



Llywodraeth Cymru
Welsh Government



Noise and Soundscape Plan for Wales

Our national strategy
on soundscapes

2023-2028

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Scope and purpose of this document

The Noise and Soundscape Plan 2023-2028 is Wales's national strategy on soundscapes, meaning the sound environment as perceived or experienced and/or understood by a person or people, in context.

All forms of airborne sound that may be heard by the people of Wales are considered to be within scope of this document.

Not all policy levers to control airborne noise in Wales are devolved. For example, military activities, airport operations, the regulation of noise in the workplace, entertainment licensing, and product safety standards are matters reserved to the UK Government. However, the siting and construction of homes within earshot of military activities and airports is a devolved matter, as are the planning rules around entertainment venues, the running of the health service (which may be called upon to treat patients suffering from occupational or recreational hearing damage), and the provision of health advice to the general public. We have not identified any forms of airborne noise for which devolved public bodies have no role whatsoever to play in affecting outcomes.

Although not covered by the technical definition of soundscape, the Welsh Government considers the effects of airborne sound on terrestrial wildlife, pets and farmed animals to be within scope of this document. However, the focus is solely on the air environment. Underwater sound falls outside the scope of this document.

The Environment (Air Quality and Soundscapes) (Wales) Bill¹ would require the Welsh Ministers to prepare and publish a strategy containing their policies with respect to the assessment, management and design of soundscapes in Wales. This strategy must include policies for assessing and effectively managing noise pollution. If Welsh Ministers produce such a strategy before the Bill gains Royal Assent, that strategy will be adopted as the national strategy on soundscapes when the Bill gains Royal Assent.

The Environmental Noise (Wales) Regulations 2006 require the Welsh Ministers to review and if necessary revise their existing environmental noise action plans, contained within our previous consolidated action plan², no later than five years after their adoption, i.e. by 4 December 2023.

This document seeks to discharge both those legal requirements.

¹ <https://business.senedd.wales/mglIssueHistoryHome.aspx?lId=40984>

² <https://www.gov.wales/noise-and-soundscape-action-plan-2018-2023-0>

Who is this document for?

This document has been written for anyone interested in learning about the Welsh Government's policy position on noise and soundscapes.

It is intended to be referred to by officials working in devolved public bodies, such as those subject to the Well-being of Future Generations (Wales) Act 2015 (the WFG Act), and particularly those who may be expected to have regard to the Welsh Government's environmental noise action plans or the national strategy on soundscapes when carrying out their statutory duties.

Programme for Government

The Programme for Government (PfG) 2021-2026 sets out the ten well-being objectives that the Welsh Government believes will make the greatest contribution towards the seven well-being goals in the WFG Act.

The Noise and Soundscape Plan directly supports the following PfG objective:

- Make our cities, towns and villages even better places in which to live and work.

By introducing a new chapter dedicated to soundscape and decarbonisation, and considering effects on wildlife, the Plan will support the following PfG objectives:

- Build a stronger, greener economy as we make maximum progress towards decarbonisation.
- Embed our response to the climate and nature emergency in everything we do.

By championing "appropriate soundscapes" as one of our National Sustainable Placemaking Outcomes, the Plan will support the following PfG objective:

- Build an economy based on the principles of fair work, sustainability and the industries and services of the future.

By identifying and responding to links between noise annoyance and deprivation, and recognising the aural diversity of our population, the Plan will also support the following PfG objective:

- Celebrate diversity and move to eliminate inequality in all of its forms.

Legal disclaimer

The references to legislation contained in this document are intended to provide a broad indication of the various ways in which noise is regulated in Wales. This document has not been written by lawyers, and should not be taken as advice on the precise application of the law. For definitive information on noise and the law, readers should refer to the legislation itself or seek advice from a member of the legal profession.

The Welsh Government accepts no responsibility for the content of external websites.

1 Policy summary

A healthy sound environment is more than simply the absence of unwanted sounds, and noise management must have a broader focus than simply reducing the decibels. The cities, towns and villages in which people live serve a variety of purposes, and should contain a variety of sound environments appropriate to the time and place. There should not be a one-size-fits-all sound environment, which is experienced everywhere, any more than every street and building should look alike.

We need to create appropriate soundscapes, meaning the right sound environment in the right time and place.

Noise and soundscape policy in Wales sits not in a vacuum, but within the cross-cutting framework set by the Well-being of Future Generations (Wales) Act 2015 (the WFG Act). This requires public bodies such as local authorities, local health boards, Natural Resources Wales (NRW), Public Health Wales (PHW) and the Welsh Government to carry out **sustainable development**. This is the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the seven well-being goals.

The **sustainable development principle** defined in the WFG Act is a fundamental part of how public bodies and public services boards (PSBs) must now operate. They must act in a manner that seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs. The principle is made up of five ways of working public bodies should follow when carrying out sustainable development. These are:

- looking to the long term so that we do not compromise the ability of future generations to meet their own needs;
- taking an integrated approach;
- involving a diversity of the population in the decisions affecting them;
- working with others in a collaborative way to find shared sustainable solutions; and
- acting to prevent problems from occurring or getting worse.

The Welsh Government expects public bodies subject to the Well-being of Future Generations (Wales) Act 2015 – and encourages everybody else – to follow the five ways of working when carrying out any activities that may affect soundscapes in Wales.

1.1 Dos and don'ts

In line with the five ways of working, when undertaking activities that may affect soundscapes in Wales, **the following practices should be followed:**

- Pursuing long-term, sustainable solutions to instances of high public noise exposure or poor soundscape quality, while developing policies in other areas in such a way as to consider their potential long-term consequences (whether positive or negative) for soundscapes in Wales
- Seeking to deliver appropriate soundscapes at the same time as achieving other, related policy objectives
- Talking to people about the challenges and opportunities associated with seeking appropriate soundscapes, listening to their concerns and inviting their views on potential solutions and how they might help to deliver them
- Working actively with internal and external partners to mutual benefit in the delivery of inter-related policy objectives
- Horizon-scanning for and acting on any soundscape-related risks or opportunities associated with decisions before they are taken

And **the following practices are to be avoided:**

- Seeking short-term solutions that fail to address longer-term, underlying issues when challenges relating to noise and soundscape present themselves
- Treating appropriate soundscapes as something to be sought separately from (or worse, at a later stage in decision-making than) related objectives such as healthy lifestyles, housing provision, clean air, energy efficiency and decarbonisation, resilient ecosystems, safe roads, litter prevention, and supporting businesses
- Letting the experts decide what's best for a community based on generic criteria, informing local people only after it's all been settled
- Leaving it to environmental health and pollution control teams to sort out
- Waiting for complaints to come in about a clearly foreseeable noise issue before seeking to do anything about it

When looking to the long term and taking preventative action, decision-makers should have regard to the information contained in the most recent Future Trends Report³ issued under the WFG Act. This is particularly important whenever the decision has a regional or national aspect to it.

1.2 The soundscape standards

The International Organisation for Standardization's ISO 12913 series of soundscape standards, adopted into British Standards by the British Standards Institution (BSI), defines **soundscape** to mean the acoustic (i.e. sound) environment as perceived or experienced and/or understood by a person or people, in context.

Part 1 of the series sets out the definitions and conceptual framework. Part 2 specifies data collection and reporting requirements. Part 3 covers data analysis. At the time of writing, Part 4, in preparation, is expected to provide additional guidelines for the assessment of soundscape investigation results.

If applied in full, the methods laid out in these standards deliver very detailed qualitative and quantitative information on people's perception and experience of their sound environment, fit for use in academic research projects. It would be unreasonable and disproportionate to expect these procedures to be followed in full every time a soundscape perspective is desired to inform a decision in Wales. Rather the Welsh Government recommends that the methods outlined in the soundscape standards (such as the soundwalks and questionnaires set out in Annex C of ISO 12913 Part 2) be used in a targeted manner, to deliver whatever information on people's perception of their sound environment is considered of practical benefit to decision-makers on a case-by-case basis.

The practical application of the approaches set out in the soundscape standards should be proportionate to the potential for soundscape interventions to deliver appropriate soundscapes and better overall outcomes contributing to the achievement of the WFG Act's well-being goals.

The Welsh Government notes that beyond the current ISO standards, modelling techniques are being developed to predict how people are likely to perceive and experience future sound environments. Such techniques may be helpful in situations where participatory approaches are not possible when designing soundscapes. However, the WFG Act calls on devolved public bodies to involve people in decisions that affect them, and so participatory processes are to be favoured wherever reasonably practicable.

³ <https://www.gov.wales/future-trends-2021>

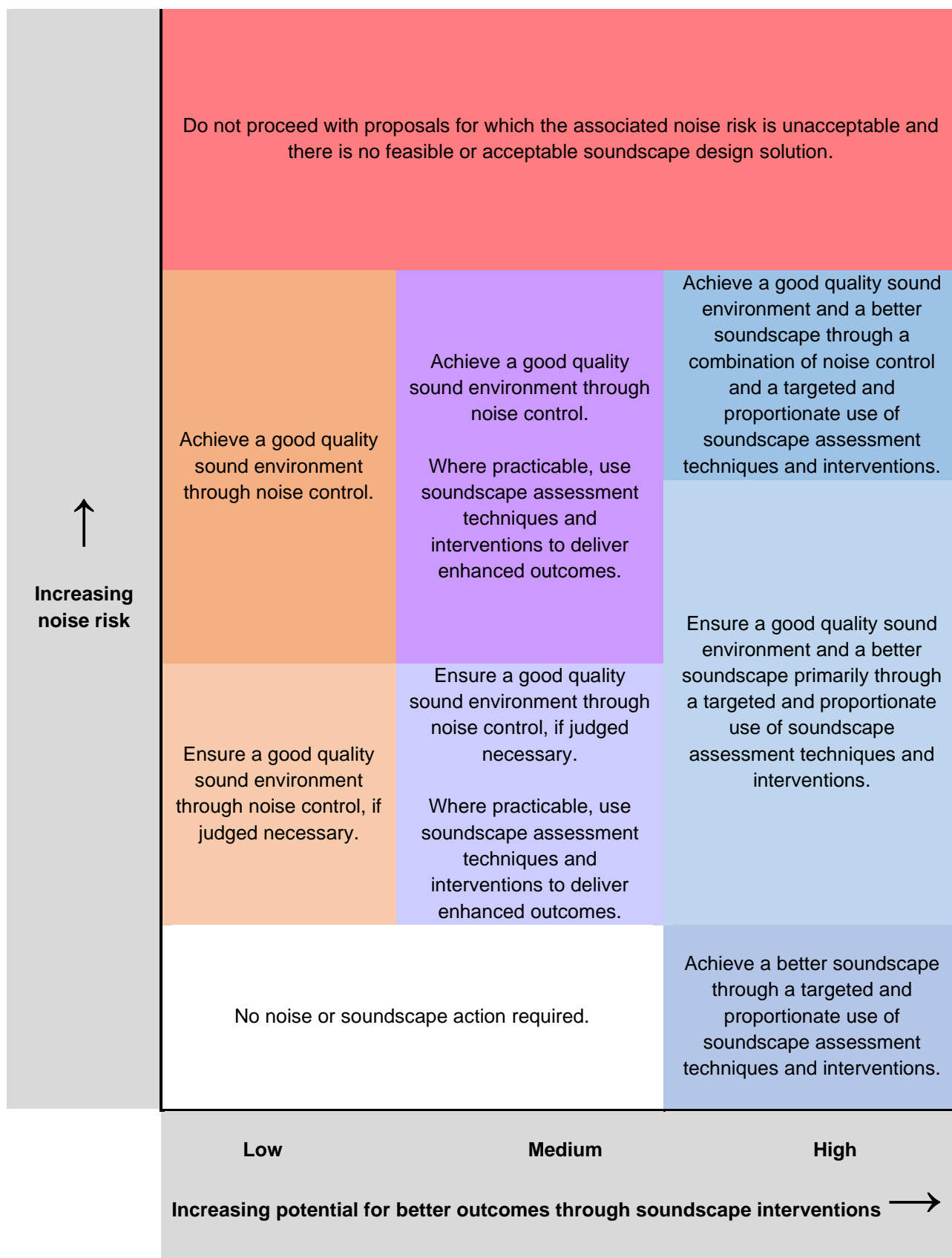


Figure 1: A generalised decision-making framework for determining the appropriate level of noise control and/or soundscape assessment and intervention when exercising functions that may affect soundscapes



Figure 2: Examples illustrative of situations that might fall into the various areas of noise risk and potential for better outcomes through soundscape interventions, considered in Figure 1

1.3 Local noise and soundscape policies

Under the Environmental Noise (Wales) Regulations 2006, the Welsh Government must produce plans containing its environmental noise policies for urban areas with populations exceeding 100,000 people (“agglomerations”). These areas were defined in the 2013 noise action plan for Wales, and can be seen on the “quiet areas” maps in section 6.2 of this document. But we want to set out noise and soundscape policies that are relevant across the whole of Wales, not just the big cities. This document therefore applies equally inside and outside agglomerations.

An illustrative snapshot of local authorities’ noise policies in a Welsh Government document is therefore likely to become out of date during its lifetime. So as our consolidated Plan evolves into a national strategy on soundscapes, we are no longer asking local authority teams to make individual text contributions to this document. Instead, we simply ask that they have regard to the national policies contained in this Plan as and when they review and update their local noise and soundscape policies over the course of the next five years.

It is up to each Welsh local authority how best to communicate its local noise and soundscape policies. Options include producing a local plan or strategy for noise and soundscape, or one covering the air environment more generally.

2 Why soundscapes matter in a post-pandemic world

2.1 Key message: soundscape quality as a determinant of well-being

Noise, meaning unwanted or harmful sound, can disrupt sleep and increase stress, irritation and fatigue, as well as interfering with important activities such as learning, working and relaxing. It reduces people's quality of life. Exposure to loud sounds can cause immediate or gradual hearing damage, while exposure to noise over the long term can increase risk of hypertension-related illnesses and cardiovascular disease⁴.

All manner of sounds can be harmful to human health and well-being if loud enough. Sounds that are not so loud may still cause harm, e.g. by being distracting or annoying or disruptive to sleep patterns, depending on the context.

Environmental noise has been ranked as the second biggest environmental contributor to the burden of disease in Western Europe after air pollution⁵. Our 2017 noise maps⁶ suggested that the homes of more than 200,000 people across Wales are exposed to external road traffic noise exceeding the World Health Organisation (WHO)'s 2009 night noise guidelines⁷. According to the National Survey for Wales⁸, a quarter of the people in Wales are regularly bothered by noise from outside their homes, with neighbour noise being at least as significant a contributor to this annoyance as noise from traffic, businesses and factories combined. (See Annex B for further details.)

But not all sounds are harmful or unwanted, and some sounds bring both costs and benefits. Music can be uplifting and restorative, and can also be annoying, depending on the listener and the context. The sound of busy roads has been shown to be detrimental to the health of the population, particularly those who experience it in their homes. However, pedestrians benefit from being able to hear vehicles approaching when crossing roads, and so artificial engine sounds are added to electric vehicles at low speeds for safety reasons. There are also situations where removing the sound of road traffic may expose people to more annoying sounds (e.g. of an industrial nature) that had previously been masked by the traffic sounds.

Access to the right sounds in the right time and place, including music and the sounds of nature, can enhance people's immediate and long-term health and well-

⁴ WHO Regional Office for Europe, Burden of disease from environmental noise: quantification of healthy life years lost in Europe, 2011. <https://apps.who.int/iris/handle/10665/326424>

⁵ WHO Regional Office for Europe, Environmental Noise Guidelines for the European Region, 2018. <https://apps.who.int/iris/rest/bitstreams/1175318/retrieve>

⁶ <https://datamap.gov.wales/layergroups/inspire-wg:EnvironmentalNoiseMapping2017>, <https://www.gov.wales/estimated-environmental-noise-levels>

⁷ WHO Regional Office for Europe, Night Noise Guidelines for Europe, 2009. <https://apps.who.int/iris/bitstream/handle/10665/326486/9789289041737-eng.pdf>

⁸ <https://www.gov.wales/national-survey-wales>

being, including aiding recovery from ill health. But the same sounds in the wrong time and place (e.g. piped music played in situations where people may not be present by choice, and so perceive it as being forced upon them) can cause anxiety and distress. This is why our policy goal is not silence, but **appropriate soundscapes**.

2.2 Lockdown soundscapes

Wales experienced perhaps its most sudden change in the national sound environment in peacetime when we went into lockdown in March 2020, with the banning of non-essential gatherings, closure of non-essential businesses and restrictions on non-essential travel. The outdoor sound environment became quiet, with the sounds of nature becoming more noticeable. At the same time, people who normally went out during the daytime received more exposure to the sound environments of their homes. Because people spent more time at home, they generated more sound at home, and people heard more sound being generated by their neighbours. In some cases, this neighbour sound could be unwanted and experienced as noise, e.g. the sounds of DIY or repetitive loud music. In other cases, for example where people lived alone, the sounds of other people living nearby might reduce the sense of isolation, and so provide a well-being benefit⁹.

People's aural experience of lockdown, like everything else at that time, was highly dependent on where they lived. The quality of the lockdown sound environment for families with children confined to small flats with thin walls and no access to local green space would be very different to that for a family living in a spacious detached property in a leafy suburb.

The 2021 Future Trends Report¹⁰ tells us that trends of household composition point to increases in one-person households. Household sizes are becoming smaller in Wales, with the number of single-person households projected to increase significantly over the next two decades. With this in mind, in 2022, the Welsh Government proposed that an expert review be carried out of any evidence for potential risks to mental health and well-being arising from over-isolating dwellings from the external sound environment. This would consider in particular people who are predominantly or entirely housebound (physically, or for occupational, cultural, financial or any other reasons) and alone, and so at greater risk of loneliness. This review has subsequently been commissioned by Defra under its noise and nuisance evidence programme.

⁹ Torresin et al., Indoor soundscapes at home during the COVID-19 lockdown in London, Applied Acoustics Volumes 183 and 185, December 2021 and January 2022.

<https://www.sciencedirect.com/science/article/pii/S0003682X21003996>,

<https://www.sciencedirect.com/science/article/pii/S0003682X21004734>

¹⁰ <https://www.gov.wales/future-trends-2021>,

<https://statswales.gov.wales/Catalogue/Housing/Households/Projections/National/2018-based/householdprojections-by-householdtype-year>

2.3 Changing soundscapes

With the lifting of Covid-19 restrictions, the outdoor sound environment went back pretty much to what it had been before the pandemic. However, for a great many people, the prevailing soundscape, meaning the sound environment as they experienced it on a daily basis, was forever changed, because they chose to remain working from home. A home working environment sounds different to an office environment, and inevitably, some home working environments are better than others.

Our town centres continue to evolve, with greater areas being pedestrianised, and land use constantly changing, e.g. from offices to flats, or from retail to hospitality. Changing lifestyles, such as increases in remote working and in shopping online, result in changing expectations for our high streets.

Decarbonisation, electrification of motorised transport and climate change adaptation bring both opportunities and challenges for the sound environment. Phasing out the internal combustion engine reduces one major source of outdoor noise in built-up areas, but the sounds generated by air conditioning units, wind turbines and heat pumps must be factored into decision-making as we seek to adapt to and mitigate man-made climate change.

While vehicle engine noise decreases as a result of reduced speed limits in urban areas and improvements in technology, artificial engine sounds and other audible warnings must be added responsibly to quiet vehicles, so that pedestrians can still hear them coming, whilst at the same time minimising any unwanted noise exposure.

Although working from home reduces the sound emitted by commuter traffic, it turns dwellings that were previously unoccupied in office hours into noise-sensitive locations during the daytime. This has potential implications for those carrying out activities such as building works, who have traditionally assumed office hours to be the least bad times to engage in noisy activities in residential areas. Meanwhile, increases in home deliveries may affect the sound environments of residential streets, particularly when delivery vehicles fail to switch off their engines whilst unloading goods.

Electric scooters and unmanned aerial vehicles (UAVs, or “drones”) are likely to present their own unique acoustic challenges if their use becomes more widespread.

2.4 Aural diversity

The concept of the hypothetical “average person” has been used in the assessment of complaints of noise nuisance for decades. It is considered useful because it helps

to ensure consistency as to what sound-generating activities, in a given context, are generally accepted and permitted by society, and what levels of noise are generally considered unreasonable or unacceptable in a given context. However, the Welsh Government recognises that the “average person” does not exist in reality, and everyone experiences sounds differently¹¹, with some people more sensitive to noise than others, for example autistic people, people with post-traumatic stress disorder (PTSD), or people who work night shifts and try to sleep during the day.

But while it is easy for government to say it recognises the wide variation in people’s experience of sounds, it is less easy to suggest how this could be taken into account when assessing whether a particular sound-generating activity should be permitted, in a manner that preserves consistency and fairness to people who carry out activities that generate sounds or who may enjoy hearing those sounds. The question of how to factor aural diversity into decision-making in a way that is inclusive and fair to all is a subject of ongoing research and debate in the UK acoustics community.

Encouraging a diversity of sound environments is likely to form part of the answer to accommodating fairly the needs of an aurally diverse population. Implementing the **agent of change principle** is expected to be another part of it. This is the principle that a business or person responsible for introducing a change is responsible for managing that change.

2.5 Noise and the health impacts of climate change

As climate change results in more frequent periods of extreme hot weather, overheating becomes an increasing health risk in domestic settings, particularly as greater numbers of people opt to work from home, where there may not be the same air conditioning as in a dedicated office building. This increased health risk can be exacerbated if noise levels outside deter a building’s occupants from opening their windows for natural ventilation.

The complex interaction between different indoor environmental health risks, including noise, extremes of temperature, excessive moisture and indoor air pollutants, must be recognised and solutions sought by everyone from architects and planning officers¹² to the occupants themselves, their employers, and anyone else with a duty of care towards them.

¹¹ <https://auraldiversity.org>

¹² See, for example, Association of Noise Consultants and Institute of Acoustics, Acoustics, Ventilation and Overheating Residential Design Guide – Version 1.1, January 2020. <https://www.association-of-noise-consultants.co.uk/avo-guide>, https://www.ioa.org.uk/sites/default/files/joint_statement_on_propg_avo_guide.pdf

3 Considering soundscapes when planning new development

3.1 Key message: sustainable placemaking

The focus on placemaking in Planning Policy Wales (PPW) requires that policy topics such as air quality, noise and soundscape be considered alongside all other relevant policy topics when preparing development plans and designing and determining planning proposals. Development plan strategies, policies and development proposals should be formulated and designed to protect and enhance the special characteristics and intrinsic environmental qualities of places because they contribute to the attractiveness, vibrancy, liveability, resilience, functioning, economic prosperity and ultimately health, amenity and well-being of places.

Planning policy in relation to air quality, noise and soundscape emphasises the requirement to secure opportunities as part of the planning process, rather than just avoid the worst negative impacts. It is no longer acceptable to regard air quality and noise merely as technical matters to be mitigated at the end of the process. Rather, they are integral to the design, functioning, health, amenity and well-being of places. Accordingly, an integrated approach should be taken towards drawing up strategies and formulating proposals for places, including those relating to air quality and soundscape.

Placemaking is a holistic approach to the planning and design of development and spaces, focused on positive outcomes. It draws upon an area's potential to create high quality development and public spaces that promote people's prosperity, health, happiness, and well-being in the widest sense.

Placemaking considers the context, function and relationships between a development site and its wider surroundings. This will be true for major developments creating new places as well as small developments created within a wider place. Placemaking should not add additional cost to a development, but will require smart, multi-dimensional and innovative thinking to implement and should be considered at the earliest possible stage.

Placemaking adds social, economic, environmental and cultural value to development proposals resulting in benefits which go beyond a physical development boundary and embed wider resilience into planning decisions.



Figure 3: Wales's National Sustainable Placemaking Outcomes (taken from Planning Policy Wales)

3.2 Updating Technical Advice Note (TAN) 11: Noise

In drafting new guidance for planning authorities and developers to support the current PPW and potentially replace the old TAN 11: Noise (1997), the Welsh Government saw a case for the new TAN 11 to be accompanied by a supporting document focusing particularly on **soundscape design**. Such a document was prepared in consultation draft form, working in partnership with the Noise Abatement Society.

Noise practitioners in the UK will be familiar with the concept of **acoustic design**. Good acoustic design is currently demonstrated by experts assessing the noise risk associated with a proposed development at an early stage, and then preparing an Acoustic Design Statement proportionate to both the scale of the development and the degree of noise risk at the proposed development site. The overall aim of good acoustic design for residential development is to protect people from the harmful effects of noise.

Protecting people from the harmful effects of noise is a necessary but not a sufficient condition for achieving an appropriate soundscape. We need to consider the sounds people might wish to hear in a given time and place, as well as the sounds people won't want to hear. Sometimes, design measures intended to protect people from noise also deprive them of other sounds that provide a useful or pleasing connection with the wider world. Involving existing local communities early on in the design process is essential in situations where the determination of what constitutes an appropriate soundscape is likely to be affected by the local context, and so requires local knowledge.

Acoustic design is an approach to design relating to the sound environment, the principal technical objective of which is to protect people from the unwanted and/or harmful effects of noise. The proposed Welsh Government guidance, intended to replace the old TAN 11, takes a progressive step by also defining soundscape design. It describes this as a participatory, people-focused approach to design concerning both the acoustic environment and any physical or non-physical non-acoustic factors that may affect how people perceive and/or experience sound in a specific context.

The extent to which a soundscape design approach is applicable to a particular development will depend on the extent to which the development offers opportunities for innovative, creative, participatory design. This will be determined by the scale, nature and context of a proposed development. When a soundscape design approach is required, it will be because it offers an opportunity for achieving better placemaking as part of a holistic approach to design, and it is considered the approach most likely to achieve an appropriate soundscape and contribute positively to a more sustainable outcome for future generations.

Where the acoustics profession's established residential development guidance¹³ advocates an Acoustic Design Statement proportionate to the noise risk, the draft Welsh Government guidance suggests rather a Noise and Soundscape Design Statement (NSDS). This would have similar content to a conventional Acoustic Design Statement when it comes to noise control, but it would also include a soundscape design element, when and to the extent to which a soundscape design approach involving community participation may be expected to result in better placemaking.

The Welsh Government launched a 13-week public consultation¹⁴ on the draft new TAN 11 and its supporting document on soundscape design in October 2022. The full consultation exercise incorporated two virtual discussion sessions with Welsh noise regulators, two hosted by the Institute of Acoustics (IOA), and one with planning professionals. It closed on 20 January 2023.

3.3 Technical Advice Note (TAN) 11: next steps

The Welsh Government will carefully consider all the consultation feedback received on the draft new TAN 11, and revise it accordingly before formally adopting it and revoking TAN 11: Noise (1997). At the same time, we will consider the case for further guidance and training for local authorities to support implementation of the new TAN 11, and discuss potential options for their delivery with our partner organisations.

The Annex to the draft new TAN 11 that discusses the role of green infrastructure has wider relevance beyond the planning regime. We have therefore adapted it and incorporated it into this Noise and Soundscape Plan at Annex C.

The consultation draft supporting document on soundscape design was broadly well received as a first iteration of guidance on this emerging subject, but responses highlighted its limitations and identified areas for potential improvement before it is formally adopted. These include providing clearer criteria for decision-making at each stage of the iterative soundscape design process, allowing for predictive modelling of soundscapes in situations where a participatory approach is impractical, and more worked examples.

The Welsh Government places high value on input from practitioners with real-world experience of successfully applying soundscape approaches to achieve better outcomes. We will discuss the feedback received on the draft supporting document

¹³ Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, ProPG: Planning & Noise: New Residential Development, May 2017.

<https://www.ioa.org.uk/publications/propg>

¹⁴ <https://www.gov.wales/revised-planning-guidance-relation-air-quality-noise-and-soundscape>

with the soundscape sub-group of the Association of Noise Consultants, the Noise Abatement Society and others pioneering work in this field, to build on the material compiled to date, and help develop professional soundscape design guidance that can be used by developers and regulators anywhere in the UK.

4 Considering soundscapes in air quality management

4.1 Key message: common sources, joined-up solutions

Concentrations of harmful substances and airborne sound waves are both attributes of our local air environment, indoor and outdoor, and local air quality and airborne noise problems and their solutions are often closely interlinked.

Road vehicle exhaust pipes and tyre/road interactions; aircraft in flight; diesel trains; extractor fans; construction; excavation; demolition; waste handling; industrial combustion sources; diesel generators; fireworks. All generate both forms of airborne pollution, and broadly speaking the air and noise pollution they generate affect most the same human receptors, namely those who live their lives closest to the pollution sources. They can have a combined overall acute and chronic effect on those people's health and well-being. Decision-making relating to one form of airborne pollution should therefore take account of the other whenever the two are linked, in order to maximise the well-being benefits of proposed interventions and avoid unintended consequences.

Proposed solutions to local air quality and noise problems are often common to both, for example, source containment, source/receiver separation, vehicle speed limits, moves to cleaner/quieter technologies, etc. Interventions may therefore bring both air quality and noise benefits, but sometimes what benefits one will worsen the other. Air quality and airborne noise policies and action plans should therefore be joined up, to achieve the best overall local health outcomes. This is consistent with the WFG Act's ways of working, one of which is policy integration.

4.2 Action to date

The WHO has ranked air and noise pollution as the top two environmental contributors to ill health in Western Europe. However, the health evidence and EU legislation on airborne environmental noise (notably Directive 2002/49/EC) have historically lagged several years behind those for air quality (e.g. Directive 96/62/EC), resulting in completely separate EU legislative frameworks which are not linked in any way, in contrast with how the physical phenomena and potential interventions are closely intertwined in the real world.

Despite the unconnectedness of EU legislative frameworks, Welsh Ministers have long recognised the close relationship between air and airborne noise pollution. In 2012 they issued an addendum to Local Air Quality Management (LAQM) policy guidance in Wales focusing on air quality and traffic noise. This guidance, which

required consideration be given to traffic noise in local air quality plans in Wales, was subsumed into the main LAQM policy guidance document¹⁵ in 2017.

A chapter on integrating noise and air quality policy was included in Wales's Noise and Soundscape Action Plan 2018-2023. The Ministerial foreword stated:

“Wherever air and noise pollution are both present and their sources are the same or related, they should be considered together rather than as separate problems. Air and noise pollution are both airborne pollutants, which can have a combined effect on the public’s health and, in many situations, they can be tackled to greatest effect through shared solutions.”

The body of the Plan contained the following commitment:

“By defining environmental noise as an airborne pollutant within its Clean Air Programme, the Welsh Government will create and pursue any opportunities to further align noise/soundscape and air quality policy and regulation in Wales over the course of the next five years, in order to achieve multiple benefits from our actions.”

In 2018, PPW brought air quality, noise and soundscape planning policy together in a shared chapter for the first time. Previously, air quality had shared a section with water quality; and noise with light pollution.

In 2019, the Welsh Government commissioned an external review¹⁶ of the synergies and conflicts between air quality and noise. The review recommended considering a joint or integrated approach to air quality and noise action planning, and aligning the timing of air quality and noise assessment and reporting cycles.

The Noise and Soundscape Action Plan 2018-2023 and Wales's 2020 Clean Air Plan both contained a commitment to replace TAN 11: Noise (1997) with a new integrated TAN covering air quality, noise and soundscape. We consulted¹⁷ publicly on this new TAN in its draft form from October 2022 to January 2023.

4.3 Local Air Quality Management (LAQM)

The Environment Act 1995 requires local authorities to review and assess air quality, and to produce an action plan when they identify a risk of non-compliance with any of the national air quality objectives. The Welsh Government issued revised policy guidance in 2017 to help local authorities carry out their LAQM duties in line with the

¹⁵ <https://www.gov.wales/air-quality-management-guidance-local-authorities>

¹⁶ Extriium, An update of the synergies and conflicts between air quality and noise, December 2019. <https://www.gov.wales/update-synergies-and-conflicts-between-air-quality-and-noise-report>

¹⁷ <https://www.gov.wales/revised-planning-guidance-relation-air-quality-noise-and-soundscape>

ways of working in the WFG Act. The guidance notes that the purpose of LAQM is to improve human health and quality of life, and that this improvement to health and quality of life will be greater if improved soundscapes are achieved alongside reductions in air pollution.

The guidance states that whenever developing local air quality action plans or wider policies with a view to improving air quality, local authorities should ask themselves the following questions:

- Are there existing environmental noise pollution issues associated with the known air quality issues? If so, can we address them at the same time?
- Is there a risk of some of our proposed air quality actions making the environmental noise pollution situation worse? If so, how can we mitigate this risk?

This approach will continue to be embedded in the LAQM guidance as it is updated to support LAQM legislative changes brought in through the Environment (Air Quality and Soundscapes) (Wales) Bill to ensure local air quality action seeks to maximise potential benefits to soundscapes.

4.4 The Environment (Air Quality and Soundscapes) (Wales) Bill

The Environmental Noise Directive (2002/49/EC), which underpins the Environmental Noise (Wales) Regulations 2006, is more than twenty years old. The 2006 Regulations have helped move noise policy forward in a number of important ways. These include highlighting the extent of population exposure to transportation noise, and its resultant health effects, and promoting innovations in computer modelling. But the Regulations also have severe limitations: They ignore forms of noise, notably neighbour noise, which are less easy to map, but may be just as detrimental to the well-being of the population as transportation noise. The evolution of strategic noise mapping under the Directive and Regulations has precluded comparisons being made from one round of noise maps to the next. The industrial noise maps required by the Regulations are of questionable value to decision-makers. The Directive and Regulations do not set out what the five-year noise action plans they require to be produced are expected to achieve in practice. They focus attention on sound levels and quiet areas rather than soundscape quality. They give greater attention to big cities than to smaller settlements. And they don't link up in any way with EU-derived air quality legislation.

The Welsh Government has addressed some of these shortcomings by going further than the Regulations require. We produced a national Noise (and Soundscape) Action Plan in 2013 and 2018, covering all forms of airborne sound across the whole of Wales, rather than limiting ourselves to the narrowly defined action plans required under the Regulations. We supplemented the strategic noise maps with evidence on

neighbour noise obtained through the National Survey for Wales in 2017-18 and 2021-22. In 2022, we made use of Defra's new Noise Modelling System to map all roads and railways across Wales and establish a national model that has the potential to be updated and re-run to generate comparable outputs in subsequent years¹⁸. And we have linked up noise and air quality policy as described in section 4.2 above.

The PfG commitment to pass a Clean Air (Wales) Act provides us with an opportunity to put much of what we have done voluntarily on a statutory footing. The scope of the proposed Bill has been widened to cover the air environment more fully, by including airborne noise and soundscape. As drafted, what is now the Environment (Air Quality and Soundscapes) (Wales) Bill¹⁹ makes provision for Welsh Ministers to produce a national strategy on soundscapes (this Noise and Soundscape Plan) covering all forms of airborne sound in Wales, with its five-year review cycle aligned with that for the national air quality strategy (our Clean Air Plan) and the electoral cycle of the Welsh Parliament. Mirroring the national air quality strategy, local authorities and other relevant Welsh public authorities will have to have regard to the policies in the national strategy on soundscapes when exercising any function of a public nature that could affect soundscapes in Wales.

By putting the Noise and Soundscape Plan on a more complete statutory footing through this Bill, we are enabling future Welsh Governments to focus their attention on whatever aspects of noise and soundscape policy are judged the highest priority for government attention. Each new or revised Plan will need to be evidence-based and developed transparently and collaboratively with stakeholders. If Ministers wish to do so, they may produce an integrated national strategy for the air environment, covering both air quality and airborne sound.

¹⁸ https://datamap.gov.wales/layergroups/geonode:Environmental_Noise_Mapping_2022

¹⁹ <https://business.senedd.wales/mglIssueHistoryHome.aspx?lId=40984>

5 Considering soundscapes as we decarbonise our society

5.1 Key message: taking the public with us

The decarbonisation of our society is dependent on the public's attitude to low-carbon and renewable energy technologies. The effort to decarbonise can therefore be undermined if those technologies generate noise that results in annoyance, complaints, adverse media reports and/or regulatory action to abate the noise. It is therefore essential to roll out these new technologies in such a way as to minimise the likelihood, severity and frequency of those noise-related outcomes.

5.2 Heat pumps

The 2021 Future Trends Report²⁰ states that the Committee on Climate Change projects a likely doubling of electricity demand in Wales by 2050 due to new demands from the societal transition to renewable electricity sources.

With the drive to reduce carbon emissions in our domestic heating systems, a renewable alternative to traditional gas and oil boilers is required. Heat pumps are generally seen as one credible alternative, delivering cost-effective heating (and cooling) from a renewable electric power source. While other technologies such as hydrogen may offer a potential solution for some domestic heating needs, heat pumps are widely expected to feature as part of Wales's and the wider UK's answer to the question of how to provide low carbon domestic heating.

As detailed in the Regional Energy Strategies, Wales is expected to see a significant rise in the installation of heat pumps by 2035 if we are to meet our net zero ambitions. The exact locations where heat pumps or other renewable heating technologies will be most effective are set to be mapped out in Local Area Energy Plans being developed by each local authority in Wales, with a National Plan due to be produced by 2024.

Permitted development rights within Wales²¹ currently require air source heat pumps (ASHPs) to be installed on domestic premises at least three metres from the site boundary, regardless of the land use beyond that boundary, if the installers wish to avoid the need to submit a full planning application. The installation also needs to be in accordance with the Microgeneration Certification Scheme (MCS)²². These requirements are considered a potential barrier to the uptake of heat pumps in Wales, especially in a terraced housing context.

²⁰ <https://www.gov.wales/future-trends-2021>

²¹ <https://www.legislation.gov.uk/wsi/2012/1346/article/2/made>

²² <https://mcscertified.com>

In 2022, the IOA and the Chartered Institute of Environmental Health (CIEH) jointly produced public-facing and professional briefing notes²³ on managing the noise risks associated with ASHPs. To take this work further, in 2022, the Welsh Government commissioned Sustainable Acoustics Ltd and Apex Acoustics Ltd to review all the available evidence on this topic and provide expert advice to inform potential changes to permitted development rights in Wales. In 2023, the findings of this review²⁴ have begun to feed into a wider piece of work by the UK Government, which we hope will lead to improvements to the MCS, the industry-led quality assurance scheme underpinning the planning rules for ASHPs in both England and Wales.

The Welsh Government welcomes the MCS Charitable Foundation's willingness to work with the Welsh and UK Governments to introduce rapid improvements to the MCS 020 assessment methodology. We anticipate that these improvements, once implemented, will enable us to update the rules for permitted development rights for domestic air source heat pumps in Wales in a way that does not expose people in densely populated areas to an unacceptable risk of noise nuisance from the rollout of this important decarbonising technology.

5.3 Onshore wind turbines

As stated in *Future Wales: The National Plan 2040*²⁵, Wales's topography and prevailing weather conditions present many opportunities to generate energy from the wind without harming our cherished protected landscape areas. Where development proposals for renewable energy generation from wind or solar technologies and equipment come forward, they must respond well to their context and contribute to meeting our ambitions for low carbon energy generation.

Irrespective of location or scale, the design and micro-siting of proposals must seek to minimise their impact, particularly those in close proximity to homes and tourism receptors. Communities should be protected from significant cumulative impacts to avoid unacceptable situations whereby, for example, smaller settlements could be potentially surrounded by large wind schemes.

The current UK wind turbine noise assessment guidance comprises a report known as ETSU-R-97, published by the Department of Trade and Industry in 1996, and a Good Practice Guide on the application of ETSU-R-97, published by the IOA in 2013, with Supplementary Guidance Notes published by the IOA in 2014. As it was considered the most up-to-date professional guidance for assessing onshore wind

²³ <https://www.ioa.org.uk/new-heat-pump-briefing-notes-calculation-sheet-ioa-cieh>

²⁴ <https://www.apexacoustics.co.uk/wp-content/uploads/2023/10/NOISE-FROM-ASHPS-WHAT-WE-KNOW.pdf>

²⁵ <https://www.gov.wales/future-wales-national-plan-2040-0>

turbine noise available at that time, the Welsh Government has endorsed²⁶ the use of this guidance in Wales.

Since the ETSU-R-97 guidance was published, the context has changed:

- Onshore wind energy generation technology has evolved.
- There is increased understanding of the range of physical and operational factors that influence wind turbine sound.
- Further research has been undertaken to investigate the effects of wind turbine sound exposure on individuals and communities.
- A feature of wind turbine sound known as “amplitude modulation” has been reported as impacting people beyond the extent that was considered at the time of ETSU-R-97.
- New approaches to addressing the impacts of wind turbine noise, including amplitude modulation, have been developed.
- The UK Government has introduced legislation mandating the target to reduce all greenhouse gas emissions to net zero by 2050, the achievement of which will require increased deployment of onshore wind energy generation capacity.

The UK Government recently commissioned a review on the adequacy of ETSU-R-97 and the IOA Good Practice Guide. The findings of this review were published in February 2023²⁷.

It is clear that the current UK guidance would benefit from being updated to address a number of unresolved issues, including how to assess the impacts of amplitude modulation. As a minimum, the WSP review of ETSU-R-97 raises questions that need to be answered by professional organisations with expertise in this field.

²⁶ <https://www.gov.wales/updates-technical-advice-note-tan-11-noise-cl-01-15>

²⁷ <https://www.wsp.com/en-gb/insights/wind-turbine-noise-report>

6 Natural soundscapes

6.1 Key message: the importance of maintaining a connection with nature

The presence of nature within our villages, towns and cities provides a precious contrast to, and relief from, the busy built environment. Even a small urban green space may offer peace and quiet, and a sensory experience conducive to mental well-being, where natural sounds such as flowing water, birdsong, the wind in the trees and human conversation are more prominent than noise. The benefits of such qualities of place may be more fully realised when they coincide with visual beauty, a sense of security and ease of access.

Areas where these qualities all exist side by side (for example, Green Flag Award-winning sites and tranquil local nature reserves) should receive the greatest protection from noise intrusion that would risk compromising the place's overall sense of tranquillity.

6.2 Tranquil urban green space

Tranquillity means different things to different people, but it is generally understood to refer to an untroubled state, characterised by peace and calm and free from unwanted disturbances. This may refer to either a state of mind or the quality of a particular environment. It can be quantified either in terms of the absence of unwanted intrusions or by a balancing of positive and negative factors.

Excessively high noise levels where human beings are present are a problem to be avoided or addressed regardless of an area's other qualities, but quiet on its own does not make an area good²⁸. If a space open to the public is ugly or feels unsafe, then relatively little benefit will be felt from its being quiet.

An area may present a high-quality sound environment but require specific improvements in terms of landscape, nature, safety or access before it can act as an effective refuge from its noisy surroundings. In such cases, addressing those deficiencies may be just as beneficial in tranquillity terms as seeking to quieten a noisy space.

Healthy, resilient and diverse urban green infrastructure that is valued for its contribution to tranquillity will deliver the widest range of benefits, including soaking

²⁸ Indeed, quite high sound levels may be considered appropriate and even necessary to create the desired atmosphere within certain spaces at certain times, for example when those spaces are used for live performance or sporting events. In those cases, the sound is not unwanted and so does not constitute noise for the users of the space, provided the level of exposure does not damage their hearing. Noise breakout may of course be an issue for people outside the venue, and the agent of change principle should be applied where possible to resolve any conflicts.

up water from rainstorms, trapping air pollution particles, reducing the effect of heat waves and providing places for healthy exercise. Tranquil urban green spaces should be seen as a very cost-effective way to deliver all seven of our national well-being goals, and not just as providers of respite from excessive noise.

The Environmental Noise (Wales) Regulations 2006 require our environmental noise action plans to identify “quiet areas in agglomerations” and aim to protect them against an increase in noise. The Welsh Ministers confirmed the designation of 63 quiet areas in agglomerations, with the agreement with the relevant local authorities, when drawing up the first national noise action plan for Wales in 2013. These designations remain in place following EU Exit:

- [Quiet area map: Cardiff and Penarth](#)
- [Quiet area map: Newport](#)
- [Quiet area map: Swansea and Neath Port Talbot](#)

However, Welsh Government policy is for decision-makers to have the same regard to locally valued tranquil urban green space wherever it occurs in Wales, and not just in the three agglomerations defined under the 2006 Regulations.

PPW paragraph 6.7.18 states:

“Early consideration is required to ascertain whether the location and design of proposed development is acceptable where air pollution or noise-generating development is likely to affect a protected species, or is proposed in an area likely to affect a statutorily designated site (such as Natura 2000 sites or SSSIs) or a tranquil urban green space (including but not limited to formally designated ‘quiet areas’) valued for the restorative respite and contact with nature that they offer to residents of busy towns and cities.”

PPW paragraph 6.7.25 states:

“Planning authorities should identify areas of cultural or historic importance to be given special consideration in terms of soundscape where this may be necessary to safeguard the vibrancy of places or provide tranquil, restorative environments within busy built-up areas. As well as this, it will be invaluable to identify synergies between the mapping of green infrastructure and the moderating effect the protection of, or provision of, green infrastructure may have in terms of maintaining good air quality and appropriate soundscapes. This will include, but is not limited to, protecting tranquillity, the role of tranquil green spaces such as the ‘quiet areas’ designated in noise action plans and the benefits of green infrastructure as part of good design.”

The designation of quiet areas in Welsh agglomerations is therefore simply a recognition that these areas are among the many tranquil urban green spaces right across Wales that should be valued and protected by local decision-makers. Locally valued tranquil green spaces in smaller settlements should not be regarded as any less important than those in the larger agglomerations, which are afforded formal quiet area status.

6.3 Tranquillity & Place: an NRW-led mapping initiative

In the Noise and Soundscape Action Plan for Wales 2018-2023, NRW committed to:

- investigate how noise mapping data for urban areas can be included in area statements under the Environment (Wales) Act 2016 and presented in the context of urban green space management, including setting out the wider tranquillity context necessary for the appreciation of soundscapes; and
- continue to work with the Green Flag sub-licence holder for Wales, Keep Wales Tidy, to ensure that judges trained in Wales have a proper understanding of tranquillity as it relates to the Green Flag Awards.

Subsequent to this, NRW has been working with consultants to deliver a nationally consistent Tranquillity & Place resource to use as an evidence base to inform policy intent, practice and provision for well-being benefits. The Tranquillity & Place resource comprises mapped themes that will merge to produce an overall relative Tranquillity & Place map for Wales.

Theme		Completion
1	Relative abundance, perception or experience of nature, natural landscapes, and green spaces	2022
2	Relative freedom from intrusive visual disturbance and human influence	2022
3	Relative dark skies	2021
4	The sound environment	2024
5	Visually tranquil areas: a cumulative map of themes 1 to 3	2022
6	Tranquillity & Place: a cumulative map of themes 1 to 4	2024

This involved creating:

- Wales-wide GIS datasets and maps of tranquillity for each theme
- maps and zonal statistics for the following geographical contexts:
 - the four regions of *Future Wales: The National Plan 2040*
 - local authorities
 - National Parks and Areas of Outstanding Natural Beauty
 - area statements
 - National Landscape Character Areas
 - LANDMAP visual and sensory areas
- evidence reports

The importance of tranquillity as a landscape asset and important cultural service was central to this initiative, the project managers having recognised that highly valued tranquillity contributes to landscape value and identity, and that while tranquillity contributes to health, well-being, spiritual benefit and quality of life, it has limited resilience.

Visit the [Tranquillity & Place “storymap”](#) and [Dark Skies and Light Pollution in Wales](#) for further information.

You can download Tranquillity & Place: Visually Tranquil Areas from [DataMapWales](#).

6.4 The effects of anthropogenic sound on animals

It stands to reason that if human health and well-being can be adversely affected by incongruous sounds, so might many forms of wildlife. However, it is not straightforward to predict what that impact might be. The audible range of frequencies and the extent to which hearing is relied upon to survive and thrive varies from species to species. Mammals and birds can certainly be disturbed by the presence of human sounds, and studies have shown how it can result in changes in their behaviour. What is less well understood is the extent to which sounds that cause disturbance and changes in the behaviour of individuals and communities might affect the population health of the species as a whole²⁹.

The presence of a species protected under legislation is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained. As noted above, early consideration is required to ascertain whether the location and design of proposed development is acceptable where noise-generating development is likely to affect a protected species, or is proposed in an area likely to affect a statutorily designated site.

²⁹ University of Bristol, The Effects of Noise on Biodiversity (NO0235): Final Report for Defra, 2012. <https://randd.defra.gov.uk/ProjectDetails?ProjectID=18136>

In 2019, a House of Commons Petitions Committee inquiry³⁰ reported evidence gathered of fireworks producing fear responses in animals. For example, the RSPCA highlighted a 2013 study, which showed that fireworks were the most common cause of fear responses in dogs, and a 2005 study finding that 45% show signs of fear when they hear fireworks. The RSPCA noted that animals displaying fear responses not only suffer psychological distress but can also cause themselves injuries, sometimes very serious ones, as they attempt to run or hide from the noise³¹.

The British Veterinary Association confirmed that the effects of firework noise on animals were real, and could lead to longer-term phobias, stating:

*“Studies, reports and animal welfare organisations all agree that loud and high-pitched fireworks can have a negative impact on animal health and welfare by causing not just physical harm, but stress or fear responses across a range of species, including companion animals, wildlife, horses, livestock and zoo animals... As animals have more acute hearing than humans, many show stress, fear or even phobia responses to loud and high-pitched noises.”*³²

Although the ISO definition of soundscape refers specifically to how sound is perceived and experienced by humans, the Welsh Government takes the view that consideration of how sounds are perceived and experienced by other air-breathing vertebrate species, whether wild or domesticated, should form an integral part of any decisions that may affect the airborne sound environment in Wales.

6.5 Nature-based solutions to air and noise pollution

PPW outlines how green infrastructure may have a moderating effect on air and noise pollution.

PPW paragraph 6.7.8 suggests incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors.

PPW paragraph 6.7.12 adds:

³⁰ House of Commons Petitions Committee, Fireworks, October 2019.

<https://publications.parliament.uk/pa/cm201919/cmselect/cmpetitions/103/10306.htm>

³¹ <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/petitions-committee/fireworks/written/99445.html>

³² <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/petitions-committee/fireworks/written/99404.html>

“Green infrastructure provision will be an important means of addressing the cumulative impacts of air and noise pollution and soundscapes on individuals and society and provide benefits for social and ecosystems resilience.”

Further advice on the role green infrastructure can play in tackling air and noise pollution, and its limitations in that regard, may be found in Annex C.

6.6 Protected landscapes

The landscapes of Wales are rich and varied. Many Welsh landscapes are iconic, and a quarter of the land area of Wales is designated as either a National Park or Area of Outstanding Natural Beauty. The character and special qualities of all our places and landscapes, both urban and rural, can provide a strong sense of place, inspiration and belonging, and contribute to the distinctive cultural identity of Wales. Soundscapes are an integral part of people's experience of protected landscapes and sound / tranquillity may be a special quality of protected landscapes.

7 Managing the sounds of transportation

7.1 Key message: soundscapes on the move

As a baseline, a question asked in the National Survey for Wales 2018-19 found that some 15% of people in Wales were either fairly dissatisfied or very dissatisfied with the level of traffic noise in their local area. Sound from other forms of transport, such as military low flying³³ or shipping, can also affect the quality of life of people in certain rural or coastal communities. On the other hand, civil aviation noise³⁴ is less of an issue in Wales than it is in the other UK administrations.

The sound of our transport system has been changing, and will continue to evolve over the course of the next few decades. Vehicles on our roads and railways are gradually going electric, which virtually eliminates the sound of their engines, while roads in built-up areas are adopting lower speed limits. These two changes will significantly reduce transportation sound levels in our villages, towns and cities. However, artificial sound must be added to electric vehicles at lower speeds for safety reasons, while noise associated with vehicles travelling at high speed, and excessively loud vehicles in particular, remains a challenge. There is also a risk of noise impacts arising from newer forms of transport such as electric scooters and UAVs.

Sustainable travel is at the heart of *Llwybr Newydd: The Wales Transport Strategy 2021*³⁵. One of its well-being ambitions is to improve air quality and reduce environmental noise associated with transport. It says we will reduce decibels and increase healthier soundscapes, keep noise to an acceptable level in the design of new developments, adopt noise mitigation on motorways and quieter vehicle travel, and grow active travel in line with the actions in our Noise and Soundscape Plan.

Llwybr Newydd prioritises bringing services to people in order to reduce the need to travel. It also states that by 2040, freight and logistics will have made a significant contribution to well-being in Wales because there are fewer greenhouse gas emissions, better air quality and less environmental noise from freight and logistics.

7.2 Strategic noise maps

The results of the 2022 strategic noise mapping exercise, which covers all roads and railways across Wales, may be found in Annex A.

³³ For information and advice on military noise, see Annex D.

³⁴ For information and advice on civil aviation noise, visit the Civil Aviation Authority (CAA)'s website: <https://www.caa.co.uk/consumers/environment/noise/noise>

³⁵ <https://www.gov.wales/llwybr-newydd-wales-transport-strategy-2021>

It is expected that the noise maps will continue to inform a range of activities carried out by public bodies in Wales over the next five years, including but not limited to:

- prioritising noise mitigation works, such as noise barriers and resurfacing;
- the setting of local speed limits;
- development planning, in accordance with the new TAN 11;
- air quality, green infrastructure, transport and well-being plans and strategies;
- assessments of local well-being produced under the WFG Act³⁶; and
- the State of Natural Resources Report and area statements produced under the Environment (Wales) Act 2016.

7.3 Speed limits in Wales

In September 2023, we reduced the default speed limit on roads in built-up areas of Wales from 30 miles per hour to 20 miles per hour³⁷.

Researchers in Switzerland³⁸ surveyed about 1,300 randomly sampled inhabitants, before and after a speed regime changeover from 50 kilometres per hour to 30 kilometres per hour along 15 small and mid-sized city streets in Zurich, and also carried out individual sound exposure calculations based on traffic counts and on-site speed measurements. They reported significant reductions in both calculated sound levels and reported annoyance and sleep disturbance amongst those surveyed. As the reported benefits were greater than those expected from sound level reductions alone, the researchers concluded that, besides the reduced sound level, additional factors related to the lower driving speed must play a role in the reduction of annoyance and sleep disturbance.

Guidance on setting local speed limits in Wales is being updated for all highway authorities to use, reflecting the change in default speed limit to 20 miles per hour, the aspirations of the Wales Transport Strategy and other Welsh Government policies. Noise and tranquillity are being considered in the updated guidance.

³⁶ The Well-being of Future Generations (Wales) Act 2015 (Assessments of Local Well-being) Regulations 2017 require PSBs to take into account the most recent strategic noise maps made and adopted by the Welsh Ministers when they carry out their assessments of local well-being.
<https://www.legislation.gov.uk/wsi/2017/939/made>

³⁷ <https://www.gov.wales/introducing-default-20mph-speed-limits>,
<https://www.legislation.gov.uk/en/wsi/2022/800/made>

³⁸ Brink et al., Effects of traffic speed reduction interventions on noise-induced annoyance and self-reported sleep disturbances: a longitudinal study in Zurich, Inter-Noise 2022.
<https://az659834.vo.msecnd.net/eventsairwesteuprod/production-inconference-public/c94231d483894ae6a7edd3ffa8d902f7>

7.4 Vehicle idling

Petrol and diesel vehicles can cause annoyance and distraction if they keep their engines running for sustained periods of time while stationary. Those affected include shift workers trying to sleep, children engaged in learning activities, and people working from home. The annoyance is greater because the people affected see idling noise as entirely unnecessary and easily avoided by the noise-maker.

The Welsh Government does not consider the current fixed penalties regime for vehicle idling to provide sufficient deterrence to drivers idling unnecessarily on the public highway. Neither does the current fixed penalty charge of £20 make it financially viable for local authorities to carry out enforcement. The Environment (Air Quality and Soundscapes) (Wales) Bill aims to rectify this situation.

Our primary aim is to enhance the deterrence provided by the current anti-idling penalties regime. We will do this by creating a power for the Welsh Ministers to specify in regulations a range (in terms of monetary value) within which local authorities will have discretion to set fixed penalties at a level of their choosing, depending on the circumstances in which the offence of stationary idling was committed. For example, local authorities may choose to apply penalties that are higher in the permissible range in cases where vulnerable groups are being exposed to idling emissions, for example, outside schools.

Outside of the Bill, the Welsh Ministers intend to issue anti-idling guidance to local authorities under section 88 of the Environment Act 1995. This guidance is intended to support and complement the vehicle idling provisions within the Bill. The guidance would include advice on administering the new penalties regime and guidelines on including vehicle idling within a wider package of complementary measures, which could work in tandem to achieve cumulative reductions in airborne pollution.

It is anticipated that local authorities would apply a higher penalty in more serious cases, for example in relation to identified idling hotspots in the immediate vicinity of vulnerable receptors (such as near a school, healthcare setting or care home), or in locations with poor air quality where sustained vehicle idling occurs, such as major transport hubs in town or city centres.

The Welsh Government will also roll out a programme of communications, awareness-raising and education to bring about behaviour change to reduce instances of unnecessary vehicle idling.

7.5 Illegally noisy vehicles

In 2023, the Department for Transport (DfT) consulted on potential improvements to the UK's MOT test³⁹. The DfT noted that vehicle noise was an issue of concern to many people:

“In addition to causing annoyance within communities, it can also have serious environmental health effects. Vehicles are required to meet strict noise limits before they are placed on the market and it is illegal to modify a vehicle's silencer to make it noisier if being used on public roads. However, experience shows that some vehicles are fitted with noisier (or no) silencer and other modifications that are noisier than desirable.

“At MOT, vehicles are currently subject to a subjective examination of the noise level. The MOT could potentially be enhanced by a metered sound test, however, the environment within many MOT stations is likely to provide challenges for accurate and reproducible sound level measurement. For example, many garages have higher than average background noise levels or lack sufficient space to avoid interference from surfaces that might reflect sound. There is also a risk of nuisance to people living near an MOT testing station if changes increase noise levels produced by the centre.”

The DfT sought views on what enhancements to the MOT could be made to tackle the issue of excessive vehicle noise and whether there are suitable technological solutions that would enable a metered sound level test to be undertaken in a typical MOT garage.

Cars and motorbikes with illegally modified exhausts remain a source of complaints on many roads in Wales, and the Welsh Government looks forward to any proposals to improve the current MOT test to help to address this problem.

7.6 Managing noise on our motorways and trunk roads

The Welsh Government has tackled road noise in various locations across the Welsh Strategic Road Network. It has carried out noise reduction schemes on the A55 at Abergele and the A40 near the Bryn, which included the construction of noise barriers on the trunk road boundary. It has also developed a new low noise surfacing material, known as WG SMA, which is currently undergoing testing to establish its noise reducing properties. Early indications demonstrate that this could reduce road traffic noise levels by approximately 4 decibels. The Welsh Government is also undertaking trials to reduce road noise on concrete carriageways through the use of

³⁹ <https://www.gov.uk/government/consultations/changes-to-the-date-of-the-first-mot-test-and-research-into-other-mot-enhancements>

Cold Applied Ultra Thin Surfacing (CAUTS) as a surface overlay and Stress Absorbing Membrane Interlayer (SAMI) across concrete joints. It has been established that concrete carriageways generate the highest levels of traffic noise on the Strategic Road Network and therefore these sites were prioritised for mitigation over the last five years.

The Welsh Government intends to use the new noise maps to identify priority areas where noise mitigation may be required between 2023 and 2028. Priority areas will be determined based on modelled noise levels, population affected and perception of noise. Often the areas most affected by noise are located near sections of poor road surfacing and bridge joints, therefore mitigation will likely align with ongoing and planned maintenance regimes. The four main mitigation measure options to address high priority noise sites will be:

- Resurfacing using the low noise surfacing material developed by the Welsh Government which has recorded improvements in low noise characteristics and improved durability.
- Enhancing the soft estate (green infrastructure) adjacent to communities to provide visual screening, which has been found to reduce the perception of noise and improve well-being.
- Implementing lower speed limits, in line with updated guidance on setting local speed limits in Wales.
- Noise barriers would also be considered but as a last resort measure due to carbon increase, environmental consequences, and cost.

Complaints received from residents in high noise areas will be used to identify priority sites, as these will help inform the perception of road noise. However, complaints will not be the deciding factor of which sites will be progressed as this will be based on whether the mitigation measures above can be implemented.

The Welsh Government intends to monitor the results of noise camera trials carried out elsewhere in the United Kingdom and may implement these in areas of significant anti-social noise disturbance in the future depending on their success.

As we refine our prioritisation on the back of recent reports such as the Roads Review⁴⁰, understand more about the effects of noise and widen the mitigation options that are possible, certain schemes may be raised higher in prioritisation rank.

7.7 Managing noise on our railways

Electrification has the potential to significantly reduce the level of sound generated by individual trains. However, an increase in services and the number of residential

⁴⁰ <https://www.gov.wales/roads-review>

properties being built close to existing railways and railway infrastructure may result in increased noise exposure and complaints in some areas. If the railways are to be seen as a truly sustainable, environmentally friendly mode of transport, responsible bodies cannot be complacent about future levels of railway noise.

The agent of change principle should be applied whenever new noise-sensitive development is proposed close to existing railways and railway infrastructure. This is the principle that a business or person responsible for introducing a change is responsible for managing that change.

The rail industry is required to respond to noise complaints received. These may occur in particular where the noise has an attention-catching character, for example, train horns, curve squeal and rail joints, or as a result of engineering works.

Responsibility for railway-related noise in Wales is split across a number of different bodies, depending on the nature and location of the sound-generating activity. Information on how these organisations manage noise may be found on their respective websites. They include:

- [Network Rail](#)
- [Transport for Wales \(TfW\)](#)
- [Great Western Railway \(GWR\)](#)
- [Other train-operating companies](#)

The Rail Safety and Standards Board (RSSB) has convened a Noise Working Group⁴¹ whose purpose is to lead a coherent and clear narrative on noise and vibration within the rail industry. This group will collate ideas from across the industry and influence policy, legislation, and standards. It will support the ongoing development of projects to support the rail industry's plans for a quieter railway for its neighbours, customers and passengers.

⁴¹ <https://www.rssb.co.uk/what-we-do/groups-and-committees/sustainability/sustainable-rail-executive/sustainable-rail-leadership-group/noise-working-group>

8 Managing the sounds generated by businesses

8.1 Key message: appropriate soundscapes for a healthy economy

Just as a person's perception of a given sound environment varies with context (time, place, what the person is doing at the time, what sort of a day they're having, etc.), the extent to which a given sound environment is good or bad for local businesses also varies with context. And it doesn't just come down to the decibels. A busy town centre generating a lot of different sounds can come across as confusing, threatening and chaotic (surely bad for business) or warm, vibrant and exciting (surely more attractive to customers) depending on what kind of sounds are in the mix. Similarly, a relatively quiet business area can come across either as bleak, economically dead and a potentially unsafe place to be, or tranquil, pleasant and a health-promoting working environment, depending on whether certain sounds are present or absent.

When it comes to making noise, all of us should do our best not to annoy people unnecessarily, and this includes when in our place of work. In terms of regulation, local authorities have a duty to intervene when business activities generate noise so severe that it constitutes a **statutory nuisance** (see section 9.3). Depending on the type of business, noise may also be controlled by means of **planning conditions**, **entertainment licences** and/or **environmental permits**. Finally, the law on **health and safety** requires employers to protect their employees and the public from suffering hearing damage due to unsafe levels of sound.

8.2 Post-pandemic ways of working

The Welsh Government's vision for remote working is to embed a culture that values and supports more options for remote work in the workplace, in ways that are consistent with our commitment to fair work.

We want to:

- see 30% of the workforce working remotely on a regular basis;
- work in partnership with employers, workers, trade unions and others to support a shift to more people working remotely, helping them to build on progress made during the pandemic and better understand the benefits of remote working;
- take action against climate change by reducing the need to travel, thereby reducing greenhouse gas emissions associated with transport;
- improve air quality by reducing congestion and softening rush hour peaks;
- create inclusive workplaces in our local communities that have equality at the heart of decision-making;

- promote a hybrid workplace model of office, home and local hubs to enable people to live and work in their local communities; and
- increase opportunities for more fair work and promote well-being and work-life balance in the Welsh workforce.

A range of benefits and risks associated with remote working are listed in *Smarter working: a remote working strategy for Wales*⁴². The potential environmental benefits identified include reduced noise emissions from commuter traffic. The potential risks include isolation and disconnect from colleagues. Both benefits and risks are identified in relation to mental health and well-being.

Many remote working environments sound different to an office environment, and inevitably, some remote working environments are better than others. A decision by a person to work remotely may be an indication that the person's remote working environment is one of good acoustic quality, and offers sufficient privacy for sensitive conversations not to be overheard. But this may not always be the case. Even a normally quiet home can experience high levels of daytime noise for a significant duration, for example, if a neighbour carries out renovations, or if roadworks or construction activities are undertaken nearby. Examples of incompatible daytime uses of adjoining residential properties may include a person providing music lessons in their home, or children playing during school holidays, adjacent to the home workspace of a person carrying out noise-sensitive office work.

Employers and managers need to bear soundscape quality in mind as part of their consideration of the well-being of staff working remotely, along with the safe handling of any personal or otherwise sensitive data that may need to be discussed aloud by remote workers (e.g. in a room with an open window).

8.3 Vibrant town centres

The rapid growth of remote working presents both a new challenge and an opportunity. More remote working means that people can work and live locally, and there may be a shift in footfall from city centres to the suburbs as people spend more time at home or in their local area. Early indications are that larger centres will be able to reinvent themselves by adapting design and use of urban space. However, there are likely to be particular risks for urban areas with lower levels of amenity.

As urban centres evolve in response to changing lifestyles, new noise risks will present themselves, alongside opportunities to create and maintain healthier and more diverse urban soundscapes. Figure 1 in Chapter 1 offers decision-makers a generalised framework for determining the level of noise control and/or soundscape

⁴² <https://www.gov.wales/smarter-working-remote-working-strategy-wales-html>

assessment and intervention warranted when making choices that may affect soundscapes in Wales.

Regulated entertainment in England and Wales falls under the Licensing Act 2003. The Home Office issues guidance to licensing authorities on the discharge of their functions under the 2003 Act. This guidance was revised in December 2022⁴³.

The 2022 Home Office guidance supports the agent of change principle. In the chapter on statements of licensing policy, it says:

“Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required by the local planning authority to provide suitable mitigation before the development has been completed.”

The Home Office guidance also states that while licence conditions should not duplicate other statutory provisions, licensing authorities and licensees should be mindful of requirements and responsibilities placed on them by other legislation. For local authorities in Wales, those responsibilities would include acting in accordance with the sustainable development principle under the WFG Act.

8.4 Outdoor entertainment

In 1995, the Noise Council published a Code of Practice on Environmental Noise Control at Concerts, which covers large musical events, including those held outdoors. At the time of writing it is still in widespread use⁴⁴. However, it is currently undergoing review, and the Welsh Government looks forward to more up-to-date professional guidance on this subject being published in the very near future.

8.5 Environmental regulation

Certain industrial sectors require an environmental permit before they can operate, and this may place additional obligations on companies in respect of noise control. In Wales, environmental permits are issued either by NRW or by local authorities.

⁴³ <https://www.gov.uk/government/publications/explanatory-memorandum-revised-guidance-issued-under-s-182-of-licensing-act-2003>

⁴⁴ See, for example: [https://www.cirrusresearch.co.uk/library/documents/ebooks/Festivals-&-Outdoor%20Events-\(digital\).pdf](https://www.cirrusresearch.co.uk/library/documents/ebooks/Festivals-&-Outdoor%20Events-(digital).pdf)

In 2021, the Environment Agency, NRW, the Scottish Environment Protection Agency and the Northern Ireland Environment Agency issued new UK-wide guidance on industrial noise and vibration management⁴⁵, covering:

- how the four national environmental regulators will assess noise from certain industrial processes;
- what the law requires industrial operators to do to manage noise and vibration arising from their activities; and
- advice on how to manage noise, how to carry out a noise impact assessment, and what operators should include in a noise management plan.

The 2021 guidance includes for the first time a section on soundscape assessment. It states that assessing and predicting soundscape quality is an important part of assessing context for a noise impact assessment. It notes also that soundscape assessments can be useful in assessing the sensitivity of a situation. It recommends that operators base any soundscape assessments submitted to the national environmental regulators on the methods described in the ISO soundscape series. See section 1.2 of this document for the Welsh Government's position regarding the application of these important international standards in Wales.

8.6 Protecting workers from hearing damage

Noise at work can cause hearing damage that is permanent and disabling. This can be gradual, from exposure to noise over time, but damage can also be caused by sudden, extremely loud sounds. The damage is disabling in that it can stop people being able to understand speech, keep up with conversations or use the telephone.

Hearing loss is not the only problem. People may develop tinnitus (ringing, whistling, buzzing or humming in the ears), a distressing condition that can lead to disturbed sleep.

Noise at work can interfere with communications and make warnings harder to hear. It can also reduce a person's awareness of their surroundings. These factors can lead to safety risks, putting people at risk of injury or death.

The Control of Noise at Work Regulations 2005⁴⁶ are now in force for all sectors of industry in Great Britain, including the music and entertainment sector. They aim to ensure that workers' hearing is protected from excessive noise in the workplace, which could cause them to lose their hearing and/or to suffer from tinnitus.

⁴⁵ <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits/noise-and-vibration-management-environmental-permits>

⁴⁶ <https://www.legislation.gov.uk/ukSI/2005/1643/made>

Hearing damage caused by long-term exposure to workplace noise has been a concern for many years. Workplace noise exposures have been successfully reduced, but there are still some pockets of industry where noise exposure levels remain high, leading to an unacceptable risk of hearing damage.

Employers sometimes find it difficult to achieve adequate noise control through engineering methods and rely on personal hearing protection programmes. This is not ideal, as the hazard, the noise source, is still present.

There are many ways of reducing noise and noise exposure in the workplace. Nearly all businesses can decide on practical, cost-effective actions to control noise risks if necessary by looking at the advice available, for example on HSE's noise at work website⁴⁷ and in its toolbox for controlling noise risks⁴⁸.

HSE's *Buy Quiet* campaign helps manufacturers, importers, suppliers and users of equipment to work together to reduce the risk of noise-induced hearing loss in the workplace. It supports users in their duty to avoid high noise equipment when suitable lower noise equipment is available, and supports manufacturers in their duty to minimise noise by technical means.

Improvements in the quality of noise information supplied with work equipment are gradually reaching the market. However, some manufacturers of work equipment could do more to reduce risk from noise at source and improve the quality of noise information supplied with their products.

As part of the *Buy Quiet* campaign, HSE has prepared advice⁴⁹ for manufacturers, importers and suppliers of work equipment on the provision of noise information. It has also provided similar material⁵⁰ for purchasers and users of work equipment.

8.7 Protecting the public from hearing damage

Music is not considered to be noise by those who choose to listen to it, but when it is so loud that it damages their hearing it fits the definition of noise, being unwanted or harmful sound.

Protecting members of the public from hearing loss or tinnitus caused by music and other sounds to which they choose to expose themselves cannot be addressed by legislation alone, and there have been a number of campaigns to raise awareness of

⁴⁷ <http://www.hse.gov.uk/noise>

⁴⁸ <https://www.hse.gov.uk/noise/advice.htm>

⁴⁹ <https://www.hse.gov.uk/noise/advice-for-manufacturers.htm>

⁵⁰ <https://www.hse.gov.uk/noise/choosequieter.htm>

the potential risks, particularly among young people. These are run by the likes of RNID⁵¹ and the Noise Abatement Society⁵².

Working within the context of health and safety law as it currently stands requires employers to conduct their undertakings in such a way as to ensure, so far as is reasonably practicable, that the public is not exposed to risks to health and safety. The law does not prescribe what control measures would be reasonably practicable in each and every case. That is a judgement that has to be made by individual organisers and venue operators based on the particular risks, which they are best placed to assess.

Further guidance⁵³ is available to organisers, promoters and venue managers to assist in risk assessment and implementation of suitable risk control measures, and to facilitate compliance with health and safety legislation.

The Office for Product Safety and Standards (OPSS)⁵⁴ formulates and implements consumer safety legislation. It is the role of local authority trading standards services to perform market surveillance checks and enforce this legislation.

⁵¹ <https://rnid.org.uk/about-us/rnid-in-wales>

⁵² <https://noiseabatementociety.org/campaigns/love-your-ears>

⁵³ <https://www.hse.gov.uk/event-safety>, <https://www.hse.gov.uk/pubns/books/hsg260.htm>

⁵⁴ <https://www.gov.uk/government/organisations/office-for-product-safety-and-standards>

9 Managing the sounds we make in and around our homes

9.1 Key message: communication and consideration

Certain sounds can be annoying, especially when we have no control over them or don't know when they are going to start or stop. We perceive those sounds as noise. We cannot reasonably expect never to experience noise, but we should all take steps where we can to minimise noise unnecessarily inflicted on others, or reduce its impact. This doesn't necessarily mean stopping what we are doing, provided it is a legitimate activity that serves a purpose. It could just mean warning our neighbours about the activity so that they know what to expect, and when to expect it, for example when doing DIY, having a party, or setting off fireworks.

9.2 Neighbourhood sounds: positives and negatives

Analogous in concept to visual landmark, a **soundmark** is a prominent, distinctive sound that is specifically associated in people's minds with a particular location or area, such as the waves on the seashore, street vendors, specific bird species, unique cultural sounds, including music and other types of audible performance, fog horns, bells, clocks or chimes, agricultural or industrial sounds, or wind on a mountainside. Given their unique quality, valued soundmarks should be protected and preserved, similarly to valued landscapes and landmarks. Valued and/or iconic sounds can create a strong sense of community, link people to places and evoke heritage and cultural identity. They may receive national or even international recognition, and in those cases can help to promote tourism.

Does the fact that the sounds made by our neighbours and things going on in the street sometimes annoy us mean we would rather hear nothing of what occurs outside our homes? In most cases, probably not. Having a sense of the world outside, both human and natural, connects us to it. This may be beneficial to our mental well-being, and provide us with information about what is happening nearby.

Nevertheless, when surveyed, a quarter of the people in Wales say they are regularly bothered by noise from outside their homes. Of these, 23% say they are bothered by noise made by neighbours indoors, while 41% say they are bothered by noise made by neighbours outside. (See Annex B for details.) According to the CIEH, the majority of noise complaints received by local authorities in Wales each year concern residential sound sources⁵⁵.

We also know that individual preference and sensitivity to sounds vary within communities, and soundmarks valued by many people (e.g. church bells) may be

⁵⁵ https://www.cieh.org/media/4523/cieh-noise-survey-results-2018_19-wales.pdf,
<https://www.cieh.org/media/6318/wales-noise-survey-2019-2020.pdf>

annoying to others. We believe that cities, towns and villages should contain a variety of sound environments, and that there should not be a one-size-fits-all soundscape any more than every street, building or hillside should look alike. Encouraging a diversity of sound environments is likely to form part of the answer to accommodating fairly the needs of an aurally diverse population. Implementing the agent of change principle is expected to be another part of it.

9.3 The law on statutory nuisance

Neighbourhood noise is addressed primarily through the statutory nuisance regime set out in Part III of the Environmental Protection Act 1990. Noise qualifies as a statutory nuisance when it is emitted from premises or emitted from or caused by a vehicle, machinery or equipment in a street, so as to be “prejudicial to health or a nuisance”.

The Environmental Protection Act 1990 places a duty on each local authority to take reasonable practicable steps to investigate complaints made by residents. In so doing, an officer from the local authority will consider, amongst other things, the type of noise, how loud it is, and how often and at what times it occurs. When a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, it must issue an abatement notice on the person, prohibiting or restricting its occurrence or recurrence. The Welsh Government has produced an online booklet⁵⁶ outlining the process.

Smartphone apps such as The Noise App⁵⁷ are now frequently used by members of the Welsh public to record noise and send the recordings direct to their local authority as evidence to inform the investigation of their complaint.

Local authorities have specific duties and powers established in law, which they are required to follow when responding to a complaint of noise nuisance. It is the role of the Public Services Ombudsman for Wales⁵⁸ to look into any complaints by members of the public about the way in which public bodies, including both local authorities and the Welsh Government, carry out their statutory duties. The Ombudsman has specific powers and expertise in this area, and it is for them, rather than for the Welsh Government, to consider any complaints about local authorities’ performance on noise-related matters. Complainants must follow their local authority’s own internal complaints procedure before making a complaint regarding the local authority to the Ombudsman.

⁵⁶ <https://www.gov.wales/how-deal-noise-problems>

⁵⁷ <https://www.thenoiseapp.com>

⁵⁸ <https://www.ombudsman.wales>

9.4 The law on anti-social behaviour

New powers for controlling noise became available to police, local authorities and other agencies under the Anti-social Behaviour, Crime and Policing Act 2014. These powers include the civil injunction, the community protection notice and the public spaces protection order. The Home Office has issued statutory guidance to inform the use of all the powers created by the 2014 Act⁵⁹.

The powers available to control noise under the 2014 Act are local in nature. This is because those who work within and for local communities are considered best placed to understand what is driving the behaviour in question and the impact it is having, and determine the most appropriate response. This is consistent with the ways of working set down in the WFG Act, one of which stresses the importance of involving people in decisions that affect them.

9.5 Barking dogs

Dogs should not be routinely left on their own for more than a few hours during the day as they are likely to become stressed and bored, leading to barking or destructive behaviour. The Code of Practice for the Welfare of Dogs⁶⁰ says:

“Dogs kept outside may react to sights and sounds that they do not normally see or hear inside the home. Your dog may bark, howl or cry for extended periods if it is bored, frightened or anxious. Not only does this mean that your dog might be unhappy and more motivated to escape, it can also cause a nuisance to your neighbours. If you require advice on managing such problems you should speak to your vet or another suitably qualified person.”

9.6 Hot topic: fireworks

Since we published the Noise and Soundscape Action Plan 2018-2023, the subject of firework noise has come to the fore, with petitions considered both in the House of Commons⁶¹ and in the Welsh Parliament⁶², and new legislation being passed in Scotland⁶³. Firework noise can cause distress to animals and to vulnerable individuals such as autistic people or military veterans.

In February 2023, the OPSS published the findings of a testing programme to determine the average decibel level of a broad selection of fireworks sold for public

⁵⁹ <https://www.gov.uk/government/publications/anti-social-behaviour-crime-and-policing-bill-anti-social-behaviour>

⁶⁰ <https://www.gov.wales/code-of-practice-for-the-welfare-of-dogs>

⁶¹ House of Commons Petitions Committee, Fireworks, October 2019.

<https://publications.parliament.uk/pa/cm201919/cmselect/cmpetitions/103/10302.htm>

⁶² <https://business.senedd.wales/mglssueHistoryHome.aspx?lId=37564>

⁶³ <https://www.legislation.gov.uk/ssi/2021/79/made>, <https://www.legislation.gov.uk/asp/2022/9/enacted>

use⁶⁴. It considered 72 articles across nine different firework types, from 14 manufacturers and importers. The study found wide variations in sound levels, establishing that “wheels” and “fountains” could be relatively quiet (often under 90 decibels), while the sound emitted by “shot tube batteries” sometimes exceeded the current legal limit of 120 decibels. The RSPCA⁶⁵ has campaigned for the current 120-decibel limit (“equivalent to a jet aircraft taking off”) to be lowered to 90 decibels (“equivalent to a car door slamming”).

The Welsh Government does not believe the current legislation in England and Wales is adequate to protect vulnerable people and animals from the effects of firework noise. Welsh Ministers have repeatedly urged the UK Government to accept the House of Commons Petitions Committee recommendation to seek a workable reduced maximum decibel limit, which would diminish the risks posed by firework noise.

The regulation of the sale and supply of goods and services to consumers is a reserved matter under Schedule 7A to the Government of Wales Act 2006, and regulation-making powers under the Fireworks Act 2003 rest with the Secretary of State in relation to England and Wales. Therefore, Welsh Ministers are not able to mirror in Wales the regulations made by the Scottish Government in 2021, which tightened conditions on the sale and use of fireworks in Scotland.

Given the proximity of Wales’s most populated areas to shops in England, and the ease of shopping online, the Welsh Government would welcome concerted action across Great Britain to ensure that in future fireworks available for sale to the public are quieter and used at more predictable times of the year. Joined-up action on this matter across Great Britain would allow us to send clear, consistent messages to the public. Co-ordinated action would also make it harder for people to get around geographically limited restrictions on sales introduced by a single administration.

The Welsh Government will work constructively with any UK Government administration that is open to improving the laws governing the sale and use of fireworks in England and Wales, so that in future they are quieter and used at more predictable times, thus reducing the distress that loud fireworks currently cause to vulnerable people and animals.

⁶⁴ <https://www.gov.uk/government/publications/noise-testing-of-fireworks>

⁶⁵ <https://www.inyourarea.co.uk/news/rspca-column-the-campaign-to-change-regulations-governing-sale-and-use-of-fireworks/>

10 Welsh Government priorities for the next five years

In light of the current constraints and pressures on public finances, this first national strategy on soundscapes neither announces significant new government spending nor assigns costly actions to other public bodies. Rather it seeks to maximise opportunities for better, more integrated decision-making across all relevant policy areas and organisations, to achieve appropriate soundscapes going forward.

10.1 Evidence

The Welsh Government will continue to input to Defra's noise and nuisance evidence programme and the Inter-Departmental Group on Costs and Benefits Noise subject group (IGCB(N)), to help build a stronger foundation for decision-making affecting noise and soundscapes across the UK. Where we are not in a position to contribute financially, officials will aim to offer assistance to their Defra counterparts in formulating and evaluating research proposals, drafting project specifications, providing policy oversight and reviewing draft final reports, as far as time allows.

It is expected that the Tranquillity & Place resource will inform the writing of the next State of Natural Resources Report to be prepared by NRW under the Environment (Wales) Act 2016.

10.2 Planning

The Welsh Government will carefully consider all the consultation feedback received on the draft new TAN 11, and revise it accordingly before formally adopting it and revoking TAN 11: Noise (1997). At the same time, we will consider the case for further guidance and training for local authorities to support implementation of the new TAN 11.

We will continue to work with the soundscape sub-group of the Association of Noise Consultants, the Noise Abatement Society and others, to build upon our draft supporting document on soundscape design and assist in the further development of professional soundscape design guidance, which may be used by developers and regulators anywhere in the UK.

The Welsh Government would welcome improvements being made to the MCS, which underpins the planning rules for ASHPs. Once the MCS has been reviewed and updated, we will take the best available and most up-to-date evidence on the noise risks associated with heat pumps into account as we review and update the rules for permitted development rights for ASHPs in Wales.

The Welsh Government would welcome the UK's professional guidance on assessing onshore wind turbine noise being updated to address a number of unresolved issues, including those relating to amplitude modulation.

10.3 Air quality

The Welsh Government is committed to ensuring that national and local air quality action seeks to maximise the potential benefits to soundscapes. We will promote the overlaying of spatial data on air quality, noise, health outcomes, deprivation and other relevant indicators when prioritising local interventions under a refreshed local air quality management regime, as we implement the Environment (Air Quality and Soundscapes) (Wales) Bill.

The Welsh Government will consider the case for producing an integrated national strategy covering air quality, noise and soundscapes.

10.4 Transport

Noise and soundscape will receive due regard alongside air quality in the Welsh Government's anti-idling guidance and communications programme. The intention is to consult stakeholders on anti-idling guidance during 2024 and to publish the guidance by March 2025. It is anticipated that the Welsh Government will work with local authorities to implement behaviour change communications following enactment of the Environment (Air Quality and Soundscapes) (Wales) Bill.

The Welsh Government will continue to take measures to reduce noise at priority sites adjacent to the Welsh Strategic Road Network over the next five years, in accordance with the measures described in section 7.6.

Although the Welsh Government does not plant trees or vegetation for the purposes of noise abatement on the Strategic Road Network, it is recognised that a change in visual screening from vegetation can affect people's perception of road traffic noise levels. The Welsh Government will carry out a further review on the impact roadside vegetation has on the perception of road traffic noise levels and the results of the review will be used to inform whether greening measures are used over the next five years. The Welsh Government also intends to invest in trials of new techniques, materials and highway infrastructure that may significantly reduce noise levels on the Strategic Road Network.

Following the publication of updated guidance on setting local speed limits in Wales, the Welsh Government will review the speed limits across the trunk road network.

The Welsh Government will continue to work with other highway authorities, to learn from studies and schemes carried out elsewhere within the United Kingdom.

The Welsh Government will work with the UK Government to consider the potential opportunities and benefits presented by Defra's new Noise Modelling System, under which new national road traffic and railway noise models were developed in 2022.

10.5 Guidance and regulation

The Welsh Government will continue to work

- with NRW and PHW;
- with professional bodies;
- with non-governmental organisations; and
- through its membership of the BSI's noise committees,

to ensure that public bodies in Wales get the guidance they need to do their job, particularly in relation to soundscape management where there are currently gaps in terms of technical guidance and examples of basic good practice.

We will continue to engage with professional bodies that offer training in the field of acoustics, and work with those who are willing, over the course of the next five years, to seek to fill the gap that currently exists in training for the practical application of soundscape techniques in day-to-day public decision-making.

10.6 Education and awareness-raising

Under the Environment (Air Quality and Soundscapes) (Wales) Bill, the Welsh Ministers will have a duty to promote awareness of the risks to human health and the natural environment caused by air pollution, and ways of reducing or limiting air pollution. We will also promote awareness of the impacts of noise on people and animals, and ways of reducing or limiting those impacts, as we discharge these new air quality duties.

10.7 Implementation and ongoing review

The Welsh Government will continue to host meetings open to all public bodies having responsibilities under this Plan at least twice yearly during the lifetime of the Plan, to further develop Wales's national noise and soundscape policies and take forward actions and long-term strategy.

The Welsh Government will update the Plan itself as and when it deems necessary, including carrying out at least one review incorporating a full public consultation no more than five years after its formal adoption.

Glossary

Acoustic design – an approach to design relating to the **sound environment**, the principal technical objective of which is to protect people from the unwanted and/or harmful effects of **noise**. For rooms such as classrooms, offices and indoor performance spaces, acoustic design may also have technical objectives relating to intelligibility, privacy and the quality of sound transmission within a room, in addition to the objective of noise control.

Acoustic environment – see **sound environment**.

Active travel – walking and cycling as an alternative means to motorised transport for the purpose of making everyday journeys.

Agent of change principle – the principle that a business or person responsible for introducing a change is responsible for managing that change (PPW definition).

Agglomeration – an urban area with a population in excess of 100,000 people and a population density equal to or greater than 500 people per square kilometre.

Air pollution – the release of particles and harmful gases into the atmosphere. These emissions can be natural or human-made.

Airborne pollution – **air pollution** and airborne **noise pollution**.

Anthropogenic – made by humans.

Appropriate soundscape – the right **sound environment** in the right time and place from a user perspective, which in a planning context may be achieved through good **acoustic design**, good **soundscape design** or a combination of the two, depending on the situation.

Environmental noise – **noise** from transport and industry.

Euphonic – pleasing to the ear.

Green infrastructure – the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places (PPW definition).

Noise / noise pollution – **sound** that is judged or perceived to be unwanted or harmful.

Pollution – any emission which may be harmful to human health or the quality of the environment, cause offence to a human sense, result in damage to material property, or impair or interfere with amenities or other legitimate uses of the environment.

Quiet area – a **tranquil** urban green space formally recognised in a national noise action plan for the restorative benefits it provides to local communities.

Sound – a physical phenomenon comprising vibrations that travel through the air or another medium and can be heard when they reach a person's or animal's ear and/or experienced physiologically even if they can't be heard (e.g. ultrasound or infrasound).

Sound environment / acoustic environment – the **sound** received from all audible sound sources, as modified by the (outdoor or indoor) environment.

Soundmark – a prominent, distinctive **sound** that is specifically associated in people's minds with a particular location or area.

Soundscape – the **acoustic environment** as perceived or experienced and/or understood by a person or people, in context (ISO definition).

Soundscape design – a participatory, people-focused approach to design concerning both the **sound environment** and any physical or non-physical non-acoustic factors that may affect how people perceive and/or experience **sound** in a specific context in accordance with BS/ISO **soundscape** standards.

Sustainable development – the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the **sustainable development principle**, aimed at achieving the **well-being goals** (WFG Act definition).

Sustainable development principle – acting in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs (WFG Act definition).

Tranquil(lity) – an untroubled state, characterised by peace and calm and free from unwanted disturbances. This may refer to either a state of mind or the quality of a particular environment.

Well-being goals – a prosperous Wales, a resilient Wales, a healthier Wales, a more equal Wales, a Wales of cohesive communities, a Wales of vibrant culture and thriving Welsh language, and a globally responsible Wales (WFG Act definition).

List of abbreviations

ASHP	air source heat pump
BB93	Building Bulletin 93
BS	British Standard
BSI	British Standards Institution
CAA	Civil Aviation Authority
CIEH	Chartered Institute of Environmental Health
dB	decibel
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DIY	do-it-yourself
EPR	Environmental Permitting (England and Wales) Regulations 2016
EU	European Union
GWR	Great Western Railway
HSE	Health and Safety Executive
IOA	Institute of Acoustics
ISO	International Organisation for Standardization
MCS	Microgeneration Certification Scheme
MOD	Ministry of Defence
NCL	Noise Consultants Ltd
NRW	Natural Resources Wales
NSDS	Noise and Soundscape Design Statement

OPSS	Office for Product Safety and Standards
PfG	Programme for Government
PHW	Public Health Wales
PPW	Planning Policy Wales
ProPG	Professional Planning Guidance
PSB	public services board
PTSD	post-traumatic stress disorder
RAF	Royal Air Force
RSPCA	Royal Society for the Prevention of Cruelty to Animals
RSSB	Rail Safety and Standards Board
SoNaRR	State of Natural Resources Report
SSSI	Site of Special Scientific Interest
TAN	Technical Advice Note
TfW	Transport for Wales
UAV	unmanned aerial vehicle
UK	United Kingdom
WFG	Well-being of Future Generations
WHO	World Health Organisation

Annex A – noise maps

Estimated population exposure to environmental noise

The Welsh Government appointed Noise Consultants Ltd (NCL) to generate [strategic noise maps for Wales](#) in 2022, using a new Noise Modelling System developed by NCL for Defra. This discharged the Welsh Ministers' 2022 duties under the Environmental Noise (Wales) Regulations 2006 to make strategic noise maps for major roads, major railways and large urban areas ("agglomerations") every five years, starting in 2007. To make the 2022 noise maps more useful, for example to planning authorities implementing the new TAN 11, we went beyond the requirements of the legislation on this occasion and mapped noise consistently from all roads and railways across Wales.

The outputs of the 2022 noise mapping exercise are not comparable to any noise maps generated previously, because new noise mapping methods were introduced and transposed into UK law prior to leaving the European Union, and these methods calculate noise emissions and residential population exposure differently from the methods used in previous rounds. However, because we used Defra's new Noise Modelling System, the 2022 noise maps for Wales are considered broadly comparable to and consistent with the 2022 noise maps being generated for England.

The estimated population exposure to environmental noise in Wales, and in our three largest urban agglomerations, according to the 2022 noise mapping exercise, is tabulated below. It should be noted that although referred to as population exposure, what we are really calculating is the level of noise impinging on the exterior of a residential property. The noise experienced indoors will vary depending on how well the building protects its occupants from noise outside, and this is highly dependent on construction methods and room layout.

Table 1 Estimated population exposure to environmental noise in Wales using the day-evening-night noise indicator L_{den}

Noise source	Number of people exposed to these noise levels				
	55-59 dB	60-64 dB	65-69 dB	70-74 dB	> 75 dB
Major roads	77,800	57,600	46,900	8,200	300
All roads	504,400	154,200	73,800	11,100	300
Major railways	23,800	8,300	2,300	-	-
All railways	26,200	8,700	2,300	-	-

Table 2 Estimated population exposure to environmental noise in Wales using the night-time noise indicator L_{night}

Noise source	Number of people exposed to these noise levels				
	50-54 dB	55-59 dB	60-64 dB	65-69 dB	> 70 dB
Major roads	59,000	53,300	18,500	800	-
All roads	157,800	94,200	24,300	1,600	-
Major railways	11,200	2,500	-	-	-
All railways	11,700	2,600	-	-	-

Table 3 Estimated population exposure to environmental noise in the Cardiff and Penarth agglomeration using the day-evening-night noise indicator L_{den} (total population 378,300)

Noise source	Number of people exposed to these noise levels				
	55-59 dB	60-64 dB	65-69 dB	70-74 dB	> 75 dB
Major roads	12,700	9,700	9,400	2,600	100
All roads	74,500	18,400	11,300	3,800	100
Major railways	8,100	3,500	2,000	-	-
All railways	8,400	3,500	2,000	-	-
Industry	200	-	-	-	-

Table 4 Estimated population exposure to environmental noise in the Cardiff and Penarth agglomeration using the night-time noise indicator L_{night} (total population 378,300)

Noise source	Number of people exposed to these noise levels				
	50-54 dB	55-59 dB	60-64 dB	65-69 dB	> 70 dB
Major roads	9,900	9,600	5,000	200	-
All roads	16,800	13,100	5,700	800	-
Major railways	3,700	1,700	-	-	-
All railways	3,800	1,800	-	-	-
Industry	200	-	-	-	-

Table 5 Estimated population exposure to environmental noise in the Newport agglomeration using the day-evening-night noise indicator L_{den} (total population 157,500)

Noise source	Number of people exposed to these noise levels				
	55-59 dB	60-64 dB	65-69 dB	70-74 dB	> 75 dB
Major roads	3,000	1,400	500	100	-
All roads	5,400	1,800	700	100	-
Major railways	1,600	1,200	200	-	-
All railways	2,000	1,400	200	-	-
Industry	100	-	-	-	-

Table 6 **Estimated population exposure to environmental noise in the Newport agglomeration using the night-time noise indicator L_{night}**
(total population 157,500)

Noise source	Number of people exposed to these noise levels				
	50-54 dB	55-59 dB	60-64 dB	65-69 dB	> 70 dB
Major roads	2,100	700	200	-	-
All roads	2,400	900	200	-	-
Major railways	1,300	200	-	-	-
All railways	1,500	200	-	-	-
Industry	100	-	-	-	-

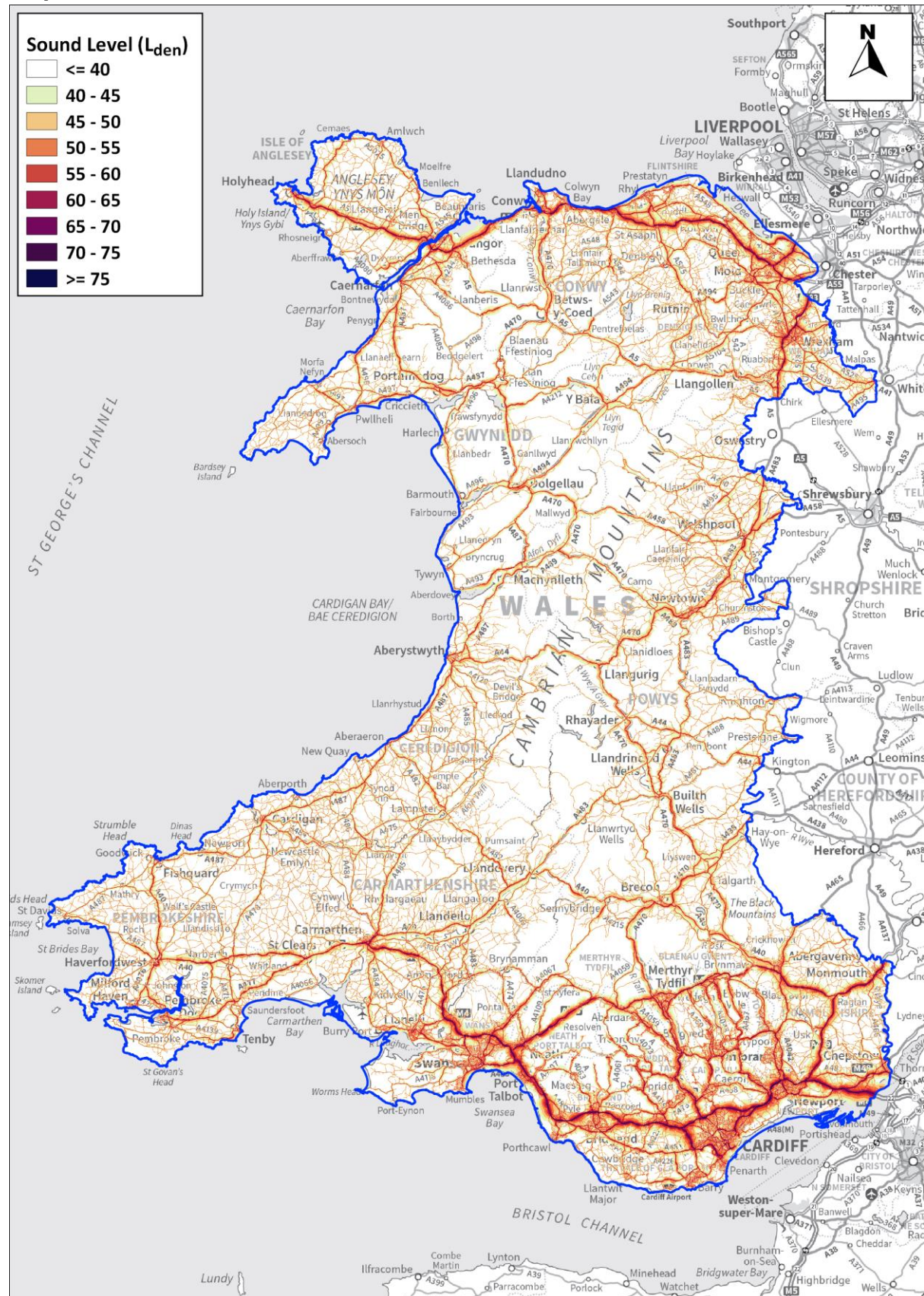
Table 7 **Estimated population exposure to environmental noise in the Swansea and Neath Port Talbot agglomeration using the day-evening-night noise indicator L_{den}** (total population 292,300)

Noise source	Number of people exposed to these noise levels				
	55-59 dB	60-64 dB	65-69 dB	70-74 dB	> 75 dB
Major roads	13,200	8,100	5,100	1,000	100
All roads	36,200	13,200	6,200	1,000	100
Major railways	3,300	700	-	-	-
All railways	3,300	700	-	-	-
Industry	200	100	-	-	-

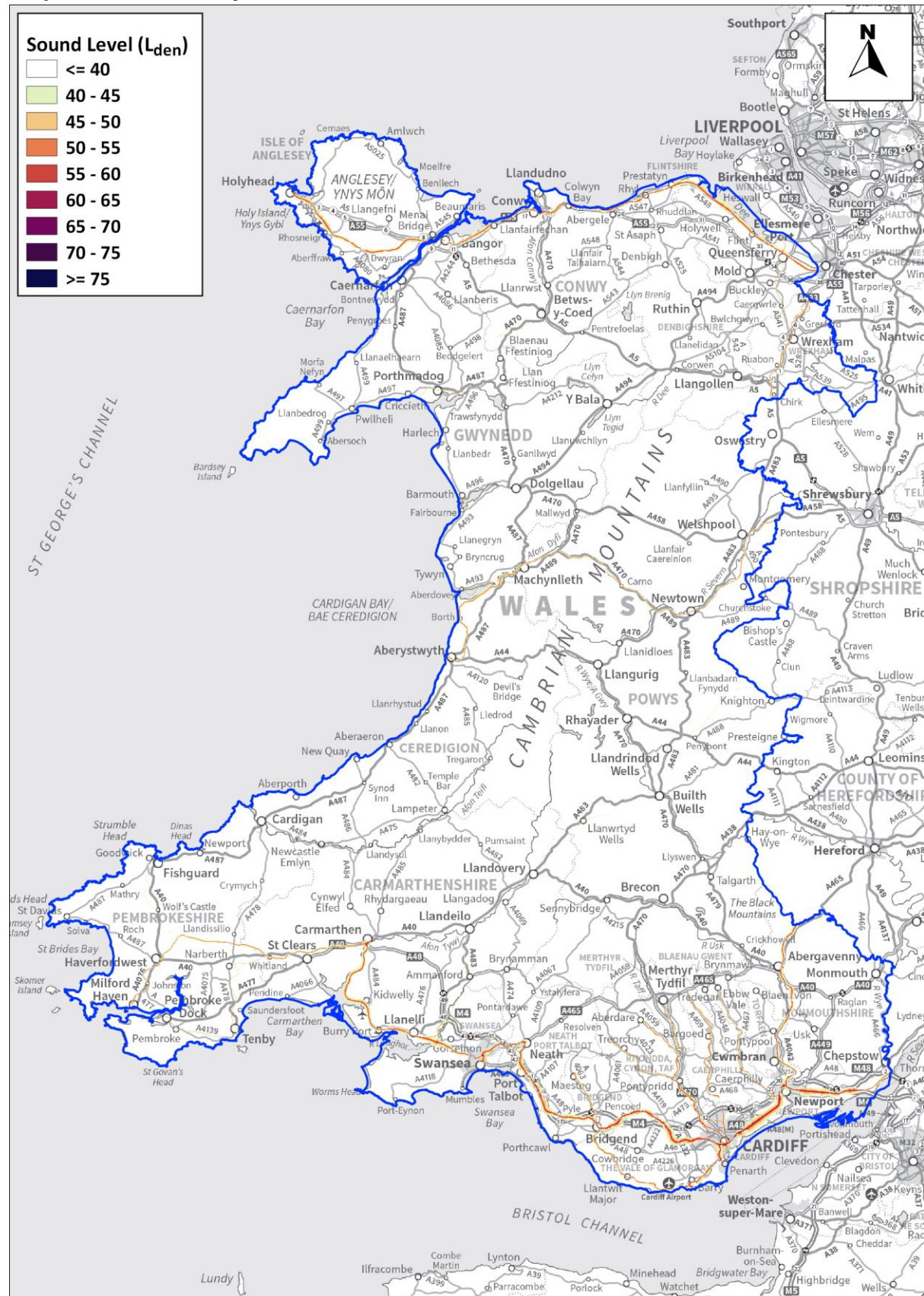
Table 8 **Estimated population exposure to environmental noise in the Swansea and Neath Port Talbot agglomeration using the night-time noise indicator L_{night}** (total population 292,300)

Noise source	Number of people exposed to these noise levels				
	50-54 dB	55-59 dB	60-64 dB	65-69 dB	> 70 dB
Major roads	8,700	6,400	1,800	200	-
All roads	14,000	8,000	1,900	300	-
Major railways	1,600	100	-	-	-
All railways	1,600	100	-	-	-
Industry	200	-	-	-	-

Map 1 Road noise in Wales



Map 2 Railway noise in Wales



Annex B – National Survey for Wales: noise pollution

The National Survey for Wales involves interviews with around 12,000 adults aged 16 and over. Since the start of the Covid-19 pandemic in 2020, the National Survey has taken place over the phone instead of face-to-face as previously. The survey covers a wide range of issues affecting people and their local area. More information can be found on the National Survey web pages: <https://gov.wales/national-survey-wales>

A number of questions relating to housing and income were included in the 2021-22 National Survey. These questions were also asked in the 2017-18 National Survey, but direct comparisons should be treated with caution due to the change in survey mode. One question related to noise levels. People were asked whether they had regularly been bothered by noise from outside their home in the previous 12 months. **26%** said they had. This percentage was the same for both male and female.

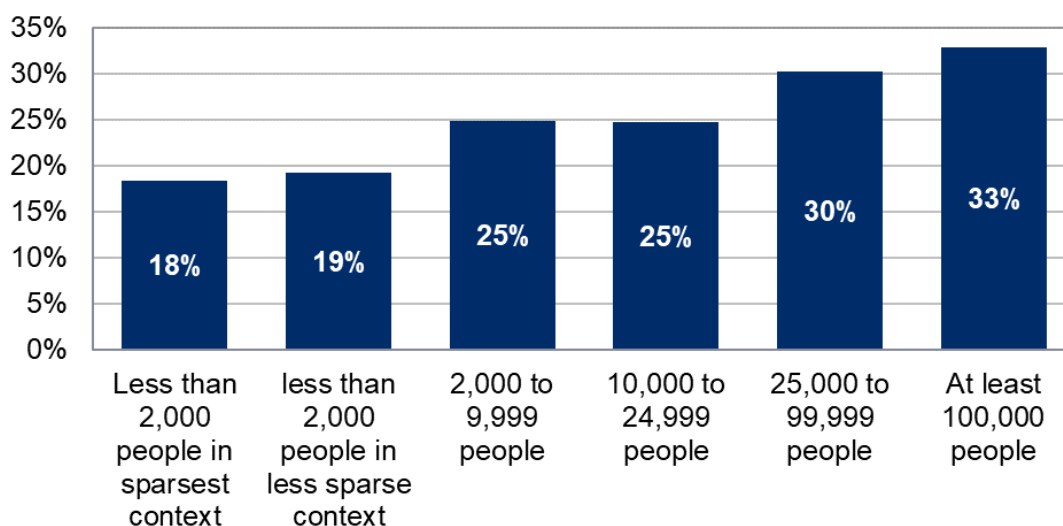
Of these:

- **23%** said the noise was caused by **neighbours inside their homes**;
- **41%** by **neighbours outside their homes**; and
- **41%** by **traffic, businesses, or factories**.

People who lived in urban areas were more likely to have been bothered by noise than those who lived in rural areas. **29%** of people in **urban** areas were bothered by noise compared with **21%** in **rural** areas.

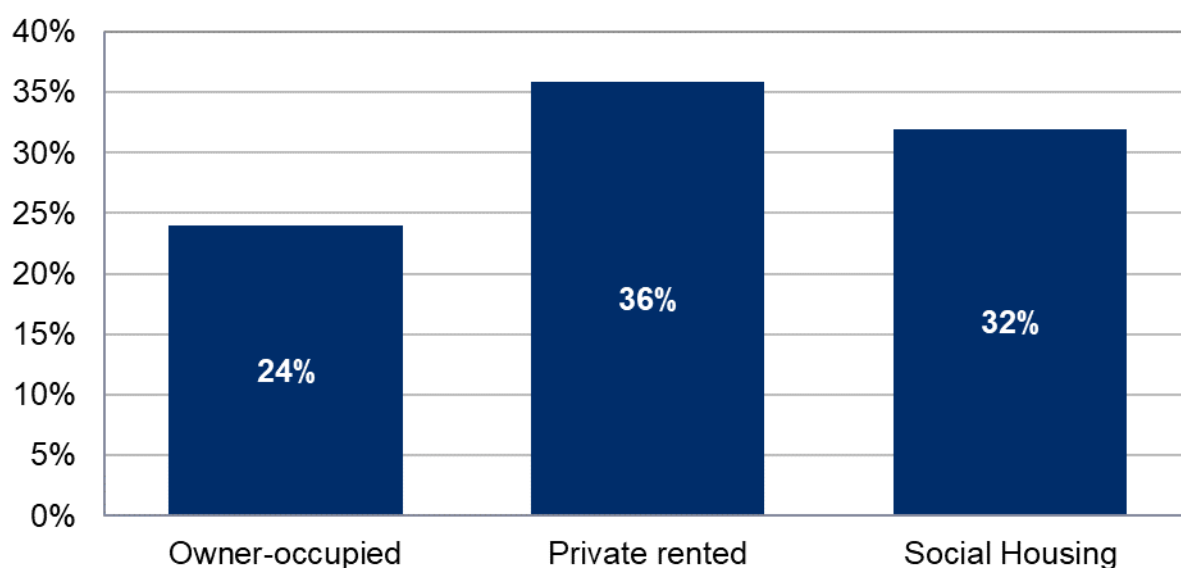
This is also illustrated by looking at the percentage of people who were bothered by noise according to their settlement size. People living in built-up areas were far more likely to be bothered by noise.

Chart 1: Bothered by noise, by settlement size



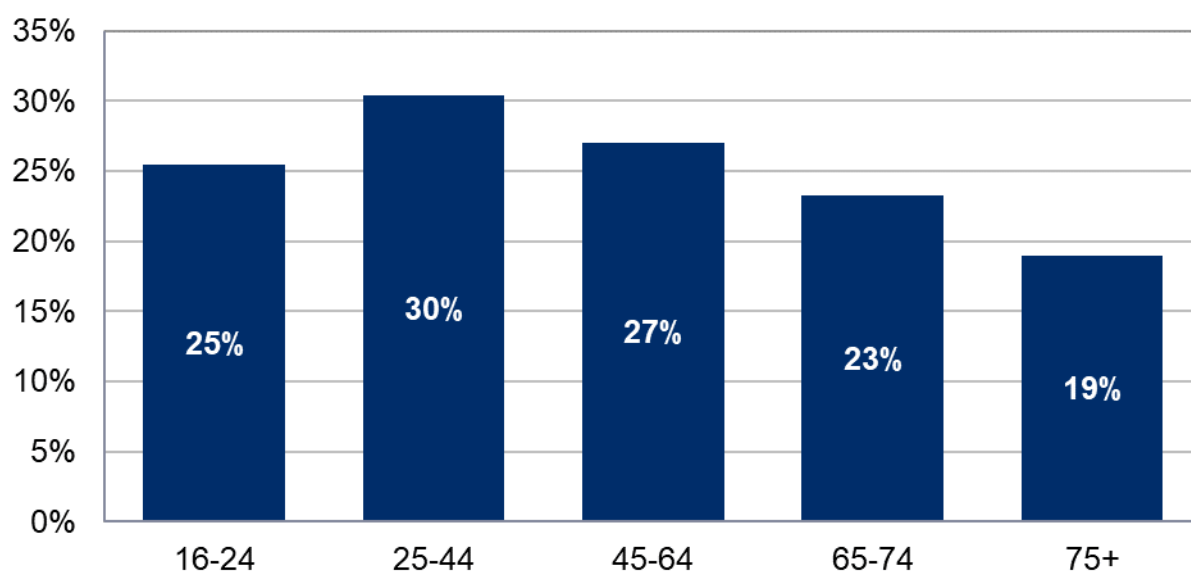
People were more likely to be bothered by noise if **they lived in social housing or private rented** as opposed to owning their own home, as is shown in Chart 2.

Chart 2: Bothered by noise, by tenure



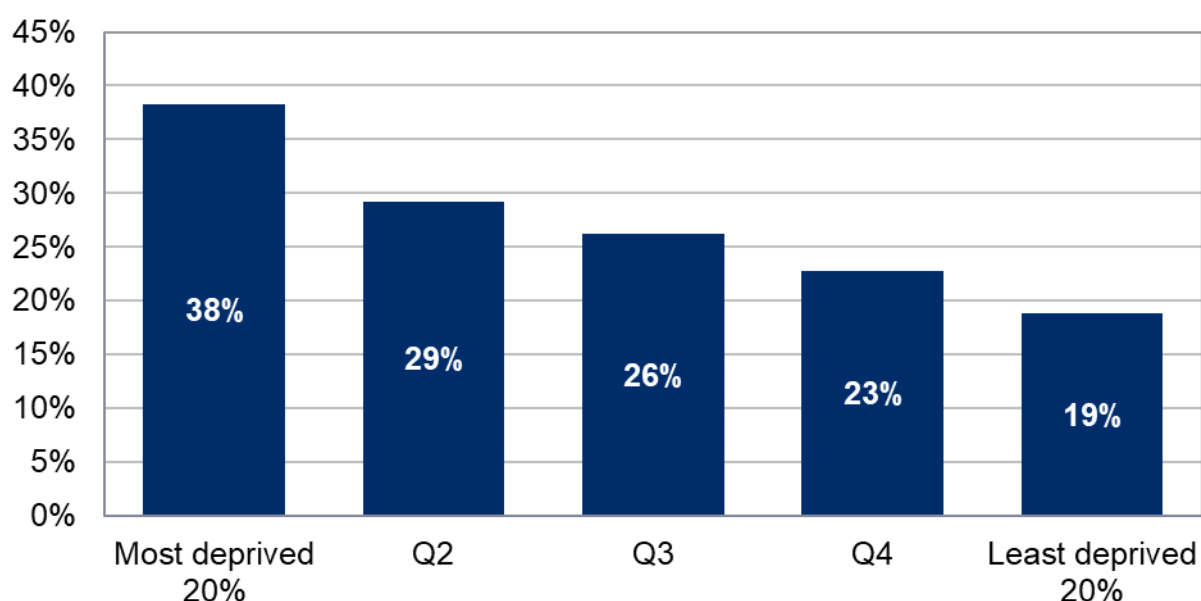
Older people were less likely to say that they had regularly been bothered by noise than younger people.

Chart 3: Bothered by noise, by age of respondent



People were more likely to be bothered by noise if they lived in materially **deprived households** or in **deprived areas**.

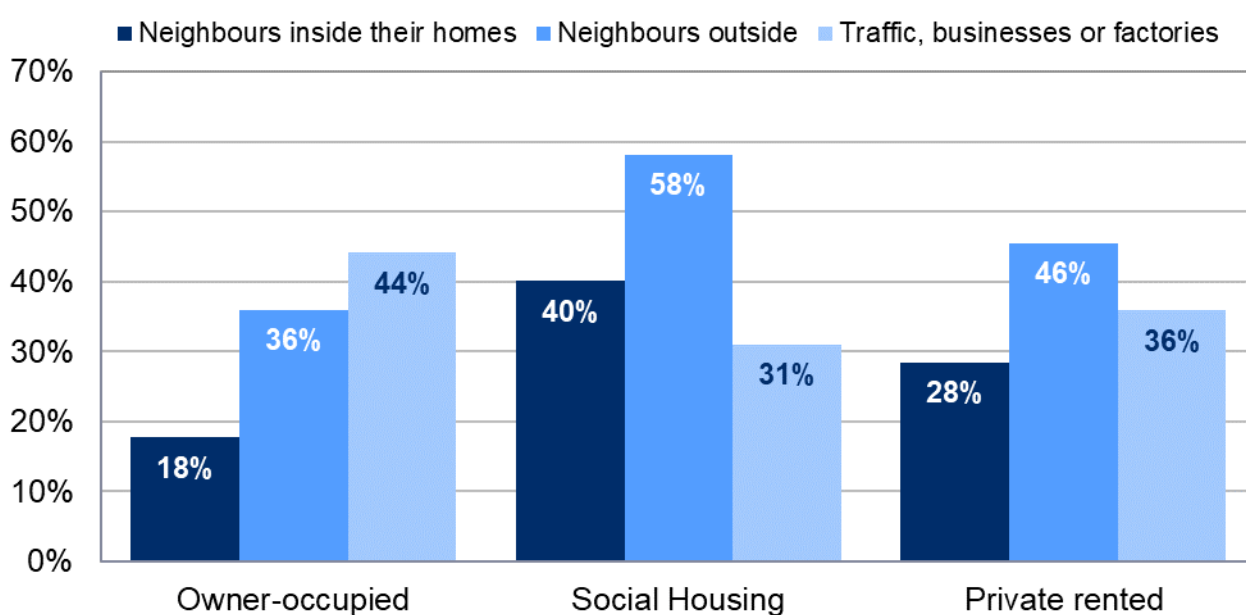
Chart 4: Bothered by noise, by area deprivation



Types of noise people were regularly bothered by

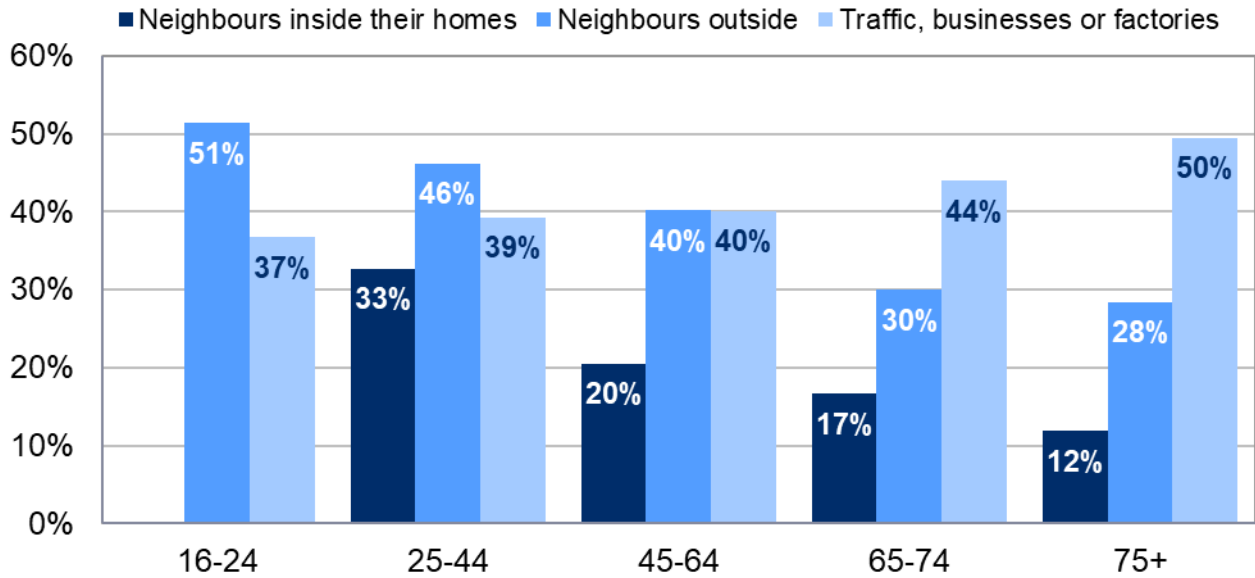
People who **owned their own property** were more likely to say they were regularly bothered by noise from traffic, businesses or factories than people living in social housing, but people living in **social housing** were more likely to be bothered by noise from their neighbours.

Chart 5: Type of noise, by tenure



Younger people were more likely to be regularly bothered by noise coming from outside caused by their neighbours, but **older people** were more likely to be bothered by noise from traffic, businesses or factories.

Chart 6: Type of noise, by age of respondent



Annex C – the role of green infrastructure

Green infrastructure is the network of natural and semi-natural features, green spaces, rivers and lakes that intersperse and connect places. At a local scale, it might comprise parks, fields, public rights of way, allotments, cemeteries and gardens. At smaller scales, individual urban interventions such as street trees, hedgerows, roadside verges, and green roofs/walls can all contribute to green infrastructure networks.

Green infrastructure should be considered as far as it relates to:

- opportunities to reduce the effects of airborne pollution on people and the natural environment;
- securing positive outcomes for people in terms of air quality and soundscape, contributing to both physical and mental health and well-being; and
- its limitations in addressing air and airborne noise pollution. It should not be seen as a means of tolerating unacceptable emissions and increased exposure where these should be avoided.

At a regional or sub-regional scale, the totality of vegetation present makes an important contribution to the removal of air pollutants from the atmosphere, just as it does for greenhouse gases. However, this process is gradual, and air pollution that is eventually absorbed by vegetation is not normally expected to be taken out of the air by the vegetation located closest to the emission source. Green infrastructure should not normally be relied on to provide protection to people close to a source of pollution. At short distances, controlling emissions is the only reliable way to minimise public exposure to air pollution.

There may, however, be some instances where well-designed vegetation can make a noticeable contribution to reducing levels of air and noise pollution at a local level. For example, a continuous, deep hedgerow or tree belt established between a trunk road and sensitive receptors may help protect those receptors from dust, noise and, to a certain extent, particulate matter. On the other hand, the physical presence of street trees can have a positive, negative or mixed effect on the dispersal of air pollutants if their size, placement and the street/building geometry inhibits the dispersion of air pollutants.

Decision-makers should never automatically assume that including trees, shrubs and hedgerows, even those positioned between source and receptor, will necessarily reduce air or noise pollution levels in a quantifiable way. The presence of green infrastructure should not be used as a defence for greater tolerance for emissions of, or exposure to, air and noise pollution. Whilst the planting or retention of trees is expected and encouraged for numerous good placemaking reasons, it does not

automatically guarantee cleaner air and better soundscapes. Where decision-makers wish to assign local air quality or soundscape benefits to green infrastructure, they must demonstrate that good design has been employed from the outset to maximise green infrastructure's contribution to cleaner air and better soundscapes, tailored to the local context. Tacking green infrastructure on to a proposal at the end of the design process, putting trees wherever there happens to be a tree-sized space left unoccupied by other structures, is not an acceptable approach.

In designing the green infrastructure elements of a proposed development to maximise their contribution in terms of air quality and soundscape, consideration should be given both to mitigating risks and to maximising opportunities. This does not necessarily mean focusing on using green infrastructure to try to drive down decibels and levels of air pollution where they are highest. (Controlling pollution overall is very important, but is likely to be achieved more effectively through measures to reduce emissions at source or, in the case of noise, erecting solid barriers to block the passage of sound.) A greater public health outcome may sometimes be achieved, and at lower cost, by designing the green infrastructure so as to reduce the likelihood of people being present in locations where air and noise pollution are highest, and creating attractive, accessible places where pollution levels are lower. Highly effective uses of green infrastructure in relation to air and soundscape quality include:

- using vegetation to keep people, such as pedestrians and cyclists, separated as far as possible from major pollution sources, particularly road traffic;
- providing options for active travel along routes other than beside busy roads, making walking and cycling increasingly attractive alternatives to motor vehicle use, thereby reducing the route users' personal exposure to air and noise pollution, and potentially the vehicular emissions of those who would be put off active travel by busy traffic, as well as reducing the risk of collisions;
- providing and protecting tranquil outdoor environments and positive soundscapes, whether public, communal or private, thereby reducing the stress levels associated with proximity to busy roads and ensuring people have options other than going indoors (where they may be exposed to other sources of airborne pollution) when they want to enjoy peace and quiet;
- encouraging exercise and other outdoor recreation, thereby improving people's overall state of health and building their resilience to the health risks posed by air and noise pollution; and
- using green infrastructure as part of traffic calming measures, where this can be demonstrated as effective (and does not make matters worse).

Removal of trees and hedgerows that had previously been hiding a noise source from view can make people more conscious of the noise being generated. This can

increase its adverse impacts, even when the vegetation's removal does not lead to an increase in measured sound levels.

These considerations are relevant at all scales, and not just for individual proposals. At a regional, sub-regional, local authority, city or town scale, it will be invaluable to map major sources of airborne pollution and/or noise and dust complaints and overlay them with maps showing the distribution of:

- public green spaces (including any spaces formally recognised for their tranquillity benefits, such as designated quiet areas, or holding Green Flag Awards);
- tree cover; and
- safe off-road active travel routes, where they provide attractive alternatives to those provided by the kerbside.

Visit the [Institute of Acoustics](#) for further information.

Annex D – noise arising from military activities

Military activities are a matter reserved to the UK Government. However, devolved public bodies and non-governmental decision-makers in Wales still need to consider military noise when making decisions that could potentially affect people's exposure to, or perception of, sounds generated by Ministry of Defence (MOD) activities.

MOD has provided the Welsh Government with the following information to assist decision-makers in Wales. It is assumed to be correct at the time of writing.

Military aviation

MOD has an enduring requirement to conduct low flying training⁶⁶ within the United Kingdom in order to remain current and competent to meet Government-directed tasks, including war-fighting operations, peace-support or peace-keeping duties, and humanitarian relief.

Low flying is a perishable skill which can only be maintained through rigorous training and continuous practice in a realistic environment. To ensure that military requirements are met, whilst managing air safety risks, and mindful of the need to minimise disturbance to the general public, military low flying training is spread as widely and equitably as possible within the UK Low Flying System, which utilises all Class G airspace below 2,000 feet above ground level, with the exception of certain designated areas.

Wales falls within Low Flying Area 7, with a small area in the north-east of Powys falling within Low Flying Area 9. RAF Valley, MOD St Athan, the Air Weapons Range at Pembrey Sands, the Cawdor Barracks at Brawdy, the Air Defence Range at Manorbier (where aircraft train in support of ground forces) and Field Training Centres at Castlemartin, Sennybridge and Caerwent are all in the area.

Low Flying Area 7 includes the Tactical Training Area 7T where military aircraft may conduct Operational Low Flying training between heights of 250 feet and 100 feet above ground level. Operational Low Flying training is necessary to ensure that aircrew are competent in flying at operational heights, and to prepare them for operational deployments or training exercises overseas. It is carefully controlled and monitored and must be booked and authorised one month in advance. MOD provides local media with the monthly Operational Low Flying programme, and it is also available to view on the UK Government website⁶⁷.

⁶⁶ Military fixed wing aircraft are judged to be low flying when they are operating at less than 2,000 feet above ground level. Light propeller-driven aircraft and helicopters are judged to be low flying when operating below 500 feet above ground level.

⁶⁷ <https://www.gov.uk/low-flying-in-your-area>

Low Flying Area 7 also includes a flow arrow system in the Cambrian Mountains in West Wales, known colloquially as “the Mach-Loop” after the town of Machynlleth in the Dovey valley. This is a roughly circular anti-clockwise flow, put in place so that aircrew can practise contour flying through the valleys without any danger of meeting aircraft coming in the opposite direction.

Training objectives involving low flying are met during the day whenever practicable, and a range of measures is in place to provide a balance between training requirements and the need to avoid excessive noise on the ground, such as staggering operating times. Careful consideration goes into the timing of night low flying, and the amount of low flying training conducted at night remains proportionate to the operational requirement. However, it is not always possible to avoid some disturbance to those on the ground.

As part of the RAF’s engagement and public relations commitment in Wales, the Service has an Air Commodore post whose designation is Air Officer Wales. The post-holder’s remit is to engage across all sectors of Welsh society, promoting the Service as a force for good and maintaining its profile. Along with this comes a responsibility to explain, when necessary, the noise implications associated with the training required to keep the Service operational and at peak readiness. Good relations are also established and maintained with local communities by RAF stations, for example through creating local websites or placing adverts in local newspapers to publicise exercises or any unusual range activity or aircraft movements.

MOD also provides environmental noise contours to local authorities for its air stations to assist with their planning decisions.

Members of the public concerned about military low flying activity are advised to contact MOD’s Low Flying Complaints and Enquiries Unit, whose details are available on the UK Government website⁶⁸.

Noise from artillery ranges

At artillery ranges, gunfire noise emissions are managed across the Defence Training estate in accordance with MOD policy, and any local restrictions imposed on the range training area are met in full in order to maintain MOD’s position as a responsible neighbour within the community. At Sennybridge Training Area, Castlemartin Range and Manorbier, noise emissions are monitored using the MOD Gunfire Noise Analysis Tool (GNAT) software. The system enables MOD to ensure that noise emissions do not exceed 130 decibels at the range boundary. Should wind direction or atmospheric conditions change so as to affect the noise emissions, the

⁶⁸ <https://www.gov.uk/low-flying-in-your-area>

firing is stopped and a change may be made to the firing position or impact area to keep the emissions within the agreed level of 130 decibels. Where a significant operational penalty is incurred, mainly arising from tank, artillery or air defence firing, permissions may be sought from the senior chain of command to increase the levels from 130 to 139 decibels, but 140 decibels is not to be exceeded.

Military activities and noise-sensitive development

MOD takes all reasonable precautions to minimise noise emissions emanating from its sites, but defence activities can, by their nature, be noisy. These emissions often take place at irregular intervals and can be transient in nature. As a result of these emissions, MOD receives many noise complaints from occupiers of third-party developments close to MOD sites. In the majority of cases the amendment of military activity will not be possible if the result is in an adverse impact upon operational capability.

MOD is exempt from statutory noise nuisance, so developers will not be able to gain an appreciation of historical noise complaints relating to MOD sites and activities based on local authority records. Complaints are either made directly to MOD by complainants or else forwarded by local authorities to MOD for individual sites to investigate and deal with. A developer looking to develop a site close to an MOD site should contact the Head of Establishment for the military site close to the potential development site for information on noise concerns.

Annex E – guidance to support decision-making

The following is a non-exhaustive list of guidance documents current at the time of writing. Decision-makers and their advisors should always refer to the most recent standards and best practice guidance available at the time when carrying out their assessments, to the extent that they are compatible with the requirements of Welsh Government and local government policy.

Assessment and control of noise in industrial and commercial activities

Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, ProPG: **Gym Acoustics** Guidance (GAG), March 2023.
<https://www.association-of-noise-consultants.co.uk/gym-acoustics-guidance>

British Standards Institution, BS 4142:2014+A1:2019, Methods for rating and assessing **industrial and commercial sound**, June 2019.

British Standards Institution, BS 5228-1:2009+A1:2014, Code of practice for noise and vibration control on **construction and open sites** – Part 1: Noise, February 2014.

British Standards Institution, BS 5228-2:2009, Code of practice for noise and vibration control on **construction and open sites** – Part 2: Vibration, December 2008.

Environment Agency, Method implementation document (MID) for BS 4142 (Methods for rating and assessing **industrial and commercial sound**).
<https://www.gov.uk/government/publications/method-implementation-document-mid-for-bs-4142>

Environment Agency, Scottish Environment Protection Agency, Natural Resources Wales and Northern Ireland Environment Agency, Noise and vibration management: **environmental permits**. <https://www.gov.uk/government/publications/noise-and-vibration-management-environmental-permits>

Health and Safety Executive, Controlling noise at work: The **Control of Noise at Work Regulations** 2005 (Third edition), 2021.
<https://www.hse.gov.uk/pubns/books/l108.htm>

Health and Safety Executive, **Noise at work**: A brief guide to controlling the risks, November 2012. <https://www.hse.gov.uk/pubns/indg362.htm>

Health and Safety Executive, Sound advice: Control of noise at work in **music and entertainment** (First edition), 2008.

<https://www.hse.gov.uk/pubns/books/hsg260.htm>

Health and Safety Executive, Sound solutions for the **food and drink industries**: Reducing noise in food and drink manufacturing (Second edition), 2013.

<https://www.hse.gov.uk/pubns/books/hsg232.htm>

Home Office, Revised Guidance issued under section 182 of the **Licensing Act** 2003, December 2022. <https://www.gov.uk/government/publications/explanatory-memorandum-revised-guidance-issued-under-s-182-of-licensing-act-2003>

Institute of Acoustics, A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of **Wind Turbine Noise**, May 2013.

<https://www.ioa.org.uk/publications/wind-turbine-noise>

Institute of Acoustics, A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of **Wind Turbine Noise**: Supplementary Guidance Notes 1-6, July 2014. <https://www.ioa.org.uk/publications/wind-turbine-noise>

University of Salford, Procedure for the assessment of **low frequency noise** complaints, Defra contract NANR45, February 2005.

Aural diversity

University of Leicester, The **Aural Diversity** Infographic, October 2022.

<https://auraldiversity.org/infographic.html>

General guidelines for assessing noise and soundscape

British Standards Institution, BS ISO 12913-1:2014, Acoustics – **Soundscape** – Part 1: Definition and conceptual framework, September 2014.

British Standards Institution, PD ISO/TS 12913-2:2018, Acoustics – **Soundscape** – Part 2: Data collection and reporting requirements, August 2018.

British Standards Institution, PD ISO/TS 12913-3:2019, Acoustics – **Soundscape** – Part 3: Data analysis, December 2019.

Institute of Environmental Management & Assessment, Guidelines for Environmental **Noise Impact Assessment** – Version 1.2, November 2014.

Good acoustic design for noise-sensitive buildings

Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, ProPG: Planning & Noise: New **Residential Development**, May 2017. <https://www.ioa.org.uk/publications/propg>

Association of Noise Consultants and Institute of Acoustics, Acoustics of **Schools**: a design guide, November 2015. <https://www.ioa.org.uk/publications/schools-acoustics-guide>

Association of Noise Consultants and Institute of Acoustics, **Acoustics, Ventilation and Overheating** Residential Design Guide – Version 1.1, January 2020. <https://www.association-of-noise-consultants.co.uk/avo-guide>, https://www.ioa.org.uk/sites/default/files/joint_statement_on_propg_avo_guide.pdf

British Standards Institution, BS 8233:2014, Guidance on sound insulation and noise reduction for **buildings**, February 2014.

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Annex F – checklist of requirements for noise action plans

This Annex addresses the information that should be included, if it exists, in the environmental noise action plans required under the Environmental Noise (Wales) Regulations 2006 and the Environmental Noise Directive (2002/49/EC). References to Articles relate to the 2002 Directive as it stood on the day the UK left the EU.

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

Wales's agglomeration boundaries remain technically unchanged from those assumed in the previous consolidated action plan⁶⁹. However, they are of less significance now, as we have now gone beyond the requirements of the 2006 Regulations and mapped noise from all roads and railways in Wales, both inside and outside agglomerations, rather than mapping only the major transport corridors outside agglomerations.

There are no major airports in Wales for the purposes of the 2006 Regulations and 2002 Directive.

2. The authority responsible

In the absence of any major airports in Wales, the Welsh Ministers are the sole competent authority for the purposes of the 2006 Regulations and 2002 Directive.

3. The legal context

The statutory basis for this Plan is twofold:

The 2006 Regulations require the Welsh Ministers to review and if necessary revise their existing environmental noise action plans, contained within the current consolidated Noise and Soundscape Action Plan for Wales, no later than five years after their adoption, i.e. by 4 December 2023.

Where an action plan has been adopted under the 2006 Regulations and identifies a public body as being responsible for a particular action, that public body must treat the action plan as its policy insofar as it relates to that action. A public body may only depart from such a policy if it provides written reasons for departing from that policy and publishes those reasons.

⁶⁹ <https://www.gov.wales/noise-and-soundscape-action-plan-2018-2023-0>

In addition, as currently drafted, the Environment (Air Quality and Soundscapes) (Wales) Bill will require the Welsh Ministers to prepare and publish a strategy containing their policies with respect to the assessment, management and design of soundscapes in Wales. This strategy must include policies for assessing and effectively managing noise pollution. Local authorities and other relevant Welsh public authorities will have to have regard to the policies in the national strategy on soundscapes when exercising any function of a public nature that could affect soundscapes in Wales. If Welsh Ministers produce such a strategy before the Bill gains Royal Assent (hopefully in 2024), that strategy will be adopted as the national strategy on soundscapes when the Bill gains Royal Assent.

The Bill aims to extend the statutory basis of this Plan from the narrow list of environmental noise sources specified in the 2002 Directive to airborne noise and soundscape more generally.

4. Any limit values in place in accordance with Article 5

N/A

5. A summary of the results of the noise mapping

This is covered by Annex A.

6. An evaluation of the estimated number of people exposed to noise, identification of problems and situations that need to be improved

This is covered by Annexes A and B, and discussed in more detail throughout the body of the Plan.

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

Public consultations carried out by the Welsh Government in the last five years which have informed the drafting of the Plan include:

- [A call for evidence to inform the new TAN 11](#)
- [A consultation on a White Paper for a Clean Air \(Wales\) Bill](#)
- [A consultation on the draft new TAN 11](#)
- [A consultation on the draft Noise and Soundscape Plan](#)

The Welsh Government has also engaged openly with the UK and Welsh acoustics communities throughout the development of its noise and soundscape policy over the course of the last five years, with officials providing verbal and written policy updates at UK-wide and international conferences, notably Acoustics 2018, Acoustics 2020, [Inter-Noise 2022](#) and Acoustics 2023.

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

Noise reduction measures relating to environmental noise are covered by Chapters 7 and 8.

9. Actions that the competent authorities intend to take in the next five years, including any measures to preserve quiet areas

The Welsh Government's high-level priorities for the next five years are set out in Chapter 10. Policies to preserve quiet areas and other tranquil urban green spaces are contained in PPW.

10. Long-term strategy

By putting the Noise and Soundscape Plan on a more complete statutory footing through the Environment (Air Quality and Soundscapes) (Wales) Bill, we are enabling future Welsh Governments to focus their attention on whatever aspects of noise and soundscape policy are judged the highest priority for government attention. Each new or revised Plan will need to be evidence-based and developed transparently and collaboratively with stakeholders. If Ministers wish to do so, they may produce an integrated national strategy for the air environment, covering both air quality and airborne sound.

Noise and soundscape policy will continue to sit within the wider framework of the WFG Act, follow the five ways of working contained in that Act and work towards the achievement of sustainable development and the national well-being goals.

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

Not currently available.

12. Provisions envisaged for evaluating the implementation and the results of the action plan

The Welsh Government has hosted at least two meetings for noise regulators across Wales every year since the publication of its 2013 Noise Action Plan. Since 2020, these meetings have been held virtually. They are regularly attended by environmental health and/or pollution control officers from the majority of Welsh local authorities, as well as by NRW, PHW and the Noise Abatement Society. In the last five years, they have covered topics such as noise regulation during the Covid-19 pandemic, increased use of The Noise App, concerns around firework noise and the development of the new TAN 11.

The Welsh Government will continue to host meetings open to all public bodies having responsibilities under this Plan at least twice yearly during the lifetime of the Plan, to further develop Wales's national noise and soundscape policies and take forward actions and long-term strategy.

The Welsh Government will update the Plan as and when it deems necessary, including carrying out at least one review incorporating a full public consultation no more than five years after its first adoption.

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

Not currently available.

Annex G – Equality Impact Assessment

An Equality Impact Assessment for the draft Noise and Soundscape Plan has been carried out, which indicates that there are positive or neutral impacts on people with protected characteristics.

The policies within the draft Noise and Soundscape Plan apply to everyone, including disadvantaged groups. The effects of sound, both positive and negative, depend on the sound's character and intensity, on who hears it and in what context. Sound affects different people in different ways, with risks and impacts changing over a lifetime. Children and young people, those who are neurodivergent and those with mental health or heart conditions are more likely to be adversely affected by noise. Improvements to soundscape quality can therefore deliver particular benefits to those with certain protected characteristics.

The draft Noise and Soundscape Plan recognises the wide variation in people's experience of sounds. By promoting soundscape approaches, we are at the forefront of moving away from a purely data-driven approach to noise management, to one that acknowledges the diversity of our population and the importance of considering context and involving communities in decisions that affect them. Soundscape approaches are an emerging discipline, but one that is very much in keeping with the principles of the Well-being of Future Generations (Wales) Act 2015.

We expect people to experience the benefits of a transition from traditional noise control to a more inclusive soundscape-based approach when they can see public bodies taking on board local communities' views on their sound environments, in terms of both what they value and what they think needs to be improved. We expect that this will have a positive effect for people with neurodivergent conditions, those with hearing conditions such as tinnitus, and those who suffer from poor mental health.

Noise can affect a child's learning, and therefore prospects later in life, both directly and through poor sleeping. Improved soundscape quality will have a positive impact on children whose education is currently being adversely affected, directly or indirectly, by noise.

Action to reduce noise outside people's homes also has the potential to bring particular health benefits for those at greatest risk from heart disease, hypertension and other conditions for which an association has been demonstrated between noise levels and health endpoints.

Greater recognition by decision-makers of the benefits of natural sounds to human well-being will lead to higher recreational quality of green spaces in and around

villages, towns and cities. Disabled people and people of lower socioeconomic status who do not own a vehicle or who find it impractical to access long-range public transport to beauty spots will be able to enjoy local recreational spaces with an improved sound environment.