

Glasgow Agglomeration

Noise Action Plan



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 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 Glasgow 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.

Glasgow is one of four agglomerations in Scotland (together with Dundee, Edinburgh and Aberdeen). This action plan for Glasgow 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

¹WHO 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

evidence from large-scale epidemiological studies linking the population's 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 Glasgow Agglomeration Noise Action Plan is one of a suite 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 Dundee Agglomeration Noise Action Plan
- The Edinburgh Agglomeration Noise Action Plan
- The Transportation Noise Action Plan
- The Aberdeen Airport Noise Action Plan
- The Dundee 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 (as defined within the Pollution Prevention and Control (Scotland) Regulations 2000) is controlled through The Pollution Prevention and Control (Scotland) Regulations 2000 (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 maps² for END Round 2 (for 2012) were produced on behalf of the Scottish Government, and for the agglomerations, by AECOM 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 on the 20 December 2012. Noise maps were produced by a computer based prediction methodology and can be found on the Scottish Noise Mapping website at www.scottishnoisemapping.org.

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).

Stage of END	Round 1 of END	Round 2 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 Round 2 of the END with respect to transportation. Note that Airport transportation noise is covered in a specific Airports Noise Action Plan. Round 2 will cover corridors across the Scottish Trunk Road Network³, Rail Network⁴ and local authority networks⁵.

Glasgow 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 1 and 2.

	L _{den} (dB)			L _{night} (dB)		
	> = 55	> = 65	> = 75	> = 50	> = 60	> = 70
END Round 1	533,800	171,100	3,900	374,100	43,300	1,000
END Round 2	485,800	139,700	1,500	349,300	33,600	500

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

³ Scotland's trunk road network covers a distance of 3,500 kilometres with 1,900 bridges and 3,700 other structures.

⁴ Scotland's rail network comprises 2,729 kilometres of railway - 23% electrified - with 344 stations leased by First ScotRail and 4 others operated by Network Rail (Glasgow Central and Edinburgh Waverley), GNER (Dunbar), or a private company (Prestwick International Airport). Two thirds of rail passenger journeys were supported by the west of Scotland commuter network, and one third were elsewhere in Scotland.

⁵ Local authorities manage and maintain local roads, which comprise approximately 94% of Scotland's roads (around 56,000km).

	L _{den} (dB)			L _{night} (dB)		
	> = 55	> = 65	> = 75	> = 50	> = 60	> = 70
END Round 1	123,400	30,000	2,300	89,800	19,600	1,500
END Round 2	89,400	21,200	1,400	65,600	14,200	500

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

The changes in population exposure are a consequence of improved road traffic data becoming available for round two mapping. In general there is a decrease in noise levels across the city. There are some localised increases as a result of the completion of the M74 extension which opened in 2011.

With regards rail noise levels; Network Rail has demonstrated that improvements to track maintenance have achieved a significant reduction in noise associated with the operational railway in Great Britain. These findings have directly informed the second round of noise mapping. A 4 dB reduction in the Acoustic Track Quality (ATQ) correction has been implemented to reflect this in the second round mapping.

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 comply with the requirements of END Annex 5. The noise maps cannot be 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 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 noise 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 to Noise Management Area (NMA) status (as described in Section 5). During the time period between 2013 and 2018, the NMAs will be a primary consideration when formulating environmental noise management actions/policy following the actions listed in this Glasgow Noise Action Plan (in line with PAN 1/2011). The process of prioritisation

follows the Technical Guidance published by the Scottish Government during END Round 1⁶.

⁶ http://www.scottishnoisemapping.org/public/action-planning_END_1.aspx

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 Draft Guidance on Noise Action Planning⁷.

The action planning process for the first round of noise mapping resulted in the publication of a new planning advice note in Scotland (PAN 1/2011⁸ and the accompanying TAN). This planning advice note aims to ensure that Noise Management Areas (NMA) and Quiet Areas (QAs) (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 <http://www.scotland.gov.uk/Publications/2007/08/24141743/0>

⁸ <http://www.scotland.gov.uk/Publications/2011/02/28153945/0>

4. Governance of Noise Action Planning

4.1 Competent Authority

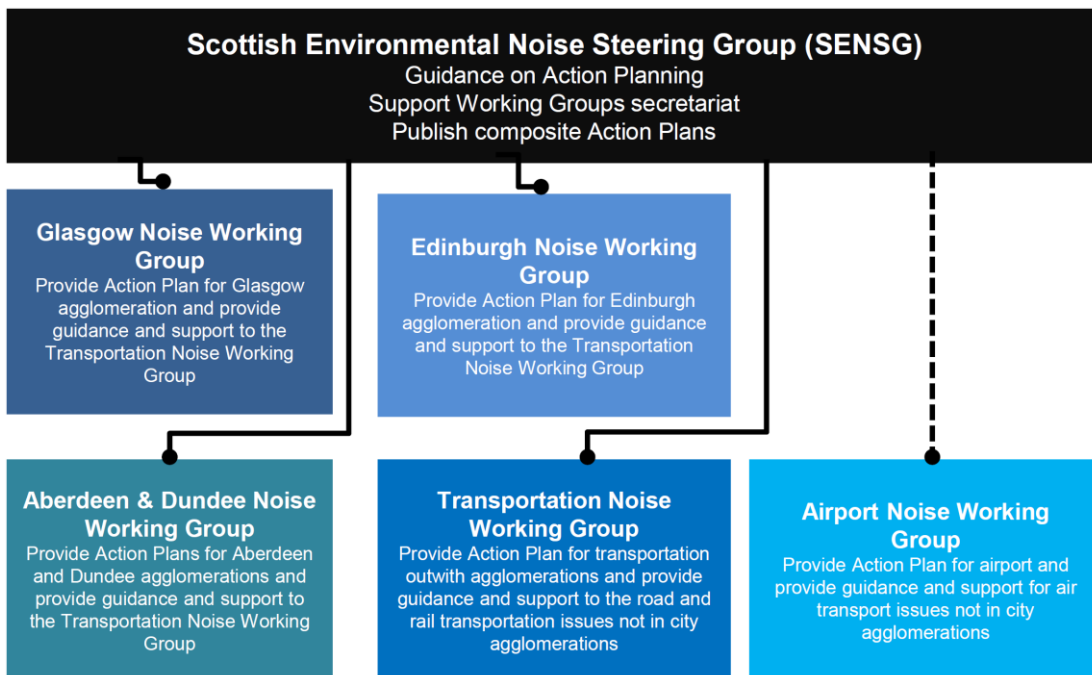
The Scottish Government is the Competent Authority for END in Scotland.

4.2 Scottish Environmental Noise Steering Group (SENSG)

Delivery of the END 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, AECOM, Local Authorities, SEPA, Transport Scotland, and airport operators. SENSG provides a forum for discussions on progression of the Noise Action Planning, with the governance arrangement shown in Figure 1.

Figure 1: END Governance Arrangements in Scotland



4.3 Glasgow Agglomeration Noise Working Group

Production of the Glasgow Noise Action Plan was overseen by the Glasgow Noise Working Group (under the auspice of SENSG) and comprised Glasgow City Council (chair), East Dunbartonshire Council, South Lanarkshire Council, West Dunbartonshire Council, East Renfrewshire Council, Renfrewshire, North Lanarkshire and AECOM. The principle objective of the Glasgow Noise Working Group was to comply with END and the Scottish Regulations in order to 'produce a Glasgow 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 in 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

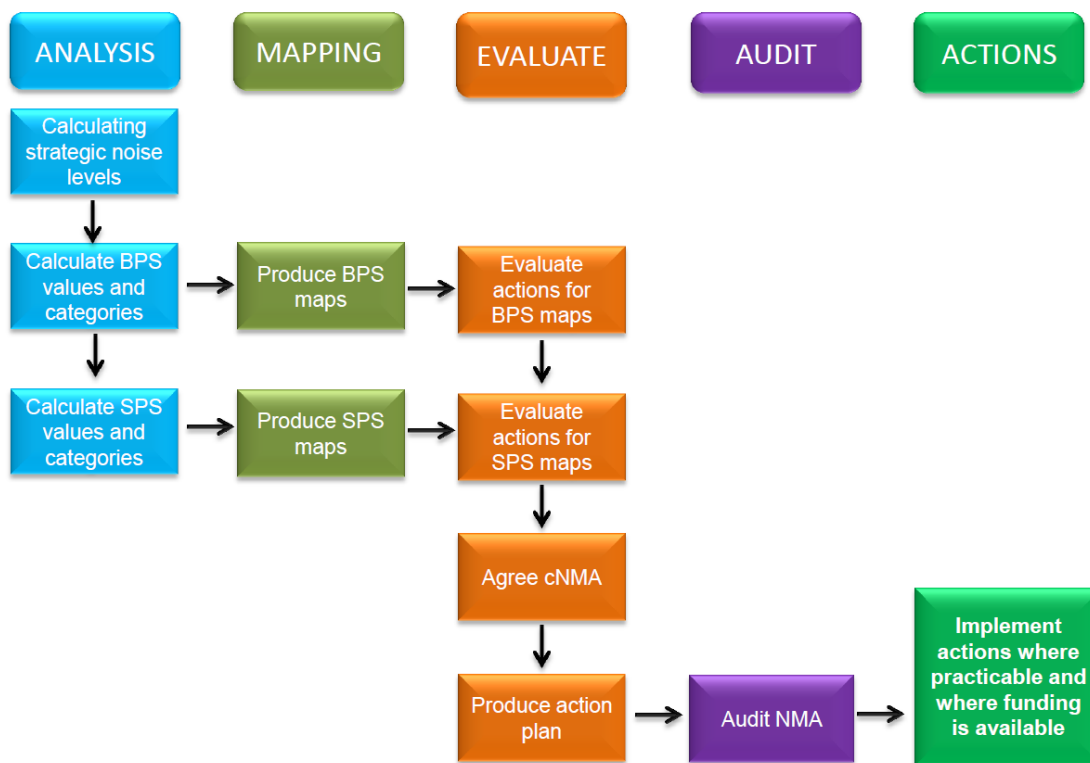
There are no noise limits values or noise thresholds in place in Scotland as it is recognised that analysing the noise contours alone will not necessarily identify areas suffering from the greatest noise impact. In order to gain a better understanding of the potential noise impacts it is helpful to identify 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.⁹

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.

⁹ 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 Guidance¹⁰.

The areas with CNMA status within the Glasgow 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 Glasgow agglomeration a minimum of 30,144 people are housed within the road CNMA approximate areas and a minimum of 3,924 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.^{11 12} '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)¹³ 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 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

¹⁰ http://www.scottishnoisemapping.org/downloads/guidance/Technical_Guidance_CNMA2NMA.pdf

¹¹ 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)

¹² Soundscapes in city parks and suburban green parks. In: Proceedings of Euronoise 2006 : Tampere, Finland, Nilsson ME, Berglund B (2006).

¹³ 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>

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 Technical Guidance¹⁴. The areas with CQA status within the Glasgow 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 3000). 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. Further detail on proposed noise actions can be found in sections 5.5 and 5.6

Preliminary Actions	Anticipated Completion Date
Assess all CNMA's as set out in the previously published guidance ¹⁰	20th April 2014
Assess all CQA's as set out in the previously published guidance ¹⁴	20th April 2014

Table 3 – Preliminary actions as part of planning process

5.5 Glasgow Agglomeration noise actions up to 2012

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

¹⁴ http://www.scottishnoisemapping.org/downloads/guidance/Technical_Guidance_for_Quiet_Areas.pdf

Options
A review of current research on road surface reduction techniques. This research commissioned by the Scottish Government comments on applicability for Scotland The report can be found here .
We have updated planning advice to local authorities see PAN 1/2011
We have pressed the European Commission(through Defra) for quieter vehicle requirements e.g. quieter tyres and quieter vehicles
A review of Air Quality Guidance to take account of noise is due to commence this year.
We have asked Defra to carry out further annoyance research on a UK basis and this is now included in the research programme.
Use of low noise road surfacing on the roads within agglomerations where appropriate (and where benefits can be demonstrated) and the inclusion of this specification within tenders
Noise barrier installation considered for developments alongside busy road/rail routes where appropriate
Promoting the use of [low carbon] electric cars and City Car Clubs
Inclusion of Noise Management Areas and Quiet Areas within local authority development control (planning) process

Table 4 – Examples of noise mitigation between 2006 and 2012

5.6 Glasgow Agglomeration proposed noise actions between 2013 to 2018

Noise action options fall into five 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 where appropriate
2	Network operational management of roads within agglomerations where appropriate
3	Development Proposals and Policies where appropriate
4	Desktop: Research, appraisal and evaluation where appropriate

5	Communications and stakeholder engagement where appropriate
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Table 5 – Remedial Actions

Glasgow NAP objectives, actions (falling within the above categories), timescales and cross-linkages to other Noise Action Plans in Scotland are outlined in Table 6.

No	Action	Timescale						
		'12	'13	'14	'15	'16	'17	'18
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 - By 2018, 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 - By 2018, 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 - By 2018, we will promote channels of communication to stakeholders that encourage a learning environment							
4a	Provide guidance, information and progress updates on the Glasgow 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 models			•			

Table 6 – Transportation (within Glasgow agglomeration) noise mitigation between 2012 and 2018

6. Description of Agglomeration – Glasgow

6.1 Description of the Glasgow Agglomeration

The Glasgow agglomeration map is shown in Figure 3 below. Glasgow and the Clyde Valley (GCV) has a population of 1.75 million and covers 3,376km², encompassing the whole of the River Clyde catchment. Approximately 48% of Scotland’s exports are produced within the area, making it critically important to the national economy.

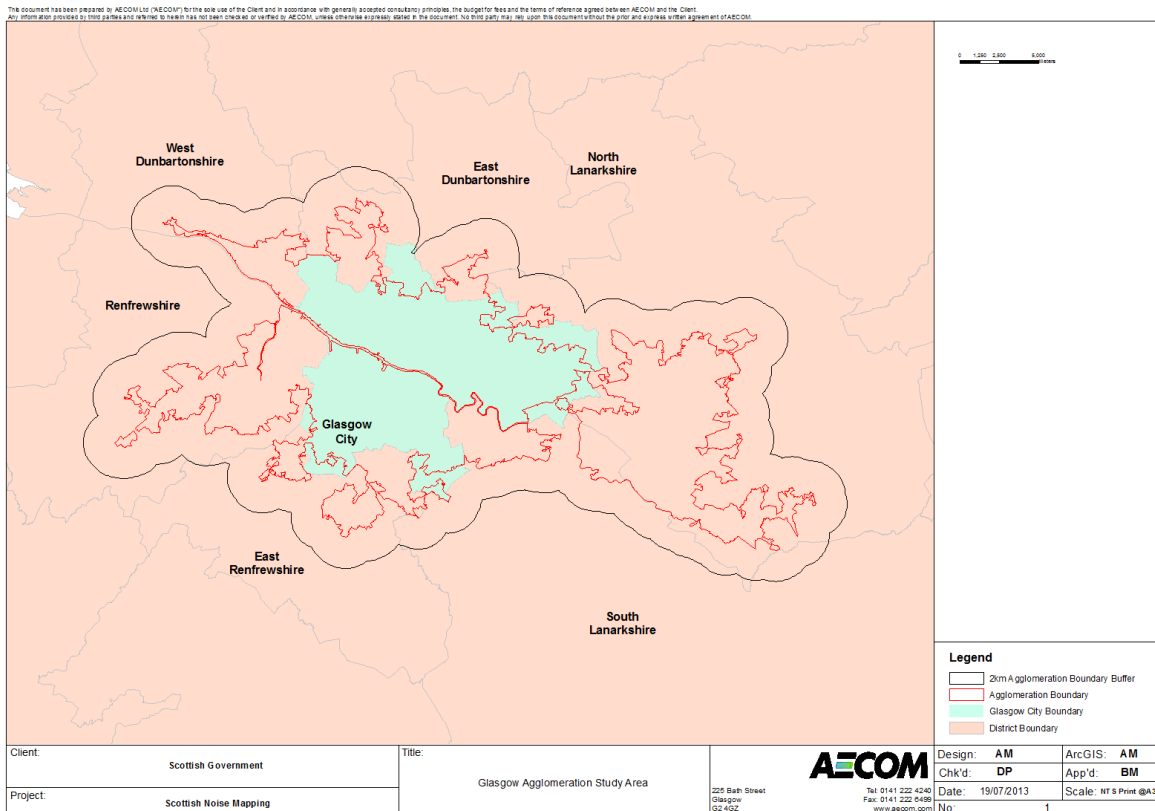


Figure 3 Glasgow Agglomeration

Glasgow and the Clyde Valley is predominantly a lowland area surrounded by hill ranges and in recent times the area has experienced the same trends as the rest of Scotland where urban development has the biggest impact on the environment. The GCV Area includes several landscapes that are recognised as being of national and regional importance including parts of the Loch Lomond National Park, the Campsie Fells, the Clyde Muirshiel Regional Park and the Southern Uplands.

Glasgow’s network of green spaces (4,878 ha) accounts for over 27% of the City’s total area. The network consists of public parks, amenity open spaces, countryside

areas, seven local nature reserves, 46 sites of City-wide importance for nature conservation and around 49 sites of local importance.

The 6,900 individual listed buildings in the City represent the principal elements of Glasgow's architectural heritage. The City also has 22 conservation areas, which extend over 1,476ha, each containing its own distinctive character.

Glasgow is a major Scottish transport node with a comprehensive internal transport network including motorways (M8, M73, M74, M77 and M80), the UK's second largest suburban commuter rail network, the only subway system in the UK outside London and an extensive network of bus routes. Around 94% of Glasgow's population lives within 300m of an hourly bus service and approximately 50 million rail journeys on the rail network in and around the region. This network includes a suburban commuter rail system with 120km of track and 60 rail stations serving all parts of the City.

Glasgow airport is situated within Renfrewshire Council on the south west of the Glasgow agglomeration. A separate Action Plan for this facility has been produced by the airport operator and can be viewed at <http://www.glasgowairport.com/about-us/living-near-the-airport/local-environment-impacts/aircraft-noise>

The Glasgow and the Clyde Valley Strategic Development Plan was approved by Scottish Ministers on 29th May 2012. The Strategic Development Plan sets out a development strategy over the next 20 years of where new development should be located and a policy framework to help deliver sustainable economic growth, shape good quality places and enhance the quality of life in the Glasgow and the Clyde Valley city region. The Plan focuses on growing the economy of the city region in a low carbon and sustainable manner and setting out a planning framework which positively encourages investment within Glasgow and the Clyde Valley.

6.2 Local Development Plans

Glasgow

The City Plan forms part of the city's development plan. It is used to guide the location, scale and quality of developments and, also, to inform decisions on planning applications.

Glasgow's City Plan 2 lays the foundation for development across the city and includes development proposals up to 2014. Work is ongoing on City Plan 3 which will be launched in 2014. City Plan 2 takes account of other national and local strategies and plans, including the City's community plan and a wide range of subject plans ranging from biodiversity and housing to transport and waste management. The Plan aims to tackle growing concerns about climate change and also the health of residents. Many policies are included in the Plan to help address these issues and tackle the City's carbon footprint. The ultimate aim of the Plan is to improve the quality of the physical environment and the quality of life for people

living and working in the City and provide the conditions to promote sustainable development.

Planning policy and development management:

The noise map for Glasgow is a key planning tool when considering the development strategy for the City. Planning applications are assessed in terms of potential noise impacts considering:

- 1) new noise sources introduced into residential areas; and
- 2) new residential schemes adjacent to existing noise sources.

In addition, applications can be assessed against the strategic noise maps to ensure that populations are not exposed to additional environmental noise from these proposals, safeguarding the newly promoted (from the first round of END) Noise Management Areas (NMAs) and designated Quiet Areas (QAs). The NMAs and QAs have been included in [Glasgow's Main Issues Report 13](#) (MIR) and on planning constraint maps.

The MIR is a statutory document that will inform Glasgow's subsequent development plan (City Plan 3 due to be adopted in 2014).

Renfrewshire

The adopted Renfrewshire Local Plan and emerging Local Development Plan guide the use and development of land, indicating where development or changes in land use should or should not take place. The development plan requires to take account and be informed by many other plans, policies and strategies and this then sets the framework at the local level in Renfrewshire.

The vision and the framework set out in the development plan focuses on promoting sustainable economic growth through indicating opportunities for change, supporting investment, creating and enhancing communities and places, providing high quality new development in the right locations. Central to this is places which can support a mix of uses, can be adaptable to future opportunities and can accommodate a range of development proposals.

The Renfrewshire Local Development Plan contains policies which are supported by New Development Supplementary Guidance providing detail and advice when considering developments in relation to noise. This informs the decision made when assessing planning application for development.

East Renfrewshire

The current Local Plan was adopted on 14th February 2011 and work is underway on a local development plan to cover the period up to 2025. It is anticipated that the new local development plan will be adopted in winter 2014.

North Lanarkshire

North Lanarkshire Council (NLC) adopted its current Local Plan in September 2012. This will be replaced by North Lanarkshire Council's first Development Plan in 2016.

The Local Plan set out NLC's development needs over the following 5 – 10 years. The Local Development Plan will state what type of development should take place where, and which areas should not be developed. It will form the basis for assessing planning applications.

Currently NLC has not declared any Noise Management Areas (NMAs) or Quiet Areas (QAs). Should this position change in the future any declared NMAs or QAs will be taken into consideration when drafting the Local Development Plan.

6.3 Local Transport Strategy

Keeping Glasgow Moving

The transport strategy for Glasgow 'Keeping Glasgow Moving' Glasgow's Local Transport Strategy (LTS) 2007-2009 sets out Glasgow City Council's aspirations for taking forward transport policy and infrastructure within Glasgow. The strategy has been developed taking account of other relevant strategies at a national, regional and local level as well as the feedback from an extensive consultation exercise and an examination of local issues, problems and opportunities.

Five high level objectives have been set. Objective three (LTS3) outlines:

“Promote healthy and environmentally sustainable methods of transport that minimise harmful emissions and energy consumption including those that involve physical activity”.

Noise Pollution is an environmental consideration. Current practice in dealing with road traffic noise by Local Authorities in Scotland is in response to the duty placed on them by the Noise Insulation (Scotland) Regulations 1975. This requires authorities to make initial assessments of traffic noise for both new and altered roads at opening and after 5, 10 and 15 years after opening. These assessments are carried out in accordance with procedures set by central government. Where noise levels are exceeded the Local Authority has a duty to carry out insulation works to qualifying properties or make grants to have the work carried out.

Policies supported by the LTS:

Noise Policy 1 - Support the Scottish Executive in the implementation of Environmental Noise Directive.

Noise Policy 2 – Ensure through assessment that the noise from new roads does not exceed national thresholds.

Actions of the LTS:

Noise Policy Action 1 – Provide input to the Scottish Executive, as required, to produce a noise map for Glasgow by June 2007. (Supports Noise Policy 1).

Noise Policy Action 2 - Provide input to the Scottish Executive as required to produce a noise action plan by June 2008. (Supports Noise Policy 1).

Noise Policy Action 3 – Continue to implement the Noise Insulation (Scotland) Regulations 1975 by assessing new road schemes following implementation and at 5 yearly intervals to assess whether noise thresholds are breached and implementing mitigation measures as appropriate. (Supports Noise Policy 2).

North Lanarkshire

North Lanarkshire Council's Local Transport Strategy (LTS) was published in 2010. The LTS document sets out the principles by which North Lanarkshire Council will maintain and improve all of its transport networks, as well as demonstrate how the Council has applied national and regional transport policy locally.

Objective 4 of the Key Objectives of the LTS is to protect North Lanarkshire's natural and built environment and to improve the health of its population. NLC's strategy for doing this includes the following measures which could lead to reductions in noise:-

- ✚ Challenge existing travel behaviour habits and encourage more sustainable transport choices.
- ✚ Increase the proportion of active travel trips; and
- ✚ Minimise the impact of the transport network on the natural and built environment.

6.4 Local Air Quality Action Plans

Glasgow

In 2012 Glasgow declared the whole of the city an Air Quality Management Area (AQMA) in respect of particulate matter air pollution (PM10). There are also three separate AQMAs; the City Centre, Parkhead Cross and Byres Road/Dumbarton Road, declared for the air pollutant NO₂.

The largest source of air pollution within Glasgow is from road transport. Glasgow's Air Quality Action Plans therefore contain a range of measures across the city targeting road transport and promoting sustainable transport. The action plans can be found [here](#).

Some of the current works taking place, that may lead to reductions in noise include the following:-

- The Carbotraf project will attempt to better define the links between road traffic and black smoke particles in the air. This project is attempting to understand how active traffic management (traffic shaping) may help to reduce pollution levels within the city.
- The Statutory Quality Bus Partnership Scheme is in operation in the city and has seen the introduction of progressive emission standards for buses.
- Policies and conditions relating to the age and specification of taxis and private hire cars are under review. This review should lead to an improvement in the taxis and private hire vehicle fleet.
- The bus retrofit grant scheme will be launched in 2013 and should see a number of older buses fitted with new state of the art exhaust systems.
- Roadside vehicle emission and idling enforcement activities will continue to be undertaken throughout the city.
- Cycling facilities i.e. cycle parking and by-pass lanes/advanced stop lines and feeder lanes have been provided at various locations in the city to encourage cycling.

Glasgow will introduce Low Emission Zones at all Commonwealth Games venues. Only the best performing engines and stationary equipment will be permitted into these zones

Renfrewshire

In 2010 Renfrewshire Council declared an Air Quality Management Area (AQMA) in respect of nitrogen dioxide and particulate matter air pollution for the Paisley town centre area. The largest source of air pollution within the AQMA is attributable to road transportation. Renfrewshire's Air Quality Action Plan therefore contains a range of measures specifically targeting road transport as well as attempting to promote sustainable transport. The action plan will be published on the Council's website.

Some of the current works taking place to reduce pollutant emissions which may also lead to reductions in noise include the following:-

- A recent refurbishment to Central Road has resulted in the traffic flow being reduced to a single direction (westbound traffic only). The numbers of bus stops were also reduced from four to two thus effectively halving the traffic using Central Road and reducing the number of buses idling. The positive effects on air quality as a result of this is evident from subsequent monitoring results.
- The Statutory Quality Bus Partnership Scheme is in operation in the area and has seen the introduction of progressive emission standards for buses.
- Roadside vehicle emission and idling enforcement activities will continue to be undertaken throughout the area.

North Lanarkshire

North Lanarkshire Council currently has 5 Air Quality Management Areas (AQMAs). These are located in

- Chapelhall
- Whifflet, Coatbridge
- Motherwell Town Centre
- Moodiesburn at the A80
- Croy

All AQMAs have been declared for exceedances of the national annual mean objective for Particulate Matter (PM10). It is likely however that some of these sites, namely Chapelhall and Whifflet will shortly be amended to take account of monitored exceedances of the annual mean objective for Nitrogen Dioxide (NO₂). In addition to this, the Moodiesburn AQMA will shortly be revoked due to a reduction in monitored emissions in this area as a result of changes to the road network and opening of the M80.

In 2013 North Lanarkshire Council published its second Air Quality Action Plan which details measures the Council intends to take to improve air quality in the AQMAs. Some of the current action plan measures may lead to reductions in noise:-

- Purchase and installation of rev-limiters on Council vehicles to ensure more efficient driving and reduced emissions. Initial batch of 30 vehicles to be trialled and measures to be rolled out across Council fleet if successful.
- Purchase and introduction of electric powered minibus for transport for school within AQMA. Performance of vehicle to be assessed with view to future purchasing strategy.

- Introduction of electric powered road sweepers for use in AQMAs (Whifflett and Chapelhall)
- Council roll-out of electric vehicles in fleet. Roll-out to be extended following evaluation of first batch performance.
- Introduction of electric vehicle charging points in Council car parks for use by Council and general public
- Feasibility study in relation to the potential development and introduction of a Statutory Quality Bus Partnership
- Introduction of Ecostars Fleet Recognition Scheme

APPENDICES

1 Candidate Noise Management Areas

Glasgow Road CNMAs			
CNMA ID	Map	ADDRESS	Local Authority
1	1	Maxwellton Street, Paisley	Renfrewshire
2	1	Caledonia Street, Paisley	Renfrewshire
3	1	St Mirren Street, Paisley	Renfrewshire
4	1	Causeyside Street And Orchard Street, Paisley	Renfrewshire
5	1	Glasgow Road, Paisley	Renfrewshire
6	1	Kilinside Road, Paisley	Renfrewshire
7	1	Kilinside Road, Paisley	Renfrewshire
8	1	Glasgow Road At Williamsburgh Terrace, Paisley	Renfrewshire
9	2	M8 At Glencairn Court, Paisley	Renfrewshire
10	3	Dumbarton Road At Yetholm Street, Glasgow	Glasgow City
11	4	Berryknowes Road At Queensland Drive, Glasgow	Glasgow City
12	4	Paisley Road West At Lourdes Avenue, Glasgow	Glasgow City
13	4	M8 And Helen Street Glasgow	Glasgow City
14	5	Bearsden Road At Fulton Street, Glasgow	Glasgow City
15	5	Crow Road At Abbey Drive, Glasgow	Glasgow City

Glasgow Road CNMAs			
CNMA ID	Map	ADDRESS	Local Authority
16	6	Dumbarton Road At Balshagray Crescent, Glasgow	Glasgow City
17	6	Dumbarton Road At Maule Drive, Glasgow	Glasgow City
18	6	A814 At Castlebank Street, Glasgow	Glasgow City
19	7	Queen Margaret Drive At Maryhill Road, Glasgow	Glasgow City
20	8	Byres Road At Great George Street, Glasgow	Glasgow City
21	8	Byres Road At University Place, Glasgow	Glasgow City
22	8	B808, Dumbarton Road And Cooper's Well Street, Glasgow	Glasgow City
23	8	Gibson Street, Otago Street, Glasgow	Glasgow City
24	8	Argyle Street, Berkeley Street, Glasgow	Glasgow City
25	8	Houldsworth Street At Houldsworth Lane, Glasgow	Glasgow City
26	8	M8 (St Vincent Street, Berkeley Street, Sauchiehall Street, Woodlands Road And A82), Glasgow	Glasgow City
27	8	A82 At Cromwell Street, Glasgow	Glasgow City
28	8	Sauchiehall Street At Garnet Street, Glasgow	Glasgow City
29	9	Paisley Road West (North Gower Street, Langshot Street And Edwin Street)	Glasgow City
30	9	M8 Near Scotland Street West, Glasgow	Glasgow City
31	9	Finnieston Street At Lancefield Quay, Glasgow	Glasgow City

Glasgow Road CNMAs			
CNMA ID	Map	ADDRESS	Local Authority
32	9	Finnieston Street At Clydeside Expressway, Glasgow	Glasgow City
33	9	Lancefield Quay At Lancefield Street, Glasgow	Glasgow City
34	9	Argyle Street At Perth Street, Glasgow	Glasgow City
35	9	Argyle Street And Oak Street, Glasgow	Glasgow City
36	9	Washington Street At Balaclava Street, Glasgow	Glasgow City
37	9	Paisley Road At Carnoustie Street, Glasgow	Glasgow City
38	9	Wallace Street At Laidlaw Street, Glasgow	Glasgow City
39	9	West Street Near Scotland Street, Glasgow	Glasgow City
40	10	Pollokshaws Road And Allison Street, Glasgow	Glasgow City
41	10	Pollokshaws Road At Kingarth Street, Glasgow	Glasgow City
42	10	Pollokshaws Road At Butterfield Place, Glasgow	Glasgow City
43	10	Allison Street At Cathcart Road, Glasgow	Glasgow City
44	10	Caledonia Road Near Silverfir Street, Glasgow	Glasgow City
45	11	Kilmarnock Road At Newlandsfield Road, Glasgow	Glasgow City
46	11	Pollokshaws Road At Moss-Side Road, Glasgow	Glasgow City
47	12	Sauchiehall Street And Pitt Street, Glasgow	Glasgow City
48	12	West Graham Street And Garscube Road, Glasgow	Glasgow City
49	12	Craighall Road Near High Graighall Road,	Glasgow City

Glasgow Road CNMAs			
CNMA ID	Map	ADDRESS	Local Authority
		Glasgow	
50	12	M8 Near Canal Street, Glasgow	Glasgow City
51	12	Baird Street At Lister Street, Glasgow	Glasgow City
52	13	Douglas Street, At Bothwell Street, Glasgow	Glasgow City
53	13	West Campbell Street At Holm Street, Glasgow	Glasgow City
54	13	Oxford Street At Carlton Court, Glasgow	Glasgow City
55	13	Norfolk Street At Oxford Lane, Glasgow	Glasgow City
56	13	Clyde Street At Maxwell Street, Glasgow	Glasgow City
57	13	Clyde Street And Stockwell Street, Glasgow	Glasgow City
58	13	Ingram Street And Glassford Street, Glasgow	Glasgow City
59	13	Albion Street At George Street, Glasgow	Glasgow City
60	13	At Bridgegate Street , Saltmarket, High Street And Ingram Street, Glasgow	Glasgow City
61	14	Springburn Road At Pinkston Drive, Glasgow	Glasgow City
62	14	M8 Near Alexandra Parade, Glasgow	Glasgow City
63	14	Cumbernauld Road At Ingleby Drive, Glasgow	Glasgow City
64	14	Cumbernauld Road And Cumbernauld Road At Alexandra Parade, Glasgow	Glasgow City
65	15	Farmeloan Road At Victoria Street, Glasgow	South Lanarkshire

Glasgow Road CNMAs			
CNMA ID	Map	ADDRESS	Local Authority
66	15	Cambuslang Road At Avenue Street, Glasgow	South Lanarkshire
67	16	Main Street At Greenlees Road, Glasgow	South Lanarkshire
68	17	M8, Near Longstone Road, Glasgow	Glasgow City
69	18	M8 Near Halliburton Terrace, Glasgow	Glasgow City
70	19	Calder Street At William Street, Glasgow	North Lanarkshire

Glasgow Rail CNMAS			
CNMA ID	Map	ADDRESS	Local Authority
1	1	Near Mc Laurin Crescent, Greenend Avenue, Johnstone	Renfrewshire
2	1	Near Gibson Crescent, Floorsburn Crescent, Johnstone	Renfrewshire
3	2	Near Main Road, Glenpatrick Road, Elderslie	Renfrewshire
4	3	Near A7050, Brown Street, Underwood Road, Paisley	Renfrewshire
5	4	Near Sandwood Road	Glasgow City
6	4	Near Chirnside Road	Glasgow City
7	4	Near M8 At Berryknowes Road	Glasgow City

Glasgow Rail CNMAS			
CNMA ID	Map	ADDRESS	Local Authority
8	5	Near M8, Paisley Road West	Glasgow City
9	5	Near M77 At Vermont Street	Glasgow City
10	5	Near M77 At St Andrews Crescent	Glasgow City
11	6	Near Glasgow Road At Duke's Road, Cambuslang	South Lanarkshire
12	6	Near Main Street At Greenlees Road, Cambuslang	South Lanarkshire
13	7	Near Melrose Place, Heritage Way, Coatbridge	North Lanarkshire
14	8	Near Calder Street, Whifflet Street, Coatbridge	North Lanarkshire
15	9	Near Motherwell Road At John Street, Bellshill	North Lanarkshire
16	9	Near Garfield Avenue, Bellshill	North Lanarkshire
17	10	At Jerviston Street, Stevenston Court, Motherwell	North Lanarkshire
18	10	Near Newarthill Road, Maryknowe Road, Motherwell	North Lanarkshire
19	11	Near Merry Street, Motherwell	North Lanarkshire
20	12	Near Campsie Road, Motherwell	North Lanarkshire
21	12	Near Marshall Street, Motherwell	North Lanarkshire
22	12	Near Caledonian Road, Wishaw	North Lanarkshire

2 Candidate Quiet Areas

ID	Map	Location	Source File
1	1	Craigston Wood	Ancient Woodland, Semi Natural Woodland
2	2	Allander Park	Parks, Semi Natural Woodland, Ancient Woodland
3	3	Clydebank Public Park	Parks, Ancient Woodland
4	3	Garscadden Wood	Ancient Woodland, Local Natural Reserve
5	3	Colquhoun Park	Parks, Ancient Woodland, Semi Natural Woodland
6	4	Knightswood Park	Parks
7	4	Robertson Park	Parks
8	5	Rosshall Park	Parks
9	5	Pollok Country Park	Country Park, Ancient Woodland
10	6	Eastwood Park	Parks, Ancient Woodland
11	8	Giffnock Playing Field	Parks
12	8	Busby Glen Park	Parks, Ancient Woodland, Semi Natural Woodland
13	7	Ruchill Park	Parks
14	7	Springburn Park	Parks
15	8	King's Park	Parks
16	8	Glen Wood	Ancient Woodland, Semi Natural Woodland

ID	Map	Location	Source File
17	9	Hogganfield Park	Local Natural Reserves, Park
18	9	Bishop Loch	Local Natural Reserves, SSSI, Semi Natural Woodland, Ancient Woodland
19	9	Greenfield Park	Parks
20	9	Tollcross Park	Parks
21	10	Cambuslang Public Park	Parks
22	10	Bothwell Castle Grounds	Semi Natural Woodland
23	11	Rawyards Park	Parks
24	12	Reset & Byramsmuir Plantations	Ancient Woodland
25	12	Orbiston Public Park	Parks
26	13	Shields Glen public park and Dalzell Burn	Ancient Woodland
27	13	Temple Gill	Ancient Woodland
28	13	Greenhead Park	Parks



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