NOISE ACTION PLAN

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1. Introduction

The European Parliament and Council Directive for Assessment and Management of Environmental Noise 2002/49/EC, more commonly referred to as the 'European Noise Directive' hereinafter referred to as END was adopted in 2004 and requires Member States to bring about measures "*intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise".*

The existence of the legislation and the work to produce and deliver the strategic noise maps and associated action plans reflects that noise can have a significant effect on the quality of life for communities and individuals. As such this work delivers a number of benefits for communities and individuals, the perception of Scotland as a place to visit and do business; we live in well designed, sustainable places where we are able to access the amenities and services we need. This helps support the Scottish Government's purpose of delivering sustainable economic growth.

The Directive was transposed into Scottish legislation with the Environmental Noise (Scotland) Regulations 2006. These regulations set out two key tasks for managing environmental noise:

- Production of strategic noise maps for major roads, rail, airports and industry; and
- Development of Noise Action Plans (NAPs) to manage noise.

The city of Dundee and parts of neighbouring Local Authorities falls within the definition of 'agglomeration' as given in the END (The Directive defines 'agglomerations' as urbanised areas with a population exceeding 100,000). It is a requirement of the Directive that noise exposure levels are mapped and managed within agglomeration boundaries and that certain information is made available to the public.

Dundee is one of four agglomerations in Scotland (together with Edinburgh, Glasgow and Aberdeen). This action plan for Dundee is therefore intended to form part of the Scottish Government's response to the requirements of the Environmental Noise Directive.

The Scottish Government is committed to understanding and managing environmental impacts. The Scottish Government acknowledge that noise can be distressing; affects our quality of life; and can impact on our health and environment. Attitudes to noise are changing and it has been suggested that people are becoming less tolerant of their noise environment. The assessment of noise and noise annoyance is a complex process and different noise sources affect people in different ways. Whilst the WHO (2011)[1] concluded that there is sufficient evidence from large-scale epidemiological studies linking the population's

[1]WHO defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. See WHO (2011) Burden of disease from environmental noise: Quantification of healthy life years lost in Europe. http://www.euro.who.int/__data/assets/pdf_file/0008/136466/e94888.pdf

exposure to environmental noise with adverse health effects at specific health end points, others suggest such effects may occur only in a susceptible minority of the population. The issue of health effects and noise is an ongoing area of research. Recent research suggests that annoyance and sleep disturbance may be the most significant impacts of noise.

2. Scope of the Noise Action Plan

2.1 What it includes

This Dundee Agglomeration Noise Action Plan is one of a set of Noise Action Plans. The Scottish Noise Action Plans describe how the Scottish Government and its partners will deliver their obligations under the Environmental Noise Directive (END). Other areas for which Noise Action Plans are being developed are;

- The Aberdeen Agglomeration Noise Action Plan
- The Edinburgh Agglomeration Noise Action Plan
- The Glasgow Agglomeration Noise Action Plan
- The Transportation Noise Action Plan
- The Aberdeen Airport Noise Action Plan
- The Edinburgh Airport Noise Action Plan
- The Glasgow Airport Noise Action Plan

2.2 Definition of 'Environmental Noise'

For the purposes of the Directive, the definition of 'environmental noise is given as "unwanted or harmful outdoor sound created by human activities, including noise emitted by means of transport, road traffic, rail traffic, air traffic, and from sites of industrial activity.

It should be noted that the END does not apply to noise that is caused by the person exposed to the noise, 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.

2.3 Industrial noise

No attempt has been made to address industrial noise as part of the action planning process other than what is set out below. This is because this type of noise is adequately provided for in the Scottish legislative framework for the control of noise from industrial sources. Industrial noise for Part A process is controlled through The Pollution Prevention and Control (Scotland) Regulations 2012 (the PPC Regulations). These regulations designate the Scottish Environment Protection Agency (SEPA) as the 'Regulator' responsible for enforcing the regime. As part of its role as regulator, SEPA produces guidance for use in enforcing the PPC Regulations. SEPA has produced guidance on the control of noise at PPC installations, which will be used when considering applications for, and inspections of PPC installations. For non-Part A processes the control of noise is exercised by the relevant local authority under the Statutory Nuisance regime under the Environmental Protection Act 1990.

In view of this and following consultation with SEPA and the local authorities it was agreed that industrial noise sources and/or areas would not be included in the action planning process other than at the request of the regulatory authority.

2.4 Strategic Noise Mapping and Action Planning

Strategic noise maps[2] for END Round 3 (for 2017) were produced on behalf of the Scottish Government and for the agglomerations by Jacobs consultants. The selection criteria for the determination of which noise sources should be mapped is outlined in Table 1.

Utilising the latest available data, population exposure levels derived from the maps were submitted by the Scottish Government to Europe in December 2017. Noise maps were produced by a computer based prediction methodology and can be found on the Scottish Noise Mapping website at https://noise.environment.gov.scot/

Stage of END	Round 1 of END	Round 2 and 3 of END
Major roads	> 6,000,000 vehicle passages per year	> 3,000,000 vehicle passages per year
Railways	> 60,000 train passages per year	> 30,000 train passages per year
Agglomerations	> 250,000 population	> 100,000 population
Airports*	> 50,000 air traffic movements per year and airports within agglomerations	> 50,000 air traffic movements per year and airports within agglomerations

Table 1 – Differences between Round 1 and Rounds 2 & 3 of the END with respect to transportation.

Note that Airport transportation noise is covered in a specific Airports Noise Action Plan. Rounds 2 &3 will cover corridors across the Rail Network[3] Scottish Trunk Road Network and local authority networks[4]

2.5 Dundee Agglomeration Population Exposure

Based on the results of the noise mapping process, Tables 2a and 2b show the estimated number of people exposed to noise for both END Round 2 and 3. The Dundee Agglomeration was not modelled as part of END Round 1 mapping.

[2] END required competent authorities to draw up "strategic noise maps" for major roads, railways, airports and agglomerations, using harmonised noise indicators L_{den} (day-evening-night equivalent level) and L_{night} (night equivalent level).

[3] Scotland's rail network comprises 2,819 kilometres of railway (709 kilometres electrified). Note, these figures do not represent the total length of railway track (e.g. a kilometre of single-track and a kilometre of double track count as 1 kilometre of route length). Currently there are 359 stations within Scotland and there were 94 passenger journeys on ScotRail services in 2016-2017 (https://www.transport.gov.scot/publication/scottish-transport-statistics-no-36-2017-edition/chapter-7-rail-services/)

[4] In 2016 there was 56,250 km of roads in Scotland – 3,669km trunk roads and 52,581km local authority roads (https://www.transport.gov.scot/media/41863/scottish-transport-statistics-2017-with-correction-to-table-214.pdf)

Statistics for Round 2 were calculated using an average household size of 2.36, as this was the national average household size according to Web-Tag[5]. In Round 3, agglomeration specific average household size was used (i.e. 2.05 for Dundee according to the 2011 census). For consistency, the Round 2 statistics have also been calculated using the agglomeration specific average household sizes.

	L_{den} (dB)			L_{night} (dB)		
	> = 55	> = 65	> = 75	> = 50	> = 60	> = 70
END Round 2 (national population constant – 2.36)	59,400	9,900	0	38,300	1,300	0
END Round 2 (agglomeration specific population constant – 2.05)	51,600	8,600	0	33,300	1,200	0
END Round 3 (agglomeration specific population constant – 2.05)	51,100	9,400	0	33,900	1,500	0

Table 2a – Population exposure from roads within the Dundee agglomeration as mapped for END

	L_{den} (dB)			L_{night} (dB)		
	> = 55	> = 65	> = 75	> = 50	> = 60	> = 70
END Round 2 (national population constant – 2.36)	8,800	3,100	900	3,100	500	0
END Round 2 (agglomeration specific population constant – 2.05)	3,400	1,000	0	1,900	300	0
END Round 3 (agglomeration specific population constant – 2.05)	3,600	1,000	0	1,900	200	0

Table 2b – Population exposure from rail within the Dundee agglomeration as mapped for END

The reasons for the change in the numbers of people exposed to noise over the period are varied. For example, differences in road traffic data or rail movements, updates to road networks and changes to address point data all contribute to the differences between rounds. Further analysis of these statistics will be undertaken to try and draw out meaningful conclusions.

As the published noise contours give a strategic level representation of the modelled noise climate for the areas mapped in Scotland, the resulting Action Plans are also strategic in nature, and complying with the requirements of END Annex 5. The noise maps cannot be

5 http://webarchive.nationalarchives.gov.uk/20140304105653/http://www.dft.gov.uk/webtag/documents/expert/unit3.3.2.php#02

used to determine the noise level at any specific property. With this point in mind, it is essential to note the following points:

- A noise map is analogous to a weather map in that it maps strategic noise levels in terms of coloured contour bands at 5dB noise contour bands.
- The strategic noise levels show annual average noise levels.
- The noise contours are not receptor-specific levels experienced on the ground. Rather, the noise levels are calculated on the basis of a 10m grid at a height of 4m above ground level. They do not represent levels at ground, or typical human ear level.

Initial analysis of the noise maps for road and rail sources, using the Prioritisation Matrix (see Section 5), provides a focus for deriving actions to reduce noise by identifying Candidate Noise Management Area (CNMA) (as described in Section 5). The CNMAs may subsequently progress into a Noise Management Area (NMA) status (as described in Section 5). During the time period between 2018 and 2023, the NMAs will be a primary consideration when formulating environmental noise management actions/policy following the actions listed in this Dundee Agglomeration Noise Action Plan (in line with PAN 1/2011).

The prioritisation process follows the Technical Guidance published by the Scottish Government during END Round 1[6].

[6] https://noise.environment.gov.scot/pdf/Technical_Guidance_CNMA2NMA.pdf

3. Context – Legislation and Policy

The END was transposed into the Environmental Noise (Scotland) Regulations 2006 (see Section 1 of this Action Plan). The definitions used as part of the noise mapping process are evident in the Scottish regulations. A useful summary of the regulatory framework is available in the Scottish Governments Guidance on Noise Action Planning[7].

The action planning process for the first round of noise mapping resulted in the publication of a new planning advice note in Scotland (PAN 1/2011[8] and the accompanying TAN[9]). This planning advice note aims to ensure that Candidate Noise Management Areas (CNMA) and Candidate Quiet Areas (CQAs) (see Section 5) are now an acknowledged part of the baseline for management of environmental noise and should be included as a material planning consideration.

[7] https://noise.environment.gov.scot/pdf/Action%20Planning%20Guidance.pdf
[8] http://www.scotland.gov.uk/Publications/2011/02/28153945/0
[9] http://www.gov.scot/Resource/Doc/343341/0114220.pdf

4. Governance of Noise Action Planning

4.1 Competent Authority

The Scottish Government is the Competent Authority for END in Scotland.

4.2 Scottish Environmental Noise Steering Group (SENSG)

Delivery of the END Directive objectives in Scotland has been achieved through extensive partnership working. Scottish Government has assumed responsibility for co-ordination of the noise mapping and action planning exercises but this has been heavily supported by individual working groups dealing with each of the agglomerations, major airports and other transport systems. These working groups have benefited from a multi-disciplinary membership including Local Authorities, other agencies and key partners.

The Scottish Environmental Noise Steering Group (SENSG) comprises representation from organisations with varying responsibility for environmental noise, namely the Scottish Government, Jacobs, Local Authorities, SEPA, Transport Scotland and airport operators. SENSG provides a forum for discussion on progression of the Noise Action Planning progression, with the governance arrangement shown in Figure 1.

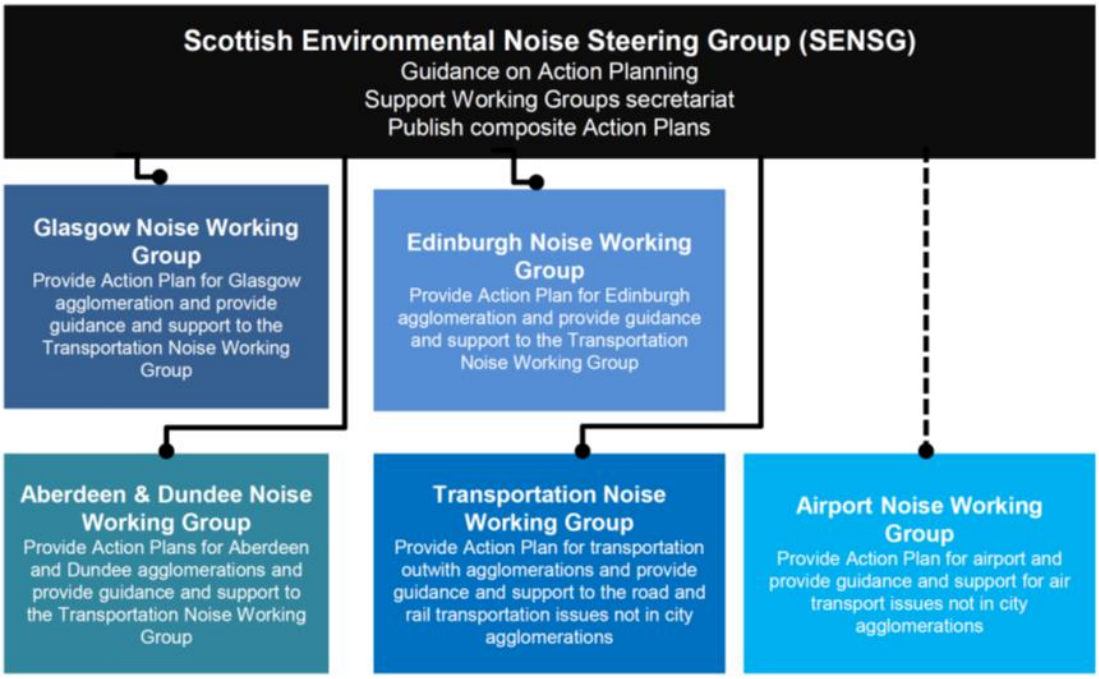


Figure 1: END Governance Arrangements in Scotland

4.3 Dundee Agglomeration Noise Working Group

Production of the Dundee Agglomeration Noise Action Plan was overseen by the Dundee Agglomeration Noise Working Group (under the auspice of SENSG) and comprised Dundee

City Council (chair), Angus Council, Perth and Kinross Council and JACOBS. The principle objective of the Dundee Agglomeration Noise Working Group was to comply with END and the Scottish Regulations in order to 'produce a Dundee Agglomeration Noise Action Plan containing clear tangible actions via collaboration and partnering'.

5. Identification of Management Areas

5.1 Need to identify Management Areas

Production of the strategic noise maps is only the first step in the process of the management of environmental noise. The Directive is clear that Member States should aim to "*avoid, prevent or reduce **on a prioritised basis** the harmful effects, including annoyance, due to exposure to environmental noise*". In Scotland, specific steps have been taken in order to use the noise maps as a basis for identifying and focusing on those areas where people are most likely to be annoyed by noise. These are referred to as Noise Management Areas (NMAs). It is such areas that are largely intended to form the basis of associated Action Plans. The process of agreeing NMAs involves various steps including provisional assignment as a Candidate Noise Management Area (CNMA).

The Directive is also clear that Member States should aim to identify and preserve its Quiet Areas. Hence a similar process is followed whereby noise mapping can be used to identify Candidate Quiet Areas with a subsequent process leading to agreement of actual Quiet Areas.

5.2 Process of Identification of Noise Management and Quiet Areas – Prioritisation Matrix

There are no noise limits values or noise thresholds in place in Scotland as it is recognised that analysing the noise contours alone will not necessarily identify areas suffering from the greatest noise impact. In order to gain a better understanding of the potential noise impacts it is helpful to identify those areas where high population density comes together with high levels of noise. The means of achieving this has emerged using a specially developed prioritisation matrix which operates by assigning a numerical value to buildings and road/rail segments within the relevant areas.[10]

The objective of the prioritisation matrix is to identify areas where people living within these areas are most likely to be annoyed by noise from either road or railway traffic noise sources. The identification of such areas has been based on a scoring system which takes into account the number of people potentially affected, and the annoyance response to the particular noise source under consideration (either rail or road).

From initial analysis of the noise maps, the prioritisation process is a method of determining 'Candidate Noise Management Areas' (CNMAs) and thereafter 'Noise Management Areas' (NMAs). Figure 2 outlines the step-by-step journey of the prioritisation process.

[10] It is important to note that at this stage in the Action Planning process it has been decided by the Scottish Government Working Groups, through consultation with SEPA and the relevant local authorities, that an industrial noise source or an area affected by industrial noise should not be included in the prioritisation matrix and that any prioritisation, or noise intervention, of such industrial areas/sources should be at the request of the regulatory authority.

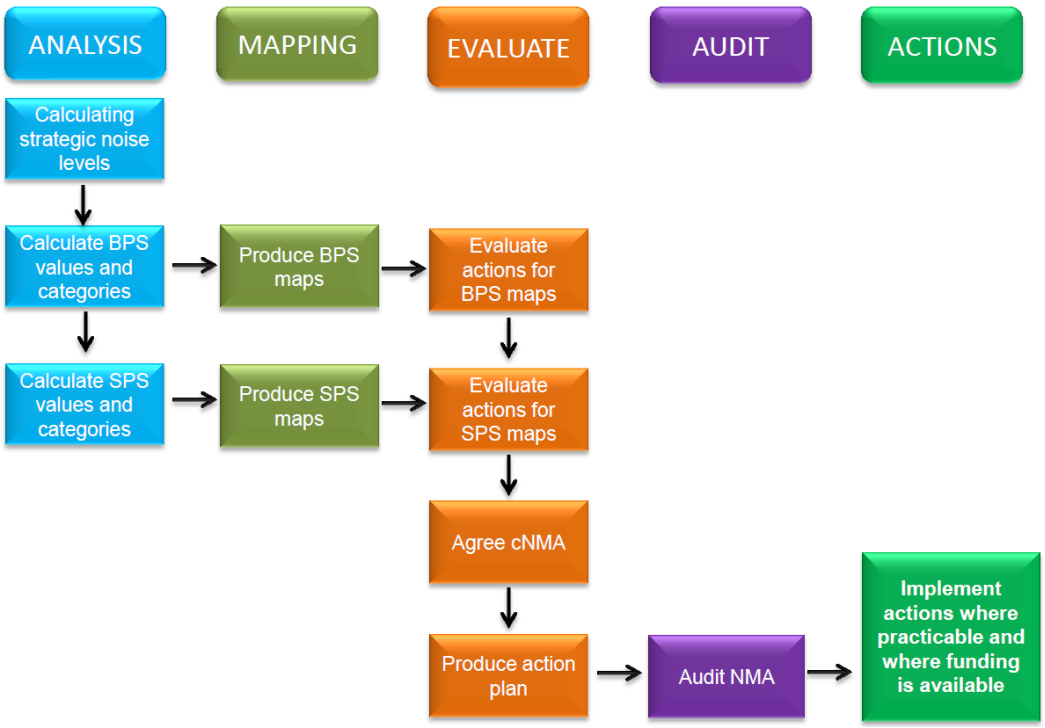


Figure 2 - Step by step stages of the Prioritisation Process. (BPS = Building Prioritisation Score; SPS = Source Prioritisation Score - see below for more detail.)

A prioritisation matrix is generated from a computer based model, where each building is assigned a Building Prioritisation Score (BPS), which takes into account the predicted road and rail noise levels, in conjunction with the number of people potentially affected and the annoyance response of that exposed population relative to the transportation noise source in question. A Source Prioritisation Score (SPS) is then determined by first segmenting the road or rail corridors into 100m sections. Each road/rail segment is then given a unique ID and for each building with a noise level greater than or equal to L_{den} 55dB the ID of the road/rail segment that is closest to it is assigned to that building. The logarithmic sum of BPS values for all buildings with the same nearest road/rail segment ID is then assigned to the relevant road segment to give the Source Prioritisation Score for that road/rail segment.

All SPS values are ranked, where the top 1% of SPSs (normally distributed) corresponded to the mean SPS plus two standard deviations to identify the highest three 1% bands of the SPS scores across the road and railway network. These are subsequently referred to as Candidate Noise Management Areas (CNMAs). Determination of a CNMA is simply a means of highlighting that a geographical area should be considered further in terms of a potential need for noise management. It may be that following further analysis, the area will be disregarded entirely or extended or reduced. Ultimately, the decision about whether or not a CNMA is eventually assigned full Noise Management Area (NMA) status is dependent on

a series of steps during which various assessments and considerations are taken into account. These are outlined in separate Technical Guidance[11].

The areas with CNMA status within the Dundee Agglomeration are shown in Appendix 1. The CNMA to NMA review process will, amongst other steps, verify the noise model findings and assumptions in comparison to physical features which are evident on the transport network. The assigning of Noise Management Areas and subsequent appraisal, planning, and prioritisation of potential mitigation measures in the NMAs form a core part of the Action Planning Process.

It is estimated that within the Dundee agglomeration a minimum of 2,900 people are housed within the road CNMA approximate areas and a minimum of 100 people are housed within the rail CNMA approximate areas.

5.3 Identification of Candidate Quiet Areas

The END recognises the importance of the preservation of existing quiet areas. Access to quiet areas and peaceful soundscapes is generally known to bring about a range of benefits to human health and well-being.[12] [13] 'Quiet Areas' are not specifically defined in the Directive, rather they are recognised as areas to be determined by the Member State and which are subject to noise falling beneath a limit value set by the Member State.

With that in mind, a study by the Transport and Research Laboratory (TRL)[14] was used as a basis for identification of 'Quiet Areas' in Scotland. It was decided by SENSG that Quiet Areas should be defined as areas which are a minimum of 9 hectares and in which at least 75% of the area is subject to noise levels not exceeding < 55 dB L_{day}. In addition, for the second round of mapping onwards SENSG decided that any local authority within an agglomeration boundary can, with good and justifiable reasons, request that an area be classified as a Quiet Area.

In addition to identifying candidate noise management areas (described above), the strategic noise mapping exercise can also be used to identify Candidate Quiet Areas (CQAs). As with the CNMA process, there are a series of steps to be taken to determine which of the CQAs will fully progress to actual Quiet Area status. This is covered in separate

[11] https://noise.environment.gov.scot/pdf/Technical_Guidance_CNMA2NMA.pdf

[12] Aircraft and road traffic noise and children's cognition and health: A cross sectional study. Lancet, 365, p1942-1949 : Stansfeld, S.A., Berglund, B., Clark,C., Lopez-Barrio, I., Fischer, P., Öhrström, E., Haines, M.M., Head, J., Hygge, S.,van Kamp, I., & Berry, B.F. (2005)

[13] Soundscapes in city parks and suburban green parks. In: Proceedings of Euronoise 2006 : Tampere, Finland, Nilsson ME, Berglund B (2006).

[14] Research into quiet areas. Recommendations for identification: Defra. 2006. http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=14839

Technical Guidance[15]. The areas with CQA status within the Dundee agglomeration are shown in Appendix 2.

5.4 Action Planning

The Directive requires that action plans are produced for each of the qualifying agglomerations, major airports and major transport systems. The content of the Action Plans are however for member states to determine but based on some minimum requirements as set out in Annex 5 of the Directive. This action plan document provides the basic outline of how we intend to manage noise and preserve quiet areas. On that basis, action plans are largely focused on taking forward the candidate noise management areas and quiet areas identified by the strategic noise mapping and prioritisation exercises described previously.

Scotland's Greenspace Map http://www.greenspacescotland.org.uk/scotlands-greenspace-map.aspx is a world first; no other country has mapped its greenspace in this way. This interactive map provides information about the type and extent of greenspace in urban Scotland (i.e. towns and cities with a population of over 3,000). It was compiled in 2011 from greenspace data provided by the 32 Scottish Councils. Although Greenspace Map does not directly use the term quiet does embrace the concept of passive recreation and breathing spaces which are defined as an oasis of calm amongst city bustle. Defining Quiet Areas as part of the Action Planning process can be seen as an extension of that work.

The preliminary actions to be undertaken as part the action planning process are set out in Table 3 below.

Preliminary Actions	Anticipated Completion Date
Assess all CNMA's as set out in the previously published guidance	30th April 2019
Assess all CQA's as set out in the previously published guidance	31st May 2019

Table 3 – Preliminary actions as part of planning process

5.5 Dundee Agglomeration noise actions up to 2017

A number noise management measures and outcomes have been achieved in Scotland since the first NAP was published, as detailed in Table 4.

[15] https://noise.environment.gov.scot/pdf/Technical_Guidance_for_Quiet_Areas.pdf

Measures and Outcomes
A review of current research on road surface reduction techniques. This research commissioned by the Scottish Government comments on applicability for Scotland.
Planning advice to local authorities has been updated – PAN 01/2011.
The European Commission (through DEFRA) has been pressed for quieter vehicle requirements e.g. quieter tyres and quieter vehicles
DEFRA have been asked to carry out further annoyance research on a UK basis.
Noise barrier installation is being considered for developments alongside busy road / rail routes where appropriate.
Use of low noise surfacing on roads within agglomerations where appropriate (and where benefits can be demonstrated).
Promoting the use of low emission vehicles and car sharing schemes.
Inclusion of Noise Management Area and Quiet Areas within the local authority development control (planning) process.

Table 4 – Examples of noise mitigation between 2006 and 2017

5.6 Dundee Agglomeration proposed noise actions between 2018 to 2023

Noise action options fall into three categories, as outlined in Table 5. The potential remedial actions will be the subject of a cost benefit analysis. Consideration will also be given to who would be responsible for any proposed actions and whether or not they are affordable or desirable.

Category	Options
1	Maintenance and improvement works
2	Network operational management of roads within agglomerations
3	Development Proposals and Policies

Table 5 – Remedial Actions

Dundee Agglomeration NAP actions (falling within the above categories) and timescales are outlined in Table 6.

No	Action	Timescale					
		'18	'19	'20	'21	'22	'23
Objective 1 - On a prioritised basis, by 2018 we aim to reduce the exposure to environmental noise in NMAs							
1a	Develop and apply appropriate Appraisal and Test of Reasonableness tools through SENSG, including cost benefit analysis, to rank effective NMA interventions.	•	•				
1b	Where appropriate apply noise management interventions on a prioritised basis during existing maintenance and improvement programmes where reasonably practicable.	•	•	•	•	•	•
1c	Engage with Transportation Working Group to assess trunk road and rail NMAs within agglomerations.	•	•	•	•	•	•
Objective 2 - We will incorporate environmental noise management within all stages of the planning process including transportation planning, design, construction and maintenance activities as appropriate							
2a	Consider incorporating a commitment to mitigate environmental noise emissions into future corporate and/or annual service plans	•	•	•	•	•	•
2b	Incorporate consideration of noise issues into future construction or maintenance contracts, franchise agreements and specifications.	•	•	•			
2c	Conduct before-and-after sample noise measurement, where possible, to (i) determine measured baseline at selected NMAs prior to mitigation construction and (ii) appraise noise mitigation approaches in terms of cost benefit and delivery of effective noise reduction.	•	•	•	•	•	•
2d	Consideration to be given to post evaluation of completed mitigation measures specified within planning conditions where appropriate		•	•			
Objective 3 - We will endeavour to demonstrate a practical contribution to noise reduction via existing and future proposals and policies							
3a	Transport and travel policies and proposals to both take into account and facilitate noise management.	•	•	•	•	•	•
3b	Consider promoting Intelligent Transport Systems to better manage road flows.	•	•	•	•	•	•
3c	Consider promoting uptake of low noise tyres where appropriate through SENSG	•	•				
3d	Support for an update to Noise Insulation Scotland Regulations (NISR) legislation		•	•			
Objective 4 - We will promote channels of communication to stakeholders that encourage a learning environment							
4a	Provide guidance, information and progress updates on the Aberdeen NAP actions to the Scottish Noise Mapping Website	•	•	•	•	•	•
4b	Conduct review of noise complaints on road network over the last 5 years in order to better understand their nature.	•					
4c	Incorporate noise maps into appropriate local authority traffic models where feasible		•				

Table 6 – Dundee Agglomeration actions for 2018 to 2023

6. Description of Agglomeration

6.1 Description of the Dundee Agglomeration

The Dundee Agglomeration is located on the north bank of the River Tay in the Tay Valley on the east coast of Scotland. The agglomeration boundary covers approximately 4,970 hectares (50km^2) and is comprised of Dundee City Council (88% of agglometation area) with small parts of Perth and Kinross Council (2%) to the west and Angus Council (10%) to the north and east within the agglomeration boundary.

For the purposes of Strategic Noise mapping, the agglomeration is surrounded by a 2km study area buffer to ensure that any environmental noise effects from just outside the boundary are taken into account within the agglomeration. This buffer area is mostly within the Perth & Kinross and Angus Council areas and covers aproximately 15,050 hectares (150km^2). The Dundee Agglomeration and buffer area are shown in Figure 3.

Dundee is the fourth largest city in Scotland and most recent estimate of Dundee's population is 148,710[16]. The approximate total population of the Dundee Agglomeration is

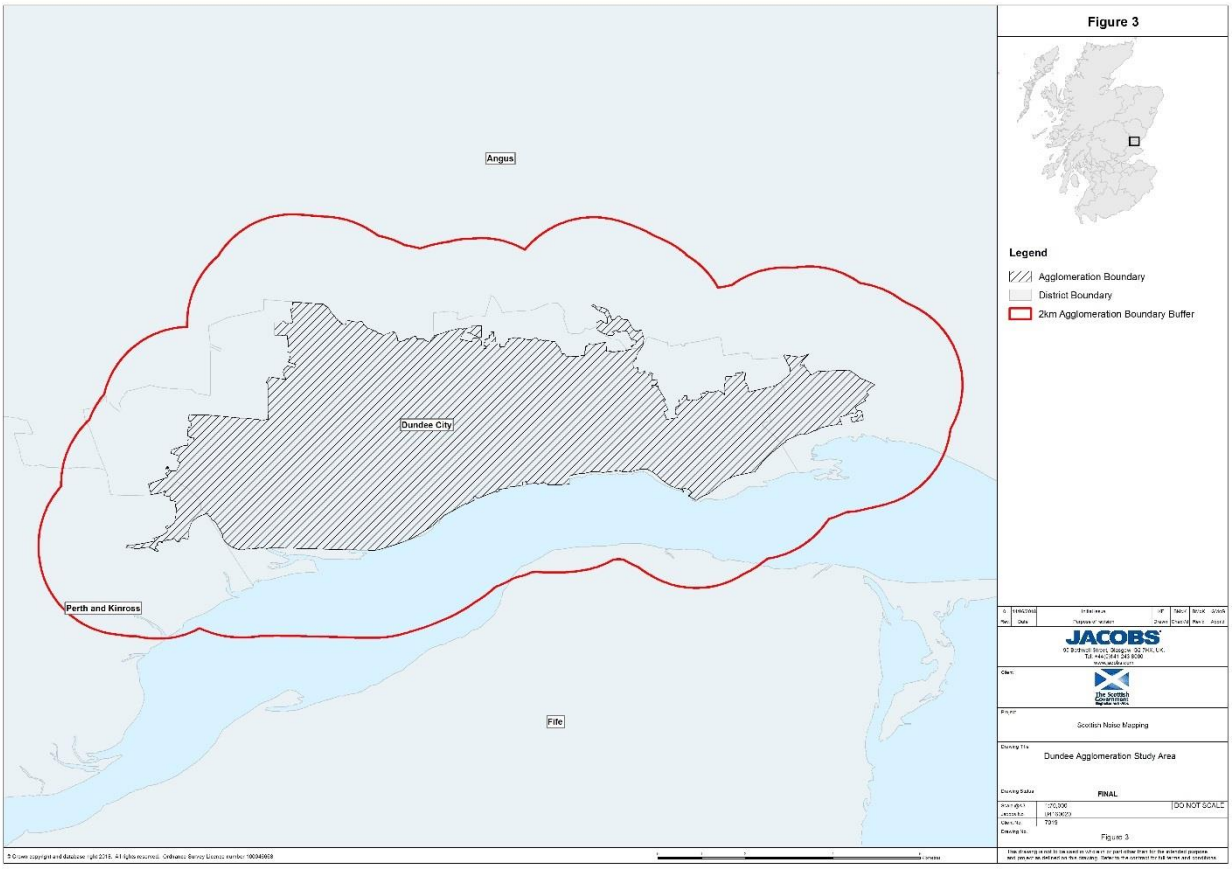


Figure 3 – Boundary of Dundee Agglomeration and surrounding buffer area

[16] National Records of Scotland 2017 mid-year estimated population

159,380 which takes into account the Angus Council (8,970[17]) and Perth & Kinross Council (1,700[18]) populations within the boundary of the agglomeration.

The Dundee Agglomeration contains a small airport which has daily flights to London. There is also a modern deep-water port and large harbour area with aims of creating a major centre for oil and gas decommissioning at the Port of Dundee. A main rail line runs along the southern border of the agglomeration connecting Dundee to Arbroath and Aberdeen to the east, Fife and Edinburgh to the south via the Tay Rail Bridge, and Perth and Glasgow to the west.

The city is a hub for many routes and is connected to Fife by the Tay bridges. The A92 crosses the Tay and emerges in the centre of Dundee. There is an inner ring road, the Marketgait, and five arterial routes - Broughty Ferry Road, Arbroath Road, Riverside Drive, Lochee Road and Forfar Road. There is a by-pass, the Kingsway, which consists of the A90, the main route from Edinburgh/Perth to Aberdeen, and the A92, the route to Arbroath. There are a significant number of busy road junctions across the City. Speed limits vary throughout the agglomeration but are generally 40mph or below, with only small sections of the A90 Kingsway / Forfar Road being 50mph. Many roads in the City have a gradient due to a central topographical feature, an extinct volcano (height being 174m above sea level).

Dundee city has a wide diversity of open spaces covering over 1,300 hectares. This includes woodlands, beaches, parks, allotment gardens, wildlife sites, burns and ponds. Many are multifunctional and contribute to the quality of life in Dundee by providing: opportunities for active and passive recreation, an attractive and sustainable urban environment and a space for nature.

Dundee city is a major employment and retail centre and has a sizeable student population, being home to the University of Dundee, the University of Abertay and Dundee College.

In common with many Scottish cities the architecture consists of a significant number of 4 or 5-storey tenemental properties creating numerous street canyons. In the commercial centres, a common feature of these tenemental properties is that commercial premises are located on the ground floor with residential premises on the floors above. The main shopping area in the city is pedestrianised. Most of the industrial processes are located around the periphery of the city and in the port area.

Dundee is in the process of a major change with the regeneration of the waterfront. The Dundee Central Waterfront comprises a new street layout extending from the city centre down to the waterfront, and the iconic V&A at Dundee building located on the bank of the River Tay which opened in 2018.

The rail station is being redeveloped and a new civic space is being created which will stretch from the Caird Hall down to the riverside. Mixed use developments have been proposed for

[17] Mid-2008 population data for Monifieth (8,220) and an estimate of population of Ballumbie Castle area (750)

[18] Mid-2008 population data for Invergowrie (Perth & Kinross) (1,720)

sites adjacent to these spaces. These will be developed over the coming years, bringing a mix of commercial, retail and residential properties to the area.

6.2 Local Development Plan

Dundee City Council is preparing a new Local Development Plan (LDP) to replace the Dundee LDP which was adopted in 2013. The Proposed Plan contains the spatial strategy that will guide development up to 2029. It shows which land is being allocated to meet the City's development needs and where new development should and should not happen.

The current 2013 Local Development Plan include policies that either directly or indirectly impact on Environmental Noise. Policies are designed to ensure that new developments will not be permitted where there will be significant adverse effects for health, the environment and amenity unless appropriate mitigation to minimise any adverse effects can be provided. These policies include both the impact of proposed new development on existing receptors and the susceptibility of potential new receptors from exiting sources of noise. The new Plan will also include this with proposed additional referencing to any Noise Management Areas and Quiet Areas identified through the European Noise Directive process.

Similar plans exist for both Angus and Perth & Kinross Councils. A full description of the Local Plan Policies can be found online for each authority - Dundee City Council, Angus Council, Perth & Kinross Council.

6.3 Dundee City Council's Local Transport Strategy (LTS)

The City Council's LTS recognises the importance of environmental issues such as air quality and noise. Although the LTS was developed in 2000 the themes derived from it are still very relevant today and these themes are:

- Reducing the need to travel
- Promoting alternative modes of travel
- Restraining the use of the private car

These three strands directly influence the environmental impacts of Transport and help mitigate the noise from transport related sources.

6.4 Regional Transport Strategy (LTS)

The Tactran Partnership Board and Minister for Transport and Islands approved the finalised Regional Transport Strategy Refresh in July 2015. The Regional Transport Strategy Refresh updated the original Regional Transport Strategy which was approved by the Tactran Partnership Board and Scottish Ministers in 2008. The Regional Transport Strategy sets out a vision for improving the region's transport infrastructure, services and other facilities over the period to 2036.

The 'Vision' of the strategy is to deliver:

"a transport system, shaped by engagement with its citizens, which helps deliver prosperity and connects communities across the region and beyond, which is socially inclusive and environmentally sustainable and which promotes the health and well-being of all."

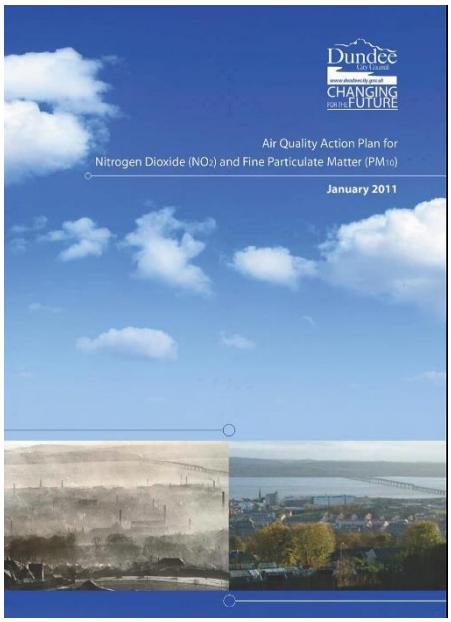
To support this 'Vision', objectives have been defined under six broad themes: Economy; Accessibility, Equity and Social Inclusion; Environment; Health and Well-being; Safety and Security; and Integration. An objective included regarding helping reduce traffic noise, while an action includes minimising the number of people exposed to intrusive noise levels.

The Strategy seeks to build on existing good practice and develop new measures and projects to ensure our Vision and Objectives are achieved.

Full details of TACTRAN Regional Transport Strategy can be found on their website.

6.5 Local Air Quality Plans

Dundee City Council has an Air Quality Action Plan which contains 32 measures aimed at reducing levels of NO2 and PM10 within the city. Many of these measures are related to transport, some of which may have beneficial effects in terms of noise. Examples of such measures include those aimed at reducing congestion in densely populated areas of the city, encouraging drivers to use other means of transportation rather than using cars for journeys, and increasing the number of cleaner (and possibly quieter) vehicles with in public transport and Council fleets.



The sections of Angus and Perth & Kinross Council within the Dundee Agglomeration are not associated with any Air Quality Action Plans for those local authorities.

6.6 Cycling Action Plan

Dundee City Council approved a cycling strategy for the city in June 2016.

With major transport projects including the realignment of thoroughfares along the Waterfront, the creation of a new rail station and public spaces in the city centre, Dundee is becoming a place where people can once again travel to the places they want to go to in an active and sustainable way.

Increasing the number of people choosing to travel around the city by cycle is an important factor in improving the city's health and economic prospects. The resultant reduction in the number of vehicles on the road can also help bring about benefits in terms of noise reduction. By developing a network of cycle routes, putting in place infrastructure improvements and delivering a programme of supporting initiatives, the action plans hopes to create the opportunities to bring about a shift in the city's travel habits.

APPENDICES

1. Candidate Noise Management Areas

** New CNMA in Round 3*

Road CNMA

CNMA ID	Map number	Address	Local Authority
1*	5	Dock Street, Thomson Avenue, A92, Dundee	Dundee City Council
2	6	Albert Street, Princes Street, Forfar Road, Dundee	Dundee City Council
3	5	Victoria Road, Ladywell Avenue, Dundee	Dundee City Council
4	2	Coupar Angus Road, South Road, Lochee, Dundee	Dundee City Council
5*	3	Lochee Road, Rankine Street, Dundee	Dundee City Council
6	3	Lochee Road, Polepark Road, Dundee	Dundee City Council
7*	4	West Marketgait, Lochee Road, Dundee	Dundee City Council
8	5	King Street, East Marketgait, Dundee	Dundee City Council
9	4	Hawkhill, Session Street, Dundee	Dundee City Council
10	5	Seagate, East Marketgait, Dundee	Dundee City Council

Rail CNMA

CNMA ID	Map number	Address	Local Authority
1	2	Near West Queen Street, Broughty Ferry, Dundee	Dundee City Council
2*	3	Near A930 / Maule Street, Monifieth	Angus Council

2. Candidate Quiet Areas

** New CQAs in Round 3*

CQA ID	Map Number	Name
1	2	South Road Park
2	2	Lochee Park
3*	2	Balgay Hill
4*	2	Law Hill
5	2	Baxter Park

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