regulations 2006 (the Regulations) which outline a number of stages to manage and, where necessary, improve environmental noise. The Department of the Environment has issued Technical Guidance for Noise Mapping and Action Planning for the road, rail and airport Competent Authorities. This Action Plan will follow the procedures set out in that guidance and will be implemented by the Department of the Environment.

Any limit values in place in accordance with Article 5

Currently there are no noise limit values set under the Environmental Noise Directive (END) for the UK. Nor do the Regulations set any limit values.

A summary of the results of the noise mapping

The results of the analysis for major industrial activities within the Belfast Metropolitan Area are set out in Table 3. It shows the area within each noise contour band, inside the Belfast Agglomeration and the number of dwellings and population within these dwellings.

An evaluation of the estimated number of people exposed to noise.

Total **area** exposed to noise categories within the Belfast Agglomeration for Industry:

L _{den}	<50 ≥75 dB =	198km ²
L _{night}	<45 ≥70 dB =	198km ²
L _{Aeq, 16hr}	<50 ≥75 dB =	198km ²

Total **number of dwellings** exposed to noise categories within the Belfast Agglomeration for Industry:

L _{den}	<50 ≥75 dB =	261,975
L _{night}	<45 ≥70 dB =	261,975
L _{Aeq, 16hr}	<50 ≥75 dB =	261,975

Total **population** living within dwellings exposed to noise categories within the Belfast Agglomeration for Industry

L _{den}	<50 ≥75 dB =	573,065
L _{night}	<45 ≥70 dB =	573,065
L _{Aeq, 16hr}	<50 ≥75 dB =	573,065

Identification of potential problems and situations that may need to be improved.

The DOE in conjunction with the other Competent Authorities, has identified, through the Northern Ireland Environmental Noise Directive Steering Group (NIENDSG), an appropriate methodology for the identification of action planning priorities. These are known as Important Areas and following further investigation, such areas may be considered Candidate Noise management Areas, prior to formal designation as Noise Management Areas.

The methodology minimises any uncertainty and ensures that the Candidate Noise Management Areas selected are relevant thereby enabling the most appropriate and cost effective action to be determined.

A record of the public consultations organised in accordance with Article 8(7).

Following a review of the noise maps a draft Industry Noise Action Plan was issued for an 9 week formal public consultation on 7 May 2013. The consultation closed on 2 July 2013. Given the limited number of individuals and dwellings affected by industrial noise within the Belfast Agglomeration it was not deemed necessary to hold seminars or events to involve the wider community.

As part of the consultation the Department of the Environment sought comments from:

- Other relevant government departments;
- NIEA Industrial Pollution and Radio Chemical Inspectorate
- Department of Regional Development;
- Competent Authorities in adjacent areas and neighbouring Member States;
- Local and regional authorities;
- Local and national pressure groups;
- NGOs;
- Relevant professional bodies; and
- Local citizen groups.

Following the consultation exercise the draft Action Plan was submitted to the Department of the Environment for consideration and was approved by the Minister for the Environment.

Any noise-reduction measures already in force and any projects in preparation.

In Northern Ireland noise from Part A processes are controlled through The Pollution Prevention and Control (industrial Emissions) Regulations (Northern Ireland) 2012 and noise from part B and C processes are subjected to the statutory nuisance regime which is enforced by district councils. It is generally accepted in the UK that the impact of noise from industrial installations are adequately controlled under existing regulatory controls. This is true of Northern Ireland as industrial noise complaints accounted for only 1.8% of noise complaints across all of Northern Ireland in 2011/12. Of the 221 complaints that related to industrial noise only 43 of these (19.5%) related to the Belfast agglomeration.

Noise from Part A PPC installations within the Belfast agglomeration are satisfactorily managed using the regulatory framework already in place to control noise, (i.e. The Pollution Prevention and Control (industrial Emissions) Regulations (Northern Ireland) 2012). However, as outlined below, the permits relating to those plants that impact upon the top 1% of individuals will be reviewed.

Actions which the Competent Authorities intend to take in the next five years, including any measures to preserve quiet areas.

The Action Planning Process includes five key stages:

- Stage 1 - Analysis of the strategic noise maps;
- Stage 2 - Identification and prioritisation of Candidate Noise Management Areas and Candidate Quiet Areas;
- Stage 3 - Confirmation of Noise Management Areas and Quiet Areas;
- Stage 4 - Review of existing measures and consideration of potentially new mitigation measures; and
- Evaluation of existing UK and Northern Ireland Policies, Plans and Programmes.

Based on the results of the noise maps the Department will identify where the top 1% of the population that are most affected by the highest levels of industrial noise are located. (Important Areas). These areas will be targeted for investigation to identify if, or to what extent further action needs taking.

The Department of the Environment has not designated formal Quiet Areas and so steps to protect such areas cannot be taken. However, this Action Plan shall be reviewed following the designation of such areas. The Department has designated Candidate Quiet Areas in the agglomeration for levels at and below 55 dB Lden for further investigation. In addition, the Department of the Environment will undertake some of the steps set out in the long term strategy in the next 5 years.

Long-term strategy.

Future Action Plans will be drafted to reflect ongoing research in noise both in terms of the health impacts of exposure and also in terms of technological advances in noise mitigation. Action Plans will also be updated, if necessary, following a major development which affects the noise situation or the designation of Quiet Areas within the Agglomeration by the Department.

The Department will continue to update relevant websites relating to industry and noise and will ensure that information is made available to the public. The Department will also consider its system of data collection in advance of round 3 noise mapping and will continue to engage with Europe on environmental noise issues, such as through the Euro Cities Working Group and with Defra and the Devolved Administrations on a variety of research projects and initiatives.

Financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment.

The Department of the Environment is required to have in place a charging scheme so that, as far as practicable, fees and charges payable for permits under the Pollution Prevention and Control (Industrial Emissions) Regulations (NI) 2012 are sufficient to recover the costs of the Chief Inspector and District Councils in exercising their functions under the Regulations. The overall aim of the charging schemes is to provide full cost recovery for regulation of prescribed installations in keeping with the polluter pays principle.

Provisions envisaged for evaluating the implementation and the results of the Action Plan.

The DOE in conjunction with the NIENDSG has agreed appropriate noise indicators for each noise source and developed a methodology for the identification of action planning priorities. This methodology is set out in Noise Mapping and Action Planning Technical Guidance which was issued by the DOE in February 2013.

Consideration will be given to the form in which the NIENDSG will continue in order to facilitate ongoing planning work, including identification of Noise Management Areas, implementation of actions, and the development of future plans following the required five yearly reviews of the noise maps.

Estimates in terms of the reduction of the number of people affected (annoyed, sleep, disturbed, or other).

Population analysis for industrial activities within the Belfast agglomeration show that no one experiences noise in the top two noise categories (more than or equal to 75 dBL_{aeq}16hr and 70-74 dBL_{aeq}16hr). Only 7 people (4 properties) experience noise of 65-69 dBL_{aeq}16hr.

These results differ significantly from round results (based on 2007 data) when 59 people experienced noise equal to or greater than 75 dBL_{aeq} 16hr, 238 experienced noise of 70-74 dBL_{aeq}16hr and 547 experienced noise in the 65-69 dBL_{aeq}16hr range.

1. Introduction

1.1. Purpose

- 1.1.1. The purpose of this Industry Noise Action Plan is to describe how the Department of the Environment propose to deliver its obligations under the Environmental Noise Directive for industrial noise in Northern Ireland. This Action Plan deals with noise from industrial activities within the Belfast Agglomeration¹.
- 1.1.2. The Northern Ireland Environment Agency is the agency of the Department with responsibility for the management of industrial noise emissions from PPC Part A installations and shall undertake the actions outlined in those Action Plans for those types of installations. The Department will also make recommendations for action and update the Plan as required throughout its lifetime.
- 1.1.3. There are Competent Authorities for each noise source covered by the END. The Competent Authorities are Department of the Environment (including NIEA), Department for Regional Development, Northern Ireland Transport Holding Company and airport operators.
- 1.1.4. This is one of a set of five Action Plans, namely:
 - The Roads Noise Action Plan;
 - The Railways Noise Action Plan;
 - The Industrial Noise Action Plan;
 - The George Best Belfast City Airport Noise Action Plan; and
 - The Belfast International Airport Noise Action Plan.

1.2. Requirement of Noise Action Planning

- 1.2.1. The European Parliament and Council Directive for Assessment and Management of Environmental Noise 2002/49/EC, more commonly referred to as the Environmental Noise Directive (END), was published in the Official Journal of the European Union in July 2002. The Directive deals with noise from roads, rail, air traffic, and from agglomerations.
- 1.2.2. The aim of the Directive is to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. The three main objectives of END are:
 - To determine exposure to environmental noise through noise mapping;
 - To ensure information on environmental noise and its effects is made available to the public; and
 - To adopt Action Plans based upon the mapping results, to prevent and reduce environmental noise where necessary, where exposure levels can induce harmful effects on human health and to preserve environmental noise quality where it is good.
- 1.2.3. The Environmental Noise Regulations (Northern Ireland) 2006 came into force on 20th October 2006 and apply to environmental noise levels, in particular in built-up areas, public parks or other quiet areas in agglomerations, near schools, hospitals and other noise-sensitive buildings and areas. The Regulations apply to noise from road, railway and airport sources, as well as industrial noise. The Regulations do not apply to noise that is caused by the person exposed to the noise from, domestic activities, noise created by neighbours, noise at workplaces, or noise inside means of transport or due to military activities in military areas.

¹ Major Continuous Urban Area having a population in excess of 100,00 persons as set out within Regulation No. 3 of The Environmental Noise Regulations (Northern Ireland) 2006.

1.2.4. Annex V of the Directive requires that Action Plans must include the detail in Table 1.1 below. Their location in this Plan is indicated.

Table 1 – Annex V Minimum Requirements for Action Plan from Directive

No	Description	Section in document
1	A description of the agglomerations, major roads, major railways or major airports and other noise sources taken into account.	Section 1.1 and 3.2
2	The authority responsible.	Section 2.1
3	The legal context.	Section 2.2
4	Any limit values in place in accordance with Article 5.	Section 2.3
5	A summary of the results of the noise mapping.	Section 3.4
6	An evaluation of the estimated number of people exposed to noise.	Section 3.4
7	Identification of potential problems and situations that may need to be improved.	Section 4.1
8	A record of the public consultations organised in accordance with Article 8(7).	Summary
9	Any noise-reduction measures already in force and any projects in preparation.	Section 4.2
10	Actions which the Competent Authorities intend to take in the next five years, including any measures to preserve quiet areas.	Section 4.3
11	Long-term strategy.	Section 4.4
12	Financial information (if available): budgets, cost-effectiveness assessment, cost-benefit assessment.	Section 4.5
13	Provisions envisaged for evaluating the implementation and the results of the Action Plan.	Section 4.6
14	Estimates in terms of the reduction of the number of people affected (annoyed, sleep, disturbed, or other).	Section 4.7

1.3 Current Status

1.3.1 Under the Regulations a number of stages are outlined to manage and, where necessary, improve environmental noise. Table 1.2 outlines the first four of these stages.

Table 2 – Environmental Noise Regulation Stages

Stage	Detail	Due Completion Date
1	Produce the first round of strategic noise maps for major roads, rail, airports, and agglomerations	31 March 2007
2	Competent Authorities to draw up first round Action Plans to manage noise	30 April 2008 18 July ² 2008
3	Produce the second round of strategic noise maps for major roads, rail, airports, and agglomerations	31 March 2012
4	Competent Authorities to draw up first round Action Plans to manage noise	30 April 2013 18 July 2013 ³

² The 18th July applies to the industry and consolidated plans.

- 1.3.2 Stage One, the creation of the first round of strategic noise maps, has been completed and published on the Northern Ireland Noise Mapping website www.noiseni.co.uk. Action Plans were submitted to the Department for review and were approved/adopted by the Minister in spring and early summer 2010. Following this a summary of the Action Plans was submitted to the European Commission.
- 1.3.3 Second round noise maps based on 2011 data were completed in summer 2012 and have been published on the Noise NI website (www.noiseni.co.uk).
- 1.3.4 It must be borne in mind that noise maps are derived models based on widely accepted assumptions and do not provide accurate data on the actual noise levels experienced. They are not based upon actual monitored or recorded noise levels. Noise maps are a high level, strategic tool used to determine areas of relative high or low noise. Due to this, it is necessary, before any decisions are made, to investigate, through noise measurement or monitoring, the actual noise levels experienced at a particular point.

1.4 Technical Guidance

- 1.4.1 The DOE has developed, in conjunction with the other Competent Authorities (in the form of the Northern Ireland Environmental Noise Directive Steering Group (NIENDSG)), a methodology to determine;
- Noise map assessment criteria; and
 - Noise Management Areas.
- 1.4.2 This took the form of Technical Guidance on Noise Mapping and Action Planning which assists each Competent Authority analyse their noise maps and draft their Action Plans. It also assists the Competent Authorities implement their Action Plans over the five year period of the plan.

1.5 Common Assessment Method

- 1.5.1 The Joint Research centre (JRC) of the European Commission is working on a Common Noise Assessment Method in Europe (CNOSSOS – EU). When completed this will be a common methodology for all noise mapping which will be undertaken across Europe pursuant to the requirements of END. However, this is currently in a draft stage and it is unclear whether or not this methodology will be finalised and issues to member States in sufficient time to enable them to adopt the new method for round three noise mapping.

³ The 18th July applies to the industry and consolidated plans.

2. Policy Context

2.1. The authority responsible

- 2.1.1. The Environmental Noise Regulations (Northern Ireland) 2006 (the Regulations) set out various responsibilities associated with the production of Noise Action Plans. Various Competent Authorities are charged with the responsibility of producing Noise Action Plans, and the Department of the Environment (DOE) is the designated Authority overseeing the implementation of each Action Plan.
- 2.1.2. The Regulations state that the Competent Authorities are as follows:
- the Department for Regional Development (DRD) for major roads and all roads within the agglomerations;
 - the Northern Ireland Transport Holding Company (Translink) for major railways and railways within the agglomerations
 - the relevant airport operator for major airports and other airports that were mapped; and
 - the Department of the Environment for industrial sources within the agglomerations.
- 2.1.3. The Northern Ireland Environmental Noise Directive Steering Group (NIENDSG) was set up by DOE in 2005 to provide input to the Development of the strategic noise maps for Northern Ireland and subsequent Action Plans. This group is made up of representatives from each Competent Authority including:
- Roads Service;
 - Ports and Public Transport Division;
 - Translink;
 - George Best Belfast City Airport;
 - Belfast International Airport; and
 - The Department of the Environment.

2.2. The legal context

- 2.2.1. Directive 2002/49/EC relates to the assessment and management of environmental noise and is referred to as the Environmental Noise Directive or END⁴. The END requires Member States to produce strategic noise maps for the main sources of environmental noise, i.e major roads, major railways, major airports. The Directive also requires strategic noise maps to be produced for agglomerations with a population of more than 250,000 persons and a certain population density in 2007 and those with a population of more than 100,000 persons and a certain population density in 2012 and subsequent rounds⁵. Action Plans must be produced based on the results of the noise mapping. The Regulations require the Competent Authorities to produce an Action Plan in 2008, 2013, 2018 and every five years thereafter, based on the results of the noise mapping. Action Plans must also be reviewed whenever a major development⁶ occurs affecting the existing noise situation. The first round the production of the noise mapping⁷ process was completed in December 2007. The second round was completed in 2013.

⁴ For further information see

http://eur-lex.europa.eu/pri/en/oj/dat/2002/l_189/l_18920020718en00120025.pdf

⁵ The population density, specified within the NI Regulations, is equal to or greater than 500 people per km².

⁶ The term 'major development' is not defined in the Regulations or the END

⁷ Noise maps can be viewed on the Departments website at www.noiseni.co.uk

- 2.2.2. The Regulations do not apply to noise caused by the person exposed to, noise from, domestic activities, noise created by neighbours, noise at work places, noise inside means of transport or due to military activities in military areas. They apply solely to environmental noise to which humans are exposed, in particular in built-up areas, in public parks or other quiet areas in an agglomeration, near schools, hospitals and other noise-sensitive buildings. Noise from domestic activities or noise created by neighbours or construction sites can be dealt with under the Clean Neighbourhoods and Environment Act (Northern Ireland) 2011. Noise at work is governed by the Control of Noise at Work Regulations (Northern Ireland) 2006.
- 2.2.3. In Northern Ireland Part A industrial processes are controlled through The Pollution Prevention and Control (industrial Emissions) Regulations (Northern Ireland) 2012. Part B and C processes are subject to the statutory nuisance regime which is enforced by district councils.
- 2.2.4. Noise from Part A processes are controlled by the Northern Ireland Environment Agency through imposing conditions on permits. As part of its role as a regulator, the NIEA has produced guidance⁸ for use in controlling industrial noise, which is used when considering applications for Environmental Permits and inspections of installations. Generally speaking noise from Part A PPC installations within the Belfast agglomeration are satisfactorily managed using the regulatory framework already in place to control noise, (i.e. The Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012).
- 2.2.5. In addition to the PPC regime, if a proposed development is likely to be a source of noise, its location and measures regarding the level or timing of noise emissions may be controlled through the planning system as noise is a “material consideration” in the determination of individual planning applications. This means that, where appropriate, noise implications will be fully taken into account by the Planning Authority when considering development proposals.
- 2.2.6. When making recommendations as part of the action planning process, the existing legislative and guidance framework in Northern Ireland, including current plans, policies and strategies must be considered to establish potential synergies or conflicts. The current policy and legislative framework for controlling environmental noise in Northern Ireland is detailed in Appendix 1. Relevant plans, policies and strategies may include (but are not limited to):
- Regional Development Strategy 2025;
 - Development Plans e.g. BMAP;
 - Planning Policy Statements and Planning Supplementary Guidance;
 - A Planning Strategy for Rural Northern Ireland;
 - Regional Transportation Strategy for Northern Ireland 2002-2012;
 - Belfast Metropolitan Transport Plan 2015;
 - Sustainable Development objectives, plans and policies;
 - Regional Strategic Transport Network Transport Plan 2015;
 - Sub-Regional Transport Plan 2015;
 - Air Quality Regulations and Action Plans;
 - Renewable Energy Action Plans;
 - Local Authority Open Spaces policies;
 - Mosaic GI Strategy for Northern Ireland;
 - Emerging climate change initiatives;
 - Spatial Data Strategy;
 - Urban Regeneration Strategies;
 - Planning Agreements;
 - Noise Abatement Policies;

⁸ Horizontal Guidance Note for Noise - IPPC H3 Part 1 and 2. Available at <http://www.doeni.gov.uk/niea/pollution-home/ippc/horizontal-guidance.htm>

- Environmental Impact Assessment Regulations;
- Strategic Environmental Assessment Regulations; and
- Noise Insulation Regulations.

2.3. Any limit values in place

- 2.3.1. Currently there are no noise limit values set under the Environmental Noise Directive (END) for the UK. Nor do the Regulations set such values. Although there are no immediate plans to introduce limit, values Defra and the DAs will keep the option under review during the implementation phase of the early rounds of action planning.

Characteristics

3.1. Scope of the Action Plans

3.1.1. The Directive requires that Action Plans be designed to manage noise issues and effects from industrial sources located within the Agglomeration.

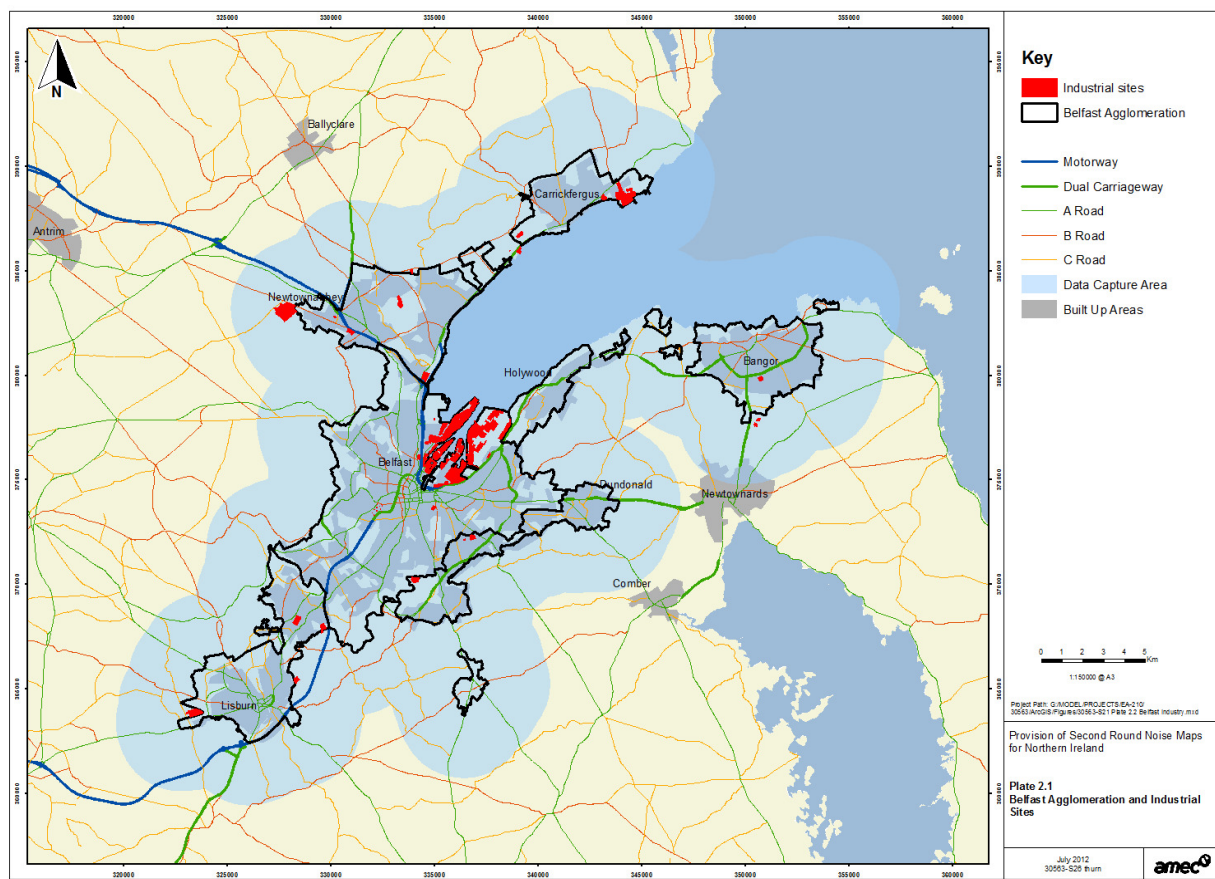
3.2. Description of Industrial Activities Within the Belfast Agglomeration

3.2.1. The Directive defines a second round agglomeration as having more than 100,000 inhabitants. On the basis of data from the Northern Ireland Statistics and Research Agency (NISRA), the Belfast Metropolitan Urban Area has a population of 267,742. The Derry Urban Area has a population of 85,016 and thus Belfast is the only settlement within Northern Ireland which is classified as a second round agglomeration.

3.2.2. The boundary of the Belfast Agglomeration, as shown in Figure 1, is that of the Belfast Metropolitan Urban Area as defined by the Northern Ireland Census classification of settlements. Figure 1 also shows the location of industry within the agglomeration.

3.2.3. The Belfast Agglomeration comprises the urban areas of Belfast, Castlereagh, Carrickfergus, Lisburn, Newtownabbey and North Down Local Government Districts. The Agglomeration extends to 198km² and generally forms a continuous area with the exception of the urban areas around Bangor, Carrickfergus and Carryduff.

Figure 1 Location of Industrial Noise Sites in Belfast Agglomeration



3.2.4. The Directive defines industrial sources as those listed in Annex 1 of the Integrated Pollution Prevention Control Directive (96/61/EC) (now superseded by the Industrial Emissions Directive). The Environment (Northern Ireland) Order 2002 together with The Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012 implement the IPPC Directive in Northern Ireland. Part A and B installations are regulated by the Northern Ireland Environment Agency's Industrial Pollution

Inspectorate, (but Part B with regard to air emissions only). Part C activities are regulated by District Councils.

3.2.5. 111 industrial sites were mapped in the round 2 mapping exercise, compared to 104 in round 1. 36 of these 111 sites are governed by the IPPC regime, 63 were located in the port/harbour and 12 are waste sites. Of the 36 IPPC sites, 30 are Part A processes, 1 is a Part A landfill site and 5 are Part B sites. Details of all Part A and B activities are listed in Appendix 2.

3.3. Preparation of Noise Maps

3.3.1 The Department of the Environment let a contract for round two noise mapping to AMEC Environment and Infrastructure UK Limited (AMEC) on behalf of all the Northern Ireland Competent Authorities in August 2011. Letting a single contract, managed by the DOE, ensured that the mapping was undertaken in a consistent manner. The noise maps were completed in mid-2012.

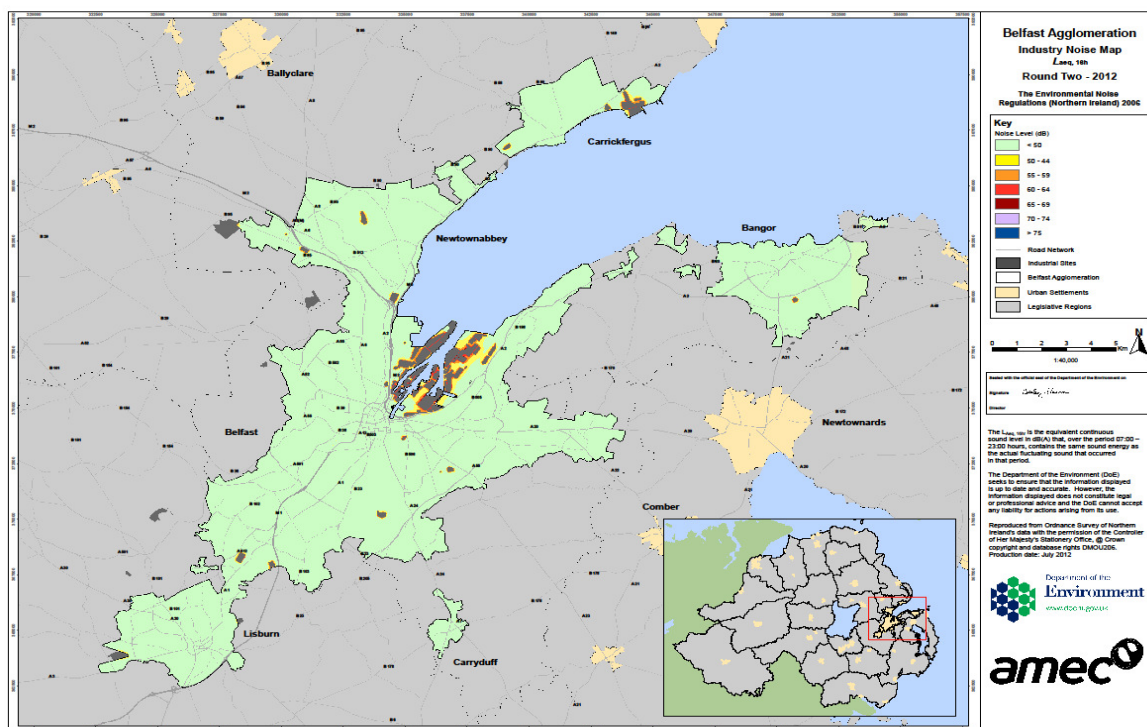
3.3.2 Data relating to waste and industrial sites was supplied to AMEC by NIEA and Belfast Harbour Authority supplied data relating to industrial activities in the harbour. Population data was supplied by the NISRA.

3.3.3 AMEC appraised the quality of the data and identified gaps, modify or collect further data and collate the data into appropriate datasets. Following this they created a digital noise model, calculated noise level outputs, completed noise modelling and generated maps. The noise mapping stages are:

- Stage 1 - Define Areas to be Mapped
- Stage 2 - Define Noise Calculation Methods
- Stage 3 – Develop Dataset Specification
- Stage 4 – Dataset Production
- Stage 5 – Develop Noise Model Datasets
- Stage 6 – Noise Level Calculations
- Stage 7 – Post Processing and Analysis

An example of a noise map for industrial noise is included in Figure 2.

Figure 2 Example of Industrial Noise Map L_{Aeq} 16hr



3.4 A summary of the results of the noise mapping

3.4.1 The Directive required that development of Action Plans would be informed by analysis of the strategic noise maps within agglomerations, and for major sources outside agglomerations. An assessment of the area, number of dwellings and numbers of people exposed to noise within 5 dB bands has been extracted from the noise maps for a range of scenarios including: L_{den} , L_{night} and $L_{Aeq\ 16hr}$. Results are set out below.

Table 3 Area, number of dwellings and population exposed to noise categories within the BMUA for Industry

Noise Scenario	Noise Category	Area (km ²)	Number of Dwellings	Population
L_{den}	<50	185.1	260,589	570,133
	50-54	3.84	1,057	2,289
	55-59	2.45	156	339
	60-64	2.34	81	145
	65-69	2.88	75	135
	70-74	1.35	17	24
	≥75	0.15	0	0
	Total	198.1	261,975	573,065
L_{night}	<45	187.2	261,220	571,506
	45-49	3.56	520	1,132
	50-54	2.32	110	212
	55-59	1.24	48	83
	60-64	2.90	74	127
	65-69	0.88	3	5
	≥70	0.02	0	0
	Total	198.1	261,975	573,065
$L_{Aeq\ 16hr}$	<50	188.7	261,662	572,458
	50-54	2.64	148	303
	55-59	1.69	71	137
	60-64	4.10	90	160
	65-69	0.94	4	7
	70-74	0.02	0	0
	≥75	0	0	0
	Total	198.1	261,975	573,065

3.4.2 This preliminary analysis of the noise maps analysis provides an understanding of:

- Where environmental noise is located
- The approximate magnitude of noise levels within the assessment area; and
- Approximately how many people are exposed to differing levels of environmental noise.

3.5 Limitations of Noise Maps

3.5.1 Noise maps are only as accurate as the data fed into the models that generate them. There was no specific validation of the round 2 input data using noise measurements or site-specific studies. Thus caution must be taken when interpreting the noise maps. The noise maps are based on predicted noise levels using a 10-metre grid spacing at a receptor height of 4 metres. The noise level for a given grid square is calculated for the centre of that grid square. It is also necessary to bear in mind that annoyance due to noise is highly subjective and not determined solely by the number of decibels, but also by the nature of the noise, tonal component and the sensitivity of the hearer. Nonetheless, as strategic noise maps, the results do provide a good indication of the overall exposure of the population to environmental noise.

4. Action Planning Process

4.1. Identification of potential problems and situations that may need to be improved

Aim of Action Plans

4.1.1 In accordance with the aims and objectives of the Directive, the proposals within this Action Plan are focussed upon: *“preventing and reducing environmental noise where necessary and particularly where exposure levels can induce harmful effects on human health and to preserving environmental noise quality where it is good.”*

4.1.2 The Action Planning Process includes five key stages as outlined in Table 4.1 below.

Table 4 – Key Stages in the Action Planning Process

Stage	Description
1	Analysis of the strategic noise maps.
2	Identification and prioritisation of Candidate Noise Management Areas
3	Confirmation of Noise Management Areas
4	Evaluation of potential mitigation measures.
5	Evaluation of existing UK and Northern Ireland Policies, Plans and Programmes.

Effects of Noise

4.1.3 Noise is an inevitable consequence of a mature and vibrant society. People enjoy a benefit from road, rail and air transport and industrial processes, and these benefits manifest themselves in terms of business, leisure, the movement of goods and employment.

4.1.4 There are many different effects of noise, and individuals experience each of them to different degrees. Noise can disturb human activity, by causing distraction or by physically interfering with it. Effects of noise can include:

- general detection/distraction;
- speech interference;
- disruption of work/mental activity;
- sleep disturbance;
- hearing loss;
- physiological effects (including stress, irritability and annoyance); and
- possibly more overt reactions, including complaints.

4.1.5 The nature of the psychological effects is much less certain, although it is known that noise can cause a variety of biological reflexes and responses referred to as stress reactions. Whether, over a period of time, these reactions could lead to clinically recognisable disease is unclear. The possibility that severe annoyance might itself induce stress cannot be ignored⁹.

Analysis of strategic noise maps

4.1.6 Preliminary analysis of the strategic noise maps has been undertaken to inform the scope of this Action Plan by assessing the area, population and number of dwellings in line with the approach established by the NIENDSG for roads, railways and airports

⁹ The World Health Organisation provides a range of evidence on the effects of exposure to environmental noise – more information at www.who.int/topics/noise/en/

(see chapter 3). The approach is set out in Noise Mapping and Action Planning Technical Guidance issued by the DOE in February 2013. These results provide an understanding of:

- where environmental noise is located;
- the approximate magnitude of noise levels within the assessment area; and
- approximately how many people are exposed to differing levels of environmental noise.

4.1.7 However, this analysis alone is not necessarily sufficient to select appropriate Candidate Noise Management Areas. As such The DOE has developed with the other competent authorities, through the NIENDSG, a methodology to determine appropriate and robust noise assessment criteria for the identification of Important Areas with a view to these potentially becoming Candidate Noise management Areas once the actual noise levels experienced at those locations have been determined.

Noise Assessment Criteria

4.1.8 The methodology developed by the NIENDSG provides a framework for the detailed assessment of the strategic noise maps to inform the identification of priorities for the Action Plan. It minimises any uncertainty and ensures that the areas selected are relevant thereby enabling the most appropriate and cost effective action to be determined. In the first instance, the criteria will be used to identify Important Areas which are investigated prior to becoming Candidate Noise Management Areas.

4.1.9 The NIENDSG agreed that $L_{Aeq\ 16hr}$ is the primary indicator for industrial noise and that as a first priority Competent Authorities should identify the total population affected by noise levels of more than $L_{Aeq\ 16h}$ from industry. Competent Authorities should then identify the location of the top 1% affected by the highest noise levels (Important Areas) and target these areas for investigation with a view to them becoming CNMAs. Additional noise indicators such as, $L_{Aeq\ 18hr}$, L_{day} , L_{eve} and L_{night} can also be examined to identify if there are any particular features of the noise that could be managed further or if there are any additional measures that could be taken to improve the management of the noise.

4.1.10 In developing the approach the DOE took account of guidance and other publications elsewhere within the UK and Europe and considered the findings of on-going research into health effects such as the 'annoyance' level and sleep disturbance. The NIENDSG agreed that $L_{Aeq\ 16hr}$ should be the primary noise indicator for industry and decided that a strict noise threshold or dB limit should not be adopted.

4.1.11 The Department of the Environment had not issued guidance on the identification and designation of Quiet Areas in agglomerations. When such guidance is issued and the Department has formally designated such areas, it will implement this Action Plan in a manner which is conducive to the protection of Quiet Areas.

Identification of Important Areas

4.1.12 Based on the noise mapping results, 607 people within the Belfast agglomeration experience noise levels of 50dB $L_{Aeq\ 16hr}$ or more. 1% of this is 6.07 people (rounded to 6 people) equating to 4 properties. These 4 properties fall within the 65-69dB $L_{Aeq\ 16hr}$ range and are:

- 2 unnamed non-residential buildings, east of LoughView, Carrickfergus; and
- 2 unnamed non-residential buildings on Duncrue Street/Northern Road, near Belfast Harbour.

4.1.13 Given the modelled nature of the maps these properties would normally then be targeted for further investigation to determine the actual noise levels experienced at those points. Consideration would also be given to noise reduction measures already in place and what further action can be taken before they are identified as Candidate Noise Management Areas. However, as these properties have been identified as non-

residential and thus uninhabited, no further investigation will be undertaken. The Department may wish to target other properties for investigation as discussed in section 4.3.6.

4.2 Any noise reduction measures already in force and any projects in preparation

4.2.1 Noise from part A PPC installations within the Belfast agglomeration is managed using the regulatory framework established in the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012. As part of an application for a PPC permit, the operators of installations are required to assess the impact of noise emissions to ensure that:

- the noise control techniques will be Best Available Techniques (BAT); and
- the impact from noise emissions will not be a reasonable cause of annoyance.

4.2.2 Noise emissions from Part A PPC installations will be controlled by conditions in Part A PPC permits, (including noise management plans where appropriate), which will be assessed as part of periodic routine site inspections.

4.2.3 Noise emissions from Part B and C industrial installations are controlled by District Councils using Statutory Nuisance provisions under the Clean Neighbourhoods and Environment Act (Northern Ireland) 2011. Where the top 1% of properties are affected by noise from part B or C processes, the Department will liaise with the relevant District Council to determine whether or not complaints have been received. However, noise from Part B and C PPC installations is not thought to be a significant issue within the Belfast Agglomeration nor a significant contributor to the combined impact from other sources of noise.

4.3 Actions which the competent authorities intends to take in the next five years, including measures to preserve quiet areas

4.3.1 Where Part A processes are identified as contributing to the noise experienced at the 4 properties listed above (the top 1%), the Department will review the noise conditions contained in the permits to confirm whether or not they are still appropriate and will review the noise mitigation measures currently in use to confirm whether or not the Best Available Techniques are being adopted in line with regulation 11 of the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012.

4.3.2 When considering whether or not to impose additional permit conditions the Department will assess their effectiveness and cost in the wider context, including positive impacts on health and quality of life, the impact on the local economy and whether or not any measure could have adverse environmental impacts, such as on air quality.

4.3.3 Following this desktop exercise, and due to the modelled nature of the noise maps it may be necessary for officers to visit the site to undertake noise monitoring to provide a true indication of the actual noise exposure levels. It should be borne in mind that noise monitoring is indiscriminate and will not just record industrial noise. Such a visit will also confirm the type of properties affected (residential or otherwise), the extent of the exposed population and the location of any noise sensitive properties (such as schools or hospitals) or noise sensitive rooms within those properties.

4.3.4 Where noise from Part B and C PPC installations is indicated by the noise maps to be an issue, the Department will liaise with the relevant District Council to determine whether or not complaints have been received.

Identification and prioritisation of Candidate Noise Management Areas

4.3.5 Further detailed analysis of the strategic noise maps is required to identify Candidate Noise Management Areas (CNMAs), which are locations where people are most likely to be annoyed by noise and may therefore require noise intervention management. However, as there are only 4 properties in the top 1% most affected by industrial, and

as they are not residential, this does not warrant designation as a Noise Management Area at this time as it would be disproportionate to the potential gains.

4.3.6 However, END requires Competent Authorities to work to prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise. Given the 4 properties making up the top 1% most affected are non-residential, the Department will consider investigating beyond the top 1% of the population affected.

Confirmation of Noise Management Areas

4.3.7 Whilst the CNMAs will be identified on the basis of the strategic noise maps, the modelled noise levels need to be validated prior to each location being confirmed as a Noise Management Area (NMA). Given the limited impact of industrial noise within the agglomeration, the Department will not be designating a Noise Management Area at the present time. However, following a review of the properties affected by noise greater than 55 dB $L_{Aeq\ 16hr}$ this may be considered necessary at some point during the lifetime of this Action Plan. A Milestone Plan is included below:

Table 6 - Programme of Work/Key Milestones

	Action	Expected date of completion
1.	Identify top 1% affected by highest noise levels	Completed April 2013
2.	Visit top 1% of properties, and consider <ul style="list-style-type: none"> • Type of property • Noise sensitive property/façade/rooms • Noise monitoring to validate maps 	NA - properties were identified as non-residential from noise maps
3.	Review PPC permits of the installations affecting the properties most affected (top 1%) and consider possible mitigation measures based on BAT	NA
4.	Consider over the life time of this Action Plan reviewing permits of installations on a prioritised basis to take account of changes in BAT and BS 4142 – Method for Rating Industrial Noise affecting mixed residential and industrial areas.	2013 - 2018
6.	Review the implementation of this Noise Action Plan following the designation of Quiet Areas by the DOE	As required
7.	Review this Action Plan following any major developments which affect the existing noise situation	As required

4.3.8 As the DOE has not formally identified QAs, this Action Plan does not set out specific steps which will be undertaken to protect such areas. Instead it will review endeavour to the contents of the Action Plan in when such areas are designated.

Review of Possible Prevention and Mitigation Measures

4.3.9 In the event that a Candidate Noise Management Areas for industrial noise is identified, the potential noise mitigation measure and the associated costs and benefits should be investigated. Such an investigation would take account of mitigation measures and regulatory controls which are already in place, prior to formal designation as Noise Management Areas.

4.3.10 When identifying potential mitigation measures the Department will consider a variety of measures and controls, including working with Planning Policy Division to develop supportive land-use policies, adoption of technical noise mitigation measures at source, selection of quieter apparatus or adoption of measures to reduce sound transmission.

4.3.11 The Department will also undertake a cost benefit analysis of potential mitigation measures. Such analysis will address construction, maintenance and lifetime costs of

measures. The benefits gained from noise reduction will also be viewed in terms of health advantages

Evaluation of existing UK, Northern Ireland and local Policies, Plans and Programmes

- 4.3.12 Given that the top 1% of properties affected by the most industrial noise amounts to only 4 properties, and these are non-residential, noise levels due to industrial activities in the Belfast agglomeration are considered acceptable and adequately controlled under the existing regulatory controls. However any synergies/conflicts with current local plans, policies and programmes that may be identified during the further assessment of noise maps will be considered by the NIENDSG.

4.4 Long term strategy

- 4.4.1 The Action Plan will be updated, as appropriate, to reflect ongoing research in noise related issues both in terms of acquiring an understanding of the impacts to health of the exposure to noise and also in terms of technological advances to possible noise mitigation solutions. The Action Plan will also be updated, if necessary, following a major development which affects the noise situation or the designation of Quiet Areas within the Agglomeration by the Department. The DOE will also issue Policy Guidance on the Identification on Quiet Areas in due course.
- 4.4.2 The Department will continue to work with the Department for the Environment, Food and Rural Affairs (DEFRA) and the other Devolved Administrations on a number research programmes, which include investigations into various technical aspects of noise management.
- 4.4.3 The Department will continue to update relevant websites relating to industry and noise and will ensure that maximum information is made available to the public. The Department will also consider its system of data collection in advance of round 3 noise mapping and will continue to Engage with Europe on environmental noise issues, such as through the Euro Cities Working Group and with Defra and the Devolved Administrations on a variety of research projects and initiatives.

Land-use Planning Policy Guidance

- 4.4.4 To help ensure that the overall aims of Action Plans are fully realised, and that noise continues to be carefully considered through the planning system, the DOE intends to include reference to the END requirements in a simplified high level statement of policy that the Environment Minister expects to be in place prior to the transfer of planning powers to district councils.

4.5 Financial information: budgets, cost-effectiveness assessment, cost-benefit assessment

- 4.5.1 The Department of the Environment is required to have in place a charging scheme so that, as far as practicable, fees and charges payable for permits under the Pollution Prevention and Control (Industrial Emissions) Regulations (NI) 2012 are sufficient to recover the costs of the Chief Inspector and District Councils in exercising their functions under the Regulations.
- 4.5.2 Current fees and charges payable to the Chief Inspector are specified in the Pollution Prevention and Control Charging Scheme 2012 for existing PPC installations and in the Pollution Prevention and Control (Industrial Emissions – NIEA) Charging Scheme (Northern Ireland) 2013 for new PPC installations.
- 4.5.3 The overall aim of the charging schemes is to provide full cost recovery for regulation of prescribed installations in keeping with the polluter pays principle.
- 4.5.4 The Department will, in the first instance, review the PPC permits of the installations affecting the top 1% of properties worst affected. As this is a desktop exercise, it will be

of limited costs and thus is cost-effective. Following this, on-site visits may be undertaken to determine if any further mitigation should be taken.

4.6 Provisions envisaged for evaluating the implementation and the results of the Action Plan over a 5 year period

4.6.1 The Department is considering reviewing the current NIENDSG system. Consideration will be given to the form in which the group will continue in order to facilitate ongoing planning work (including identification of Noise Management Areas), implementation of actions, and the development of future plans following the required five yearly reviews of the noise maps.

4.6.2 In order that the delivery of the Plan can be managed effectively, it is important to identify clearly in advance the approach to monitoring its implementation and success. This will be done in the event that a Noise management Area is designated for industrial noise.

4.6.3 Throughout the period of the Action Plan the Department will continue to collate noise complaint statistics, paying particular attention to those relating to industrial noise within the agglomeration.

4.7 Estimates in terms of the reduction of the number of people affected (annoyed, sleep disturbed, or other)

4.7.1 The assessment criteria and subsequent mitigation measures will prioritise actions to the worse affected population. The noise maps have estimated the populations exposed to noise greater than 50 dB for the decibel ranges set out in the Directive.

Appendix 1

Current Policy and Legislative Framework for Controlling Environmental Noise in Northern Ireland.

Air Navigation Order 2005.

Air Navigation (Environmental Standards) Order 2002.

The Airports (NI) Order 1994 Aeroplane Noise Regulations 1999

Land Acquisition and Compensation (Northern Ireland) Order 1973

Clean Neighbourhoods and Environment Act (Northern Ireland) 2011

Noise Insulation Regulations (NI) 1995

Aeroplane Noise Regulations 1999

Aeroplane Noise (Amendment) Regulations 1999

Air Navigation (General) Regulations 1999

The Pollution Prevention and Control Regulations (Northern Ireland) 2003

The Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003

The Environmental Assessment of Plans and Programmes Regulations (NI) 2004.

The Civil aviation Act 2006.

Environmental Noise Regulations (Northern Ireland) 2006.

Relevant Policy and Guidance Publications

Control of Noise (Code of Practice for Construction and Open Sites) Order (NI) 2002

Calculation of Road Traffic Noise Department of Transport 1998 - NI Modification

Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 Traffic Noise and Vibration

Land Compensation - Your Rights Explained DOE (NI)

Land Compensation Your rights explained - Insulation against Traffic Noise 1995

DOE Control of Noise at Surface Mineral Workings 1990

DOE Environmental Effects of Surface Mineral Workings 1992

BS 5228 Noise Control on Construction and Open Sites

Part 1 1997 - Code of Practice for basic info and procedures for noise & vibration control

Part 2 1997 - Guide to noise & vibration control legislation for construction and demolition including road construction and maintenance

BS 5228 Part 3 1997 - Code of Practice applicable to surface coal extraction by open cast methods

BS 5228 Part 4 1992 - Code of Practice for noise and vibration from piling operations

BS 5228 Part 5 1997 - Code of Practice applicable to surface mineral extraction (except coal) sites

BS 4142: 1997 - Method of rating industrial noise affecting mixed residential and industrial areas

BS 6472 1992 - Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80 Hz)

BS 7385 Part 1 1990 – Evaluation and Measurement for Vibration in Buildings – Guide for measurement and evaluation of their effects on buildings

BS 7385 Part 2 1993 - Evaluation and Measurement for Vibration in buildings - Guide to damage levels from ground borne vibration

BS 7445 Part 1: 1999 - Description and measurement of environmental noise

BS 7445 Part 2: 1999 - Guide to the acquisition of data pertinent to land use

BS 7445 Part 3: 1999 - Guide to the application of noise limits.

BS 8233 1999 - Sound Insulation and noise reduction for buildings – Code of Practice

DEFRA - Low Frequency Noise 2002

Delivering the goods – a toolkit for improving night time-deliveries Freight Transport Association in consultation with Department for Transport

Calculation of Railway Noise 1995 Department of Transport

Environment Agency IPPC Horizontal Guidance for Noise Part 1 Regulation and Permitting 2001

Environment Agency Horizontal Guidance for Noise Part 2 - Noise Assessment and Control 2001

The Noise Insulation (Railways and other Guided Transport Systems) Regulations 1996

DEFRA – A Review of Published Research On High Freq. Noise and It Effects – May 2003

World Health Organisation – Guidelines for Community Noise

Environmental Impact Assessment (August 1999)

DMRB Screening Method Spreadsheet Version 1.02 November 2003

Transport Assessment; Guidelines for Development Proposals in N. Ireland Nov 06 DRD/DOE

ODPM -PPG24: Planning and Noise (1994)

Schedule of Round 2 Waste Sites within Belfast agglomeration

Operator	Location/Type
Browns (Inert landfill)	Waste
Carrickfergus WwTW (Sewage Sludge)	Waste
Derek Hall Pig Farm	Waste
Dunmurry WWTW	Waste
Greenisland WwTW (Sewage Sludge)	Waste
Harland and Wolf (Waste Oil Storage)	Waste
New Holland WWTW (Sewage Sludge)	Waste
Newtownbreda WWTW (Sewage Sludge)	Waste
Renewable Power Systems, Dargan Road Gas Engines	Waste
SITA (Hazardous Waste)	Waste
Tipco (Inert Landfill)	Waste
Whitehouse WwTW (Sewage Sludge)	Waste

Appendix 3

Glossary of Acoustic and Technical Terms

Term	Definition
Agglomeration	Major Continuous Urban Area as set out within the Regulations
ASL	Above Sea Level
Attribute Data	A trait, quality, or property describing a geographical feature, e.g. vehicle flow or building height
Attributing (Data)	The linking of attribute data to spatial geometric data
BCA	George Best Belfast City Airport
BIA	Belfast International Airport
CRN	The Calculation of Railway Noise 1995. The railway prediction methodology published by the UK Department of Transport.
CRTN	The Calculation of Road Traffic Noise 1988. The road traffic prediction methodology published by the UK Department of Transport.
Data	Data comprises information required to generate the outputs specified, and the results specified
dB	Decibel
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
DVD	Digital Versatile Disk
EC	European Commission
END	Environmental Noise Directive (2002/49/EC)
First Round Agglomeration	An agglomeration but having a population in excess of 250,000 persons.
GIS	Geographic Information System
INM	Integrated Noise Model
Irish National Grid (ING)	The official spatial referencing system of Ireland
ISO	International Standards Organisation
Metadata	Descriptive information summarising data
NA	Not Applicable
Noise Bands	Areas lying between contours of the following levels (dB): L_{den} <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_d <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_e <55, 55 – 59, 60 – 64, 65 – 69, 70 – 74, >74 L_n <50, 50 – 54, 55 – 59, 60 – 64, 65 – 69, >69

Term	Definition
Noise Levels	Free-field values of L_{den} , L_d , L_e , L_n , and $L_{A10,18hour}$ at a height of 4m above local ground level
Noise Level - L_d - Daytime	L_d (or L_{day}) = $L_{Aeq,12h}(07:00 \text{ to } 19:00)$
Noise Level - L_e - Evening	L_e (or $L_{evening}$) = $L_{Aeq,4h}(19:00 \text{ to } 23:00)$
Noise Level - L_n - Night	L_n (or L_{night}) = $L_{Aeq,8h}(23:00 \text{ to } 07:00)$
Noise Level - L_{den} - Day/Evening/Night	A noise rating indicator based upon L_d , L_e and L_n as follows: $L_{den} = 10 * \lg \left\{ \frac{1}{24} \left[12 * 10^{((L_{day})/10)} + 4 * 10^{((L_{evening}+5)/10)} + 8 * 10^{((L_{night}+10)/10)} \right] \right\}$
Noise Level - $L_{A10,18hour}$	$L_{A10,18hour} = L_{A10,18hour} (06:00 \text{ to } 24:00)$
Noise Mapping (Input) Data	Two broad categories: (1) Spatial (e.g. road centre lines, building outlines). (2) Attribute (e.g. vehicle flow, building height – assigned to specific spatial data)
Noise Mapping Software	Computer program that calculates required noise levels based on relevant input data
Noise Model	All the input data collated and held within a computer program to enable noise levels to be calculated.
Noise Model File	The (proprietary software specific) project file(s) comprising the noise model
Output Data	The noise outputs generated by the noise model
OSNI	Ordnance Survey for Northern Ireland
Processing Data	Any form of manipulation, correction, adjustment factoring, correcting, or other adjustment of data to make it fit for purpose. (Includes operations sometimes referred to as 'cleaning' of data)
QA	Quality Assurance
Shapefile	ESRI proprietary GIS dataset format. Contains both geometry to define features, and associated alphanumeric attribute information.
Spatial (Input) Data	Information about the location, shape, and relationships among geographic features, for example road centre lines and buildings.
WG - AEN	Working Group – Assessment of Exposure to Noise