

TECHNICAL ADVICE NOTE 11: AIR QUALITY, NOISE AND SOUNDSCAPE

Table of Contents

1 INTRODUCTION	3
1.1 Context for action on air pollution	3
1.2 Context for action on noise and soundscape	4
1.3 Scope of this document.....	5
1.4 Supporting Document 1: Soundscape Design	5
2 GENERAL APPROACH.....	6
2.1 Placemaking	6
2.2 Integrating air quality, noise and soundscape considerations when designing and proposing development	7
2.3 Appropriately addressing issues at different scales.....	9
2.4 The importance of location for ensuring good air quality	10
2.5 Soundscape design.....	11
2.6 The role of green infrastructure in air quality and soundscape.....	12
2.7 Pre-application discussions	12
3 STRATEGIC APPROACHES	14
3.1 Key considerations	14
3.2 Information to inform development plans and placemaking	15
3.2.1 Existing spatial information, assessment and/or evidence gathering.....	15
3.2.2 Identifying relevant constraint mapping, data and information.....	16
3.2.3 Collecting/producing new spatial or other design and environmental quality related information or evidence	17
3.3 Using information to improve planning responses	18
3.3.1 Producing local site acceptability criteria for pollution-sensitive development	18
3.3.2 Ensuring the location and distribution of development is sustainable and mitigation is secured where appropriate.....	19
3.3.3 ‘Quiet areas’ and other tranquil spaces.....	21
3.3.4 Local soundscape design policies	22
4 IMPROVING THE QUALITY OF PROPOSALS	25
4.1 Initial consideration of environmental conditions on site	27
4.1.1 Pollution-sensitive development: Qualitative assessment of environmental conditions on site.....	27
4.1.2 Pollution-sensitive development: Initial quantitative assessment of environmental conditions on site	28
4.1.3 Environmental conditions considered unsuitable for pollution-sensitive development	29

4.2	Relationship of development with the surrounding area.....	31
4.2.1	Requirements for airborne pollution assessment	32
4.2.2	Biodiversity and ecosystem considerations.....	34
4.2.3	When a soundscape assessment can add value	35
4.3	Design.....	36
4.3.1	Addressing impacts and improving the quality of proposals through good design	36
4.3.2	Principles of good design for air quality	37
4.3.3	Noise and Soundscape Design Statement (NSDS)	38
4.3.4	Addressing impacts on nearest neighbours through good design.....	42
4.3.5	Development whose nature and/or scale has the potential to cause adverse air quality and soundscape impacts for the local area	43
4.3.6	Ventilation and overheating	44
4.4	Construction phase	45
5	DEVELOPMENT MANAGEMENT: DETERMINING ACCEPTABILITY OF POLLUTION IMPACTS FOR POLLUTION-SENSITIVE AND POLLUTION-GENERATING DEVELOPMENT	46
5.1	Determining environmental conditions considered unsuitable for pollution-sensitive development	46
5.2	Assessing pollution impacts generated by development	47
5.2.1	Air quality impacts and mitigation.....	48
5.2.2	Impacts on biodiversity and ecosystem resilience	50
5.2.3	Air source heat pumps.....	50
5.3	Applying the ‘agent of change principle’	51
	REFERENCES	53
	GLOSSARY.....	56
	LIST OF ACRONYMS	58
	APPENDIX 1: THE ROLE OF GREEN INFRASTRUCTURE IN AIR QUALITY AND SOUNDSCAPE	59
	APPENDIX 2: DATA AND INFORMATION FOR PLAN MAKING	61

1 INTRODUCTION

Planning Policy Wales (PPW) is supplemented by a series of Technical Advice Notes (TANs) and other guidance, which together comprise national planning policy in Wales.

This TAN provides further policy guidance and technical advice to support planning policy in PPW relating to air quality, noise and soundscape. The policy framework in PPW requires proactive and preventative action which achieves better health outcomes, reduces health and social inequalities and does more than think about not breaching thresholds, driving down decibels and using up 'headroom'. A better quality strategic outcome or individual development proposal will not cause exposure to airborne pollution, or at the very least should minimise its effects.

This TAN is closely aligned with TAN 12: Design, which sets out policy guidance on sustainable design and planning. It is accompanied by a supporting document that offers an introductory guide to the concept of soundscape design.

This TAN should be considered alongside PPW and all other relevant planning policy when preparing development plans and will be material to decisions on individual planning applications where air quality, noise or soundscape are relevant considerations.

1.1 Context for action on air pollution

Good air quality is essential for life, health, nature, the environment and the economy. People are exposed to air pollution in the places they live, work, and spend their leisure time. Air pollution carries severe social and environmental costs and adverse effects on economic growth, through its impact on health.

Despite outdoor air quality in Wales improving steadily over recent decades, it is still the largest environmental risk to public health. People with pre-existing respiratory and heart conditions, the young, and older people are particularly vulnerable to the adverse impacts of air pollution on their health. Beyond these groups, it is possible that others are at a higher risk, such as those working in polluted places or commuting to work through heavily congested urban areas. People living in the most deprived areas are particularly susceptible to air pollution, and multiple deprivation and health data in Wales show that average air pollution concentrations are consistently highest in the most deprived areas.¹

The sources of outdoor air pollution are well known. They include transport and the fuels used for transport, particularly private cars and other road vehicles but also

¹ Public Health Wales and Welsh Government, Working together to reduce outdoor air pollution, risks and inequalities: Guidance to support policy and practice development across the NHS in Wales. <https://gov.wales/sites/default/files/publications/2019-06/working-together-to-reduce-outdoor-air-pollution-risks-and-inequalities.pdf>

trains, shipping and aircraft. They also include industry, agriculture and emissions from homes and businesses. Sources of air pollution can vary greatly with locality and solutions to tackle poor air quality must be found at local, regional, national and international levels.

The Clean Air Plan for Wales sets out the wider policies, interventions and measures necessary to improve air quality in planning actions at all relevant scales. Attention is drawn to air quality standards in Wales, which are determined through:

- The Air Quality Standards (Wales) Regulations 2010 which set limit values for the concentration of pollutants that must be met everywhere by specific dates (previously set by the Ambient Air Quality Directives (2008/50/EC and 2004/107/EC));
- The National Emission Ceilings Regulations 2018 which set national emission totals for key pollutants to be met by 2020 and 2030 (previously set by the National Emission Ceilings Directive (2016/2284/EU)); and
- Legislation controlling emissions from specific sources such as industrial emissions as set out in the Environmental Permitting (England and Wales) Regulations 2016 (with emission limit values previously set by the Industrial Emissions Directive (2010/75/EU)), and emissions standards for road and off-road vehicles and machinery.

1.2 Context for action on noise and soundscape

Noise, meaning unwanted or harmful sound, can, in the short term, disrupt sleep and increase levels of stress, irritation and fatigue, as well as interfering with important activities such as learning, working and relaxing. In other words, it reduces the quality of people's lives. Exposure to loud sounds can cause hearing damage, while exposure to noise in the long term can increase risk of hypertension-related illnesses and cardiovascular disease.

Noise has a significant impact on well-being. But this does not mean a Wales that is silent. People's lives are enhanced by conversation, laughter and cheering, music and the sounds of nature. A healthy acoustic environment is more than simply the absence of unwanted sound, and noise management must have a broader focus than simply reducing the decibels. There is a need to create appropriate soundscapes, meaning the right acoustic (i.e. sound) environment in the right time and place. The towns and cities, in which people live, serve a variety of purposes, and should therefore 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.

The Noise and Soundscape Action Plan for Wales 2018-2023 sets out the Welsh Government's focus on moving beyond managing noise primarily through sound level reduction to creating appropriate soundscapes.

1.3 Scope of this document

This TAN sets out general expectations and requirements for developers, designers, consultants and planning authorities regarding airborne pollution and soundscapes. It is not intended to be read in isolation, rather it should be applied in conjunction with the suite of planning policy and the most recent standards and best practice guidance available at the time of undertaking any relevant assessments, to the extent that such standards and guidance are compatible with the requirements of Welsh Government and local planning policy.

The unique or specific issues associated with agricultural air pollution, wind turbine noise, minerals operations or waste operations and the effects of airborne (air and noise) pollution on wildlife are not considered in this TAN in any detail. The reason for this is that they are either covered in other relevant TANs or the level of detail required is such that it could not be covered sufficiently in this TAN. Where other TANs or MTANs (Minerals Technical Advice Notes) cover specific uses in detail it is also appropriate to consider the policy guidance in this TAN. This TAN does not replace or supersede existing TANs or MTANs.

1.4 Supporting Document 1: Soundscape Design

The TAN is supported by an introductory guide to taking a soundscape design approach to new development. Supporting Document 1 covers relevant background and definitions for understanding soundscape and using it within a planning context, including what may constitute good soundscape design and a proportionate soundscape design response. It is a starting point for all those involved in the planning process, recognising that it does not provide exhaustive information on good soundscape design. Other guidance, standards, and materials incorporating emerging best practice may also cover soundscape design issues relevant to specific topics or types of development. It is important to note that soundscape is an emerging discipline which is rapidly evolving in both research and practice. As such, the references noted in these documents are a starting point.

Where appropriate, such an approach should complement traditional noise control design measures and form part of an overall design approach.

2 GENERAL APPROACH

The TAN supplements PPW with advice on:

- augmenting wider policies and interventions necessary to improve air quality, including measures set out in the Clean Air Plan for Wales; and
- creating appropriate soundscapes to promote health, well-being and sustainability.

The advice is relevant when forward planning, when designing and formulating development proposals and when determining planning applications. It requires up front consideration at the strategic, site analysis and design stages. Pollution impacts on people and the environment should be minimised and benefits for air quality and soundscape should be captured through appropriate location, siting and design.

Planning authorities should collaborate with relevant stakeholders, including local authority environmental health officers and pollution control specialists, to ensure that effective air quality and soundscape interventions are considered as part of developing strategies and policies for places. Developers and applicants should identify impacts on air quality and noise at the outset and involve designers, air quality specialists and acousticians in finding appropriate solutions.

2.1 Placemaking

The focus on placemaking in PPW means policy topics such as air quality, noise and soundscape should be considered alongside all other relevant policy topics when preparing development plans and designing and determining planning proposals.

PPW People and Places: Achieving Well-being Through Placemaking and Placemaking in Action PPW Air Quality and Soundscape

Key considerations and questions include:

Do not regard air quality and soundscape as technical matters to be resolved at the end of the design process

Consider impacts on health, well-being and amenity from the outset

Will an action or proposal make existing air quality or noise problems worse?

Will an action or proposal create areas of poor air quality or soundscape?

Will people and the environment be exposed to airborne pollution or create exposure to airborne pollution?

How can the quality of an action or proposal be improved to result in better quality outcomes and reduce pollution and exposure to it, or at the very least minimise its effects?

How can opportunities be secured to improve air quality and soundscape alongside other design objectives?

Air quality and noise issues should be planned and designed out at the start as they are difficult to mitigate once they arise. It is better to avoid exposing people and sensitive habitats to airborne pollution in the first place rather than seeking to provide mitigation later. This is particularly the case where poorly chosen locations for development can exacerbate existing air quality problems or create new problems which did not previously exist. For noise or soundscape there may be opportunities to employ good acoustic design or soundscape design to protect against unacceptable effects of noise pollution as part of identifying overall design objectives.

2.2 Integrating air quality, noise and soundscape considerations when designing and proposing development

Air quality, noise and soundscape should be considered together because the sources of pollution are often the same. How they may be addressed will depend on the nature of the development itself and where it is being proposed.

Definitions of Nature of Development:

Dwellings, schools and other buildings or outdoor amenity spaces where members of the public are likely to spend long periods of time are referred to in this TAN as **pollution-sensitive development**.

Any development is considered to be **potentially polluting development** (or pollution-generating) if it has the potential to generate additional traffic in the surrounding area, emit air pollutants directly, for example from chimneys or extractor fans, or introduce new sources of noise within the development itself. This can include a development that is also pollution-sensitive.

An iterative process is outlined in Chapter 4 to guide when and how issues should be addressed at site analysis and design stages. A summary of the main components of this process is set out in Figure 1.

Figure 1 Summary of main components of national policy



Early input by air quality and acoustics professionals into the design of a development provides an opportunity to maximise the benefits of taking an integrated approach to design. An integrated approach will achieve the best environmental and human health outcomes from the project. It also reduces risks and inefficiencies that may materialise if the related disciplines of air quality and acoustics are treated separately from one another and from other design objectives.

Air quality measures can sometimes be effective design measures to minimise noise pollution. For example, containing fugitive emissions and noise within a sealed industrial building rather than allowing dust- and noise-emitting activities to be carried out in the open air. The combined air quality and soundscape benefits of such measures may justify additional costs where a case expressed solely in terms of a single benefit might not.

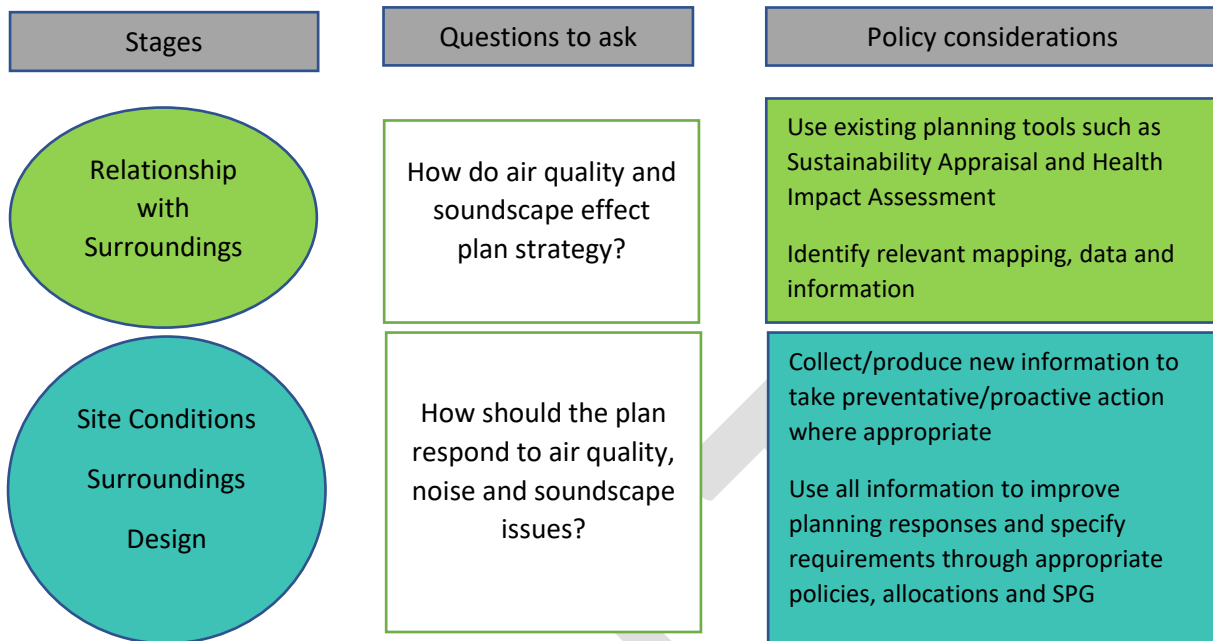
In other cases, an air quality measure might lead to an adverse acoustic outcome, or vice versa. For example, a roadside noise barrier or other noise blocking structure might create a canyon effect that prevents air pollution from dispersing. This can result in higher levels of pollution on the road and roadside footpath. Alternatively, a solid fuel heating system might be replaced by a noisy air source heat pump, bringing about air quality improvements but leading to noise complaints from neighbours. If air quality and acoustics professionals are involved collaboratively early in the design process benefits and dis-benefits can be weighed up in the local context and the most sensible approach adopted for the proposed development.

2.3 [Appropriately addressing issues at different scales](#)

The TAN seeks to ensure air quality and soundscape are or can be improved through the best possible locational and design choices at the most effective planning level. In this way, the components of national policy should be taken into account when preparing development plans and determining planning applications.

Existing settlement patterns will already be influencing pollution levels and the exposure of people and the environment to poor air quality and noise. Therefore, obtaining an understanding of the existing context for air quality and soundscape when formulating plan strategy will ensure unacceptable effects do not occur as a result of the aims and objective of the plan and the broad distribution and location of proposed new development. How the strategy of the plan is implemented via policies and allocations, including potential supplementary planning guidance, provides an opportunity to specify design and mitigation requirements for more specific areas and sites to ensure impacts can be minimised as part of better placemaking.

Figure 2 Using the national policy components for forward planning



Action to consider air quality and soundscape at the plan level will support health and well-being, urban and rural regeneration, economic activity, the re-purposing of town centres, the provision of green infrastructure and tranquillity ensuring the right uses in the right places. PPW advocates the use of the Agent of Change principle to manage change in an area and this should be considered when drawing up policies and allocations in development plans. The overall aim is to ensure the right choices are made about the location, mix and density of uses in an area whilst ensuring air quality is protected and an appropriate soundscape is achieved.

Particular attention is drawn to air pollution and deprivation for the purposes of plan making, where studies have revealed that the interaction of air pollution, impaired health and deprivation and the consequences of disproportionate disease burdens between and within communities (inequalities) presents a ‘triple jeopardy’ threat. For example, in the context of particulate matter pollution rates of respiratory mortality can be twice as high in ‘low’ pollution and ‘most’ deprived areas compared with ‘low’ pollution and ‘least’ deprived areas, and increased to 2.4 times as high in ‘high’ pollution and ‘most’ deprived areas. Therefore, air pollution problems must be considered in terms of their relationship with health determinants if improved planning outcomes are to be obtained. Ignoring these interactions is likely to compound existing health inequalities.

2.4 The importance of location for ensuring good air quality

Decisions on land use can significantly impact future emissions across localities and it is difficult and often costly to tackle air pollution issues once they have arisen. It is, therefore, essential to make optimal location and site selection choices from the outset and planning authorities must ensure that the siting of development is

appropriate for its users and that movement to and from sites is sustainable. Good design, whilst being an important factor in ensuring development is sustainable, is unlikely to be capable of mitigating a poor choice of location where air quality is concerned, and certainly not to the extent that it can be beneficial in addressing noise impacts.

Key considerations and questions include:

- Do not exacerbate existing problems in an area
- Do not create new pollution problems
- How does the proposal reduce the need to travel?
- Apply the sustainable transport hierarchy
- Design in measures to improve walking and cycling from the outset
- Identify mitigation measures to improve air quality across localities
- Consider setting local standards for air quality
- Consider the implications of incremental development and cumulative impacts of air pollution

2.5 Soundscape design

Soundscape design augments traditional noise control practices by assessing the effects of the sound environment from the perspective of the user in context. Whereas traditional noise control approaches focus on predicting and/or measuring, assessing and reducing noise (i.e. unwanted or harmful sound), soundscape design focuses on understanding the impact of the sound environment on people's lived experience in a specific context. In other words, how the collective sounds of a place, together with any physical and/or non-physical non-acoustic factors (i) affect people's perception of those sounds; (ii) make people feel; and (iii) affect what they do.

Soundscape design also complements traditional design practices. Design is defined in PPW as the relationship between all elements of the natural and built environment and between people and places.

PPW People and Places: Achieving Well-being Through Placemaking and Placemaking in Action

TAN 12 Design

Soundscape design encourages a multisensory approach to design to support well-being and quality of life. This is important for planners, as how people experience a place is a key element of good placemaking. Good soundscape design, as a prerequisite to good placemaking, requires a collaborative, creative, inclusive process of problem-solving and innovation in the planning process from the outset.

Whilst a soundscape design approach is supported in this TAN, it should only be required by planning authorities instead of, or in addition to, a conventional noise control or acoustic design where it is considered necessary to create an appropriate soundscape and is likely to result in better placemaking in accord with PPW and section 4.3.3 of this TAN.

2.6 The role of green infrastructure in air quality and soundscape

The provision of green infrastructure is a key policy requirement of Future Wales and PPW. It is a multifunctional solution which complements taking an integrated approach to planning and design, with the potential to secure climate, nature and well-being benefits at the same time. Green infrastructure should be embedded as part of improving the quality of places through forward planning. It should be considered as far as it relates to:

- opportunities to reduce the effects of 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 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. 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 and further consideration can be found in Appendix 1.

2.7 Pre-application discussions

Chapter 4 promotes an iterative process which should be considered by developers, designers and applicants when proposing development. It requires early consideration of air quality, noise and soundscape design issues. Pre-application discussions should be used to confirm the key air quality, noise and soundscape design issues arising from a development proposal which need to be addressed alongside other key planning considerations. This may involve planning authorities, with the assistance of environmental health officers, providing advice on the nature

and scope of the relevant assessments required commensurate with the significance of the issues identified and the objectives of good design.

Discussions should be informed by relevant national and development plan policies and guidance. Detailed discussions should focus on meeting the objectives of good design, including soundscape design, and the topics to be addressed in any required Noise and Soundscape Design Statement or Design and Access Statement.

DRAFT

3 STRATEGIC APPROACHES

3.1 Key considerations

Addressing air quality, noise and soundscape as part of developing strategies, policies and proposals in development plans provides an opportunity to avoid creating new problems, to avoid exacerbating pollution problems, and to obtain sustainable outcomes. This requires making optimal use of existing planning tools, assessments and available information to embed solutions based on fully taking into account:

- the impacts of plan strategy, policies and proposals on air quality and soundscape; and,
- the impact of air quality and soundscape on the choices being made when preparing plans.

Key considerations and questions for forward planning include:

How good is the air quality, and are there any known pollution problems in an area?

What are the soundscape and noise issues in an area?

Could existing settlement patterns result in incremental development across an area which will intersect with known areas of poor air quality or soundscape or create new pollution problems?

Is there a relationship between air quality, health and deprivation in an area?

Is there potential for improving air quality and soundscape whilst considering regeneration, re-purposing town centres or identifying employment areas?

Identify the opportunities for addressing air quality as part of decarbonisation measures, including the promotion of active travel and locating near transport hubs to reduce the additional generation of transport emissions

Is there potential for improving air quality and soundscape whilst considering landscape, biodiversity, green infrastructure, green spaces or nature based solutions?

Is there potential for improving air quality and soundscape whilst considering action for built heritage, including conservation areas?

Consider whether large scale development proposals impact on areas of already poor air quality or soundscape or create new pollution problems

Consider how soundscape design and applying the agent of change principle can resolve conflicts and improve compatibility of uses

Air quality impacts should be considered at the same time as those aspirations relating to decarbonisation, such as reducing the need to travel by private car, promoting active travel and public transport options and encouraging the provision of

non-polluting forms of heating to reduce the contribution to background air pollution contribution from solid fuel combustion where people live. Soundscape design should be integral to placemaking where it can add value to existing policy formulation and design guidance.

3.2 Information to inform development plans and placemaking

Effective use of information will be important in identifying whether and how air quality, noise and soundscape issues affect plan strategies or other strategic interventions on placemaking. Such information and evidence are likely to fall into a number of categories:

- Spatial information, assessment and/or evidence gathered for plan purposes which is not directly related to air quality and soundscape but which could enable opportunities for improvements in air quality and soundscape to be identified as part of securing other wide-ranging benefits;
- Constraint mapping based on existing spatial information or data which identifies an existing or potential pollution problem directly or indirectly;
- New spatial or other design and environmental quality related information or evidence which may be specifically collected and prepared which can address existing problems, or be beneficial for, air quality or soundscape.

Measures to improve air quality may be reliant on investment and provision outside of the plan process. This may particularly be the case for strategic infrastructure provision or may be incrementally funded or phased through appropriate development proposals coming forward. This presents challenges but should not be used as a reason for strategies, policies or proposals in plans to exacerbate existing pollution problems or potentially create new ones, either of themselves or cumulatively over geographical areas.

3.2.1 Existing spatial information, assessment and/or evidence gathering

National planning policies require a number of assessments and evidence gathering to support plans which are either part of the procedural requirements for plans or which reflect the particular circumstances faced by places.

Considerations for existing planning tools and assessments include:

Identify air quality, noise and soundscape data and mapping which can add to the socio-economic understanding of an area

Consider intelligence on societal behaviours (for example outputs of Wales Housing Condition Survey) and how this may inform design responses

Consider how the information in Appendix 2 can improve Sustainability Appraisal (and SEA), Habitats Regulations Assessment and Health Impact Assessment

Consider the implications of the ‘triple jeopardy’ threat in Health Impact Assessment

Consider how green infrastructure assessments, active travel measures, built heritage and design guidance, development briefs or master plan cans assist in improving air quality and soundscapes

3.2.2 Identifying relevant constraint mapping, data and information

When gathering evidence to inform development plans, authorities should explore all available sources of spatial intelligence on current and likely future airborne pollution and soundscapes (i.e. how people perceive their sound environment, in context). Taking opportunities to map data wherever possible will assist in enhancing understanding of how people experience places which in turn will improve placemaking.

Considerations include (Further detail is contained in Appendix 2):

Environmental noise maps

Air quality maps/Air Quality Management Areas

Local authority intelligence and knowledge of air quality

Noise complaint hotpots

Maps of licenced entertainment venues

Maps showing major industrial areas and operations

Major road/infrastructure projects

‘Tranquillity & Place’ resources

3.2.3 Collecting/producing new spatial or other design and environmental quality related information or evidence

Table 1 contains a summary of potential action which could be taken to collect or produce new information to improve air quality and soundscape.

Table 1: New spatial or other design and environmental quality related information or evidence	
What type of new information may be necessary	Reason to take preventative and proactive action
Evidence to inform tighter local air and noise pollution limits for new pollution-sensitive development	<p>Even if areas do not exceed national air quality objectives it is not acceptable to keep polluting and use up so-called ‘headroom’ because there are no safe thresholds for some pollutants. PPW requires that average levels of pollution should be reduced and pollution should be prevented. Where this is not possible it should at least be minimised.</p> <p>Local knowledge can be brought to bear to strike a balance between the need for development and the health benefits of setting lower pollutant thresholds to ensure that public exposure to pollution is kept as low as reasonably practicable.</p>
Identifying high noise risk areas that may warrant a trigger for specific action driven by soundscape considerations and the agent of change principle	In areas where there is a likely need to resolve conflicting aims between development and preventing inappropriate soundscapes and to ensure the compatibility of uses it would be beneficial to identify in advance where a soundscape design approach may be valuable in line with section 4.3.4 and Supporting Document 1.
Identifying green spaces outside urban agglomerations that should be mapped and afforded the same level of protection as ‘quiet areas’	As part of green infrastructure assessments and open space assessments accessible areas of tranquil respite space should be identified, taking into account section 3.3.3. Tranquil areas should be identified which are afforded the same level of protection as nationally designated urban ‘quiet areas’.

3.3 Using information to improve planning responses

Using existing or new information in a proactive and preventative way could include:

Identifying local air and noise pollution limits for pollution-sensitive development across local authority areas or in specific places in order to avoid the potential for development to increase public exposure to pollution;

Preparing specific policies and/or SPG to address the implications of, and for, Air Quality Management Areas (AQMAs), and to avoid the potential for development to increase public exposure to pollution either individually or cumulatively. This may include:

- specifying requirements for airborne pollution assessments;
- identifying both direct and off-site mitigation measures for an area in line with actions in Local Air Quality Management plans; or
- putting forward specific transport implementation measures for larger scale developments to manage movement to, from and within a site or area of change in the most sustainable manner;

Identifying particular areas or drafting specific policies and/or preparing SPG covering circumstances where development proposals would require soundscape design responses. Such policies or SPG should be integrated with and complement the development of wider design/placemaking policies, strategies, design or development briefs.

3.3.1 Producing local site acceptability criteria for pollution-sensitive development

PPW and Local Air Quality Management requires air and noise pollution levels to be kept as low as reasonably practicable. Local authorities may also consider setting more ambitious site acceptability criteria (see section 4.1.3) than those set nationally to be achievable across all new dwellings or other classes of development in a given area.

Working in conjunction with environmental health officers, planning authorities may consider the feasibility of setting local site acceptability criteria for a part or all of their area, which are more ambitious than the national default criteria provided in Chapter 4. Where they choose to do so, authorities should take into account information already being collected for plan purposes such as demographics, projected housing demand, the supply of land available to meet that demand, the latest health evidence, the character of an area and any other relevant factors. These factors will determine to what level pollution could realistically be lowered in an area. Establishing more ambitious local site acceptability criteria should take place through development plans, including the preparation of SPG where appropriate, and must be supported with appropriate local evidence.

It is better to avoid exposing people and sensitive habitats to air pollution in the first place. If the wrong location for development is proposed or chosen the ability of designers to orientate and design development to minimise the impacts of air pollution may be limited. Therefore, utilising approaches based on establishing local acceptability criteria for air quality will avoid the creation of future air quality problems.

The Welsh Government's ambition is to improve air quality across Wales and may set new targets through future clean air legislation. Currently air quality limits are set by the Air Quality Standards (Wales) Regulations 2010². These standards will become more stringent over time and a proactive reduction of air pollution levels through sustainable planning decisions will help local authorities meet legal targets in future. The World Health Organization (WHO) has recommended long and short-term air quality guidelines and interim targets.

When proposing new air quality targets the Welsh Government will take account of the WHO guidelines on air pollution levels³. Advice from the WHO is based solely on scientific conclusions about public health aspects of air pollution and does not consider the technical feasibility or the economic, political and social aspects of the achievement of recommended levels. However these new guidelines include a phased approach to adopting more stringent targets by providing interim targets towards reaching the WHO air quality guidelines. Local authorities may wish to use the WHO guidelines and interim targets as a starting point for producing local site acceptability criteria for air quality and implement a similar phased approach in areas where they are able to be more ambitious.

For noise and soundscape there are more opportunities to employ soundscape design or good acoustic design to protect against unacceptable effects. In setting any more ambitious local site acceptability criteria, planning authorities should bear in mind that some widely quoted health guidelines for environmental noise are generally derived, not from studies limited to modern dwellings whose architects have followed good acoustic or soundscape design, but rather from studies of population effects observed across the entire housing stock. It would therefore be inappropriate to apply such health guidelines without modification as absolute limits in a development context where good acoustic or soundscape design is expected to be applied.

3.3.2 Ensuring the location and distribution of development is sustainable and mitigation is secured where appropriate

Placing development in the wrong location could expose new occupants of development to pollution or could increase exposure for the wider community. In

² The Air Quality Standards (Wales) Regulations 2010.

<https://www.legislation.gov.uk/wsi/2010/1433/contents/made>

³ World Health Organization, WHO global air quality guidelines, 2021.

<https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf>

order to ensure proposed development is located in the right place, existing and potential future impacts of pollution, planned measures to improve pollution levels and wider opportunities to improve air quality and soundscape should be identified and factored into the plan making process. This will involve taking account of the information sources referenced in Appendix 2, including the spatial distribution of AQMAs and their implications.

Plan strategies may facilitate individual action which could have cumulative benefits of reducing and/or minimising pollution and not amount to overall increases. However, cumulatively small actions in the wrong place could lead to increases in overall exposure creating new or exacerbating existing problems.

Therefore, a carefully planned approach should be taken in the vicinity of existing pollution problems so as not to exacerbate pollution levels and unnecessarily increase exposure of people and environment to pollution. SPG is the most effective way of setting out the detail required.

The planning of movement and accessibility as part of development plan strategies and allocating sites for development should therefore be based on an understanding of the implications for, and of, local air quality and soundscape. This understanding should contribute to the selection of the most appropriate locations for development in line with the transport hierarchy which are joined up with measures to promote sustainable transport modes, manage traffic, ensure sustainable ways to best utilise road space within developments, and ensure the provision of multi-functioning green infrastructure and environmental quality through design. Account should be taken of those actions already contained in Local Air Quality Management plans and existing SPG.

Planning authorities should take into account available guidance. For example, the Welsh Government has published updated guidance for the implementation of the Active Travel (Wales) Act 2013⁴. Local authorities are required to produce maps of existing active travel routes, future routes and improvements to routes. Planning authorities should work closely with colleagues responsible for the active travel maps in order to determine the travel choices available to users of potential developments and the conflicts and opportunities which may arise with future development, including whether opportunities exist to improve how roads are used within an area by changing road space allocation, road design and use. By ensuring that roads are built and used in the best way for all users, air pollution levels should be lower and places should become more pleasant areas to be⁵.

⁴ Welsh Government, Active Travel Act Guidance.

<https://gov.wales/active-travel-act-guidance>

⁵Manual for Streets

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdfmanforstreets.pdf

3.3.3 ‘Quiet areas’ and other tranquil spaces

Tranquil urban spaces or accessible water features should be identified as providers of respite from excessive noise as part of an overall sustainable approach to green infrastructure provision. Tranquil areas (including those formally designated urban ‘quiet areas’) are not necessarily determined by scale. A single park bench or a rest area near a fountain could be recognised as providing a tranquil experience to its users, and therefore be identified for protection because of its relative tranquillity in the context of the local area. The value of tranquil and accessible public spaces should be identified as part of green infrastructure assessments in accord with PPW and taking into account section 2.5.

Detailed considerations for plan making will include:

- Identifying areas which may offer peace and quiet, or a tranquil sound environment where natural sounds such as flowing water, birdsong, the wind in the trees and human conversation are more prominent than background traffic noise. The benefits of such qualities of place may be fully realised only when they coincide with relative freedom from intrusive visual disturbance, a sense of security and ease of access. Areas where these qualities all exist side by side (for example, Green Flag Award-winning sites) should receive protection from noise intrusion or any other detrimental change that would risk compromising the place’s overall sense of tranquillity.
- Where urban ‘quiet areas’ have been identified by local authorities and formally confirmed by the Welsh Government, these designations should be kept under review and updated where appropriate, particularly where national evidence and local knowledge identifies additional tranquil green spaces that warrant a similar level of recognition and protection.
- Green spaces outside urban agglomerations that provide similar tranquillity benefits to those provided by designated urban ‘quiet areas’ should also be mapped and afforded the same level of protection as quiet areas in development plans. As part of green infrastructure assessments, local authorities should consider the role of tranquil green spaces generally in enhancing the well-being of local communities.

Where areas are deficient in accessible tranquil green space, development plans should make provision for such spaces to be created to enhance the well-being of local communities. This should be complementary to approaches which seek to maintain and enhance biodiversity, the resilience of ecosystems and ensure the provision of more formal open space.

A soundscape design approach should be taken where there is a need to create an appropriate soundscape which balances the aims of tranquil respite and economic

benefits for users and visitors. The soundscape design objectives and resulting interventions (e.g. water features, play and sports areas, or non-mechanical and non-amplified sounds made by people) should reflect local policy needs and provision should be made for the long-term management of identified interventions.

3.3.4 Local soundscape design policies

Planning authorities should consider identifying areas to be given special consideration in terms of soundscape, including where there would be a benefit in setting out specific soundscape design expectations and requirements. These will vary in nature but will reflect the characteristics of places and the need to reconcile conflicting objectives such as those which may emerge as part of regeneration.

DRAFT

Consideration should be given to the use of soundscape design approaches in areas:

- of landscape, townscape, cultural or historic importance which provide or could provide tranquil, restorative environments within busy built-up areas;
- where there is a need to promote growth and change, such as town centres and older housing and employment areas, where soundscape considerations can help to clarify how areas might develop over time as part of an urban design framework or masterplan taking into account the agent of change principle;
- where soundscape considerations can help manage pressure or change in rural landscapes;
- where soundscape design can work beneficially with considerations around improving air quality, and where site location, building and street design can play an important role in achieving a reduction in car traffic and speed and short distance motorised journeys, as well as encouraging a wider choice of more sustainable modes of travel;
- where a soundscape design approach to the improvement of the public realm will dovetail with key regeneration activities, including improvements to commercial areas and enhanced green infrastructure provision and key soundscape considerations could usefully be incorporated into policies and appropriate supporting guidance;
- of existing employment and commercial use, or in new employment land allocations, which would benefit from the need to embrace high quality soundscape and environmental standards to add value to commercial property, help increase occupant productivity, health and well-being, support the image of modern businesses and encourage further investment; and
- where there is a need to address community safety, for example, where community access to public spaces may be inhibited by safety issues. How people respond to their local sound environments is directly linked with feelings of safety and security and soundscape design could result in improvements to the public realm.

Promoting good soundscape design is a means of promoting the five ways of working from the Well-being of Future Generations (Wales) Act: firstly by ensuring effective stakeholder involvement in developing local soundscape design policies and guidance, and secondly by providing advice and information to assist with

specific soundscape design issues. Planning authorities are encouraged to prepare soundscape design advice for their areas which specifies where and why such approaches would be beneficial which both takes account of national policy and guidance and also reflects local context and issues. Further information on adopting a soundscape (and therefore multisensory) design process can be found in Supporting Document 1.

When preparing SPG, planning authorities should identify the target user and work collaboratively to ensure that the content, format and type of advice is most appropriate to meet those users' needs. Planning authorities should also examine how in the exercise of their statutory functions they can ensure they are responsive to local soundscape concerns raised by members of the public. This may mean exploring new ways of achieving meaningful participation in policy formulation and SPG preparation by both practitioners and the wider public. The level of community involvement in these processes should be sufficient to allow adequate evaluation of the needs and concerns of end users, local communities and business interests at each stage of the soundscape design process.

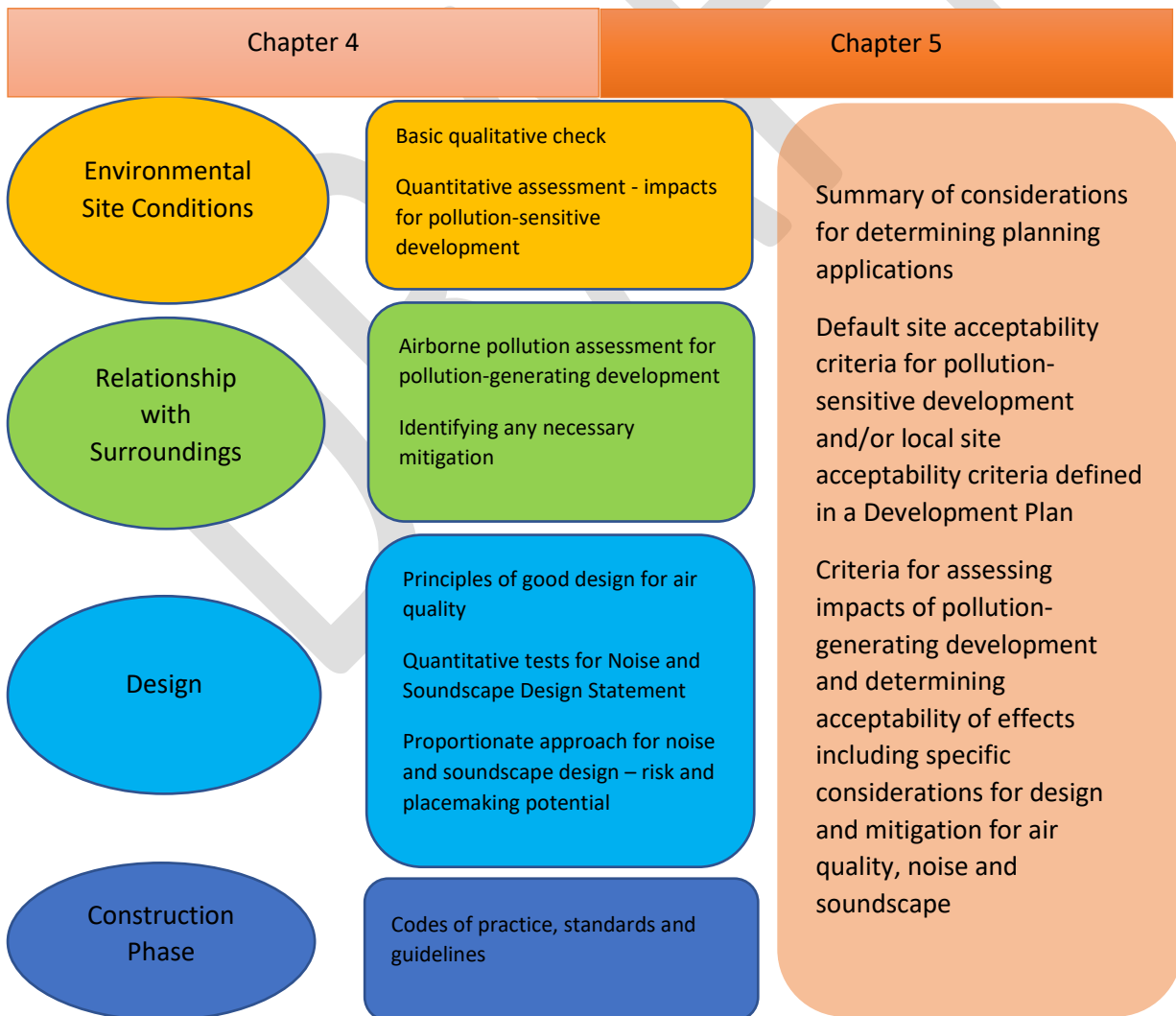
4 IMPROVING THE QUALITY OF PROPOSALS

Developers should take a proportionate approach to air quality, noise and soundscape assessment and design, based on the nature of development itself, the levels of risk to people and/or the environment and the opportunity for better placemaking.

Similarly, any requirement for soundscape assessment and design, or measures to improve air quality, should be proportionate to the development and result in better placemaking.

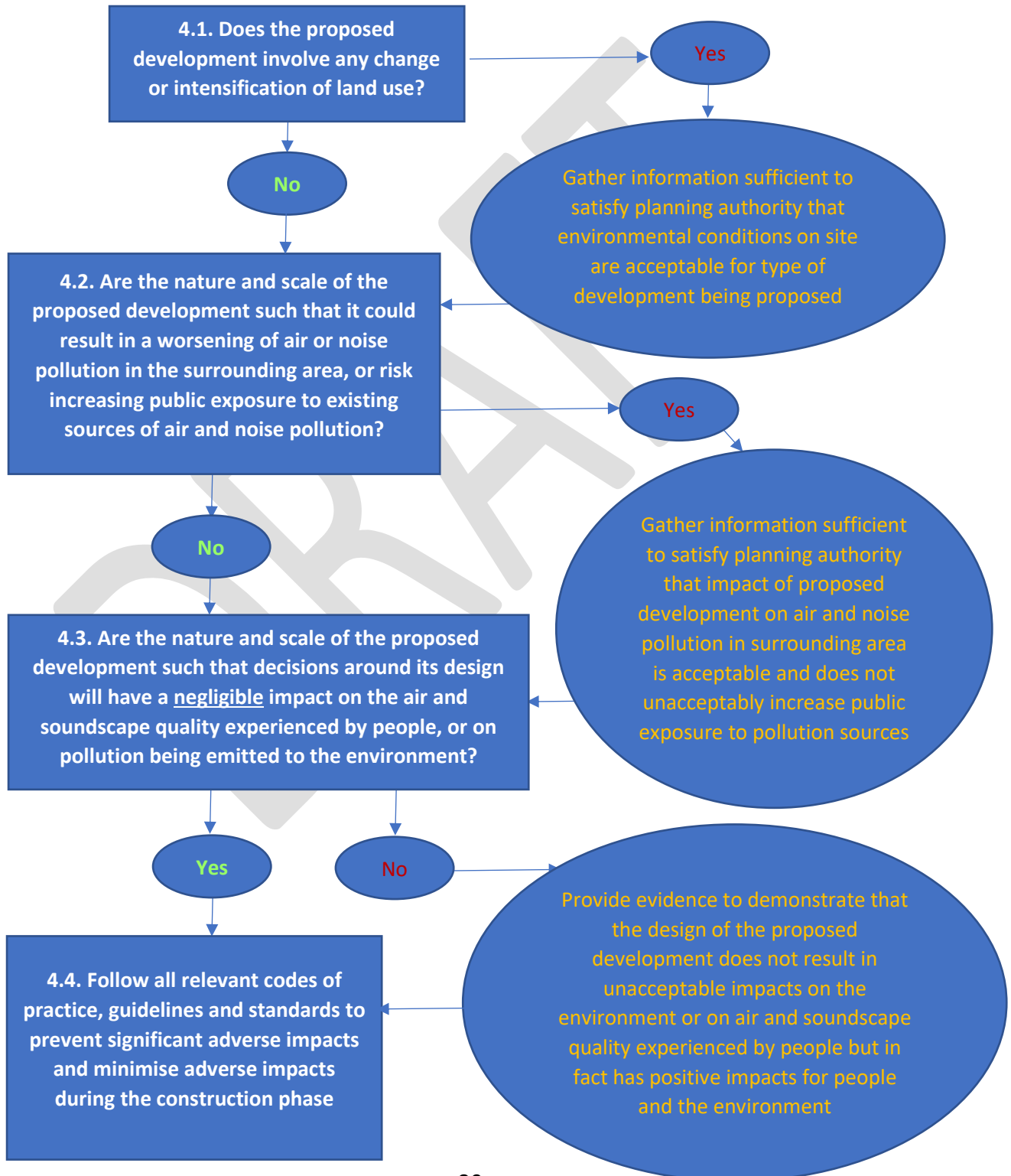
Chapter 5 focuses on development management. Its contents are intrinsically linked to those of Chapter 4 and developers should consider its contents alongside the process in this chapter. Planning authorities will similarly need to consider both chapters when determining planning applications. Figure 3 summarises the key technical requirements and acceptability criteria which are integral to both chapters.

Figure 3 Key technical requirements and acceptability criteria



The policy advice in this chapter focuses on four key aspects (summarised in Figures 1 and 3) which should inform any development proposal and will determine how acceptable a development will be with regard to air quality, noise and soundscape. The key aspects of the process overlap and are inter-related. They should be considered in an iterative way by developers with feedback loops between design and wider mitigation being employed as appropriate.

Figure 4 Process for improving development proposals



4.1 Initial consideration of environmental conditions on site

If the proposed development does not involve any change or intensification of land use, then action under this section may not be required, and the developer should consider section 4.2.

The planning authority will need to be satisfied that environmental conditions experienced on site are acceptable for the development being proposed and will require appropriate evidence from developers to demonstrate this.

Both site and context analysis should be used to determine the appropriateness of a development proposal in responding to its surroundings. This process should highlight the constraints and opportunities that a developer will need to consider with regard to air quality, noise and the soundscape when formulating proposals and undertaking detailed design as required in section 4.3.

Site and context analysis guide: Capturing the value of a site

Where relevant, as part of a site and context analysis an initial assessment of environmental conditions should include consideration of existing and predicted air and sound environment quality on the proposed site. This is necessary as potential constraints on the location of pollution-sensitive development include high existing or predicted levels of outdoor air and/or noise pollution in places where people are intended to be present.

4.1.1 Pollution-sensitive development: Qualitative assessment of environmental conditions on site

Developers proposing new pollution-sensitive development should confirm that they have considered the levels of outdoor air and noise pollution and the quality of the prevailing sound environment that will be experienced by the future occupants of the development.

If it is clear based on local knowledge that pollution levels are and will remain very low, for example because there are and will continue to be no significant sources of air or noise pollution in the area, the planning authority will be unlikely to require a quantitative assessment of environmental conditions relating to air quality or noise at the site. To indicate that a site is sufficiently low-risk to not require a quantitative assessment of existing environmental conditions on-site, a developer must:

- demonstrate in their planning application that they have visited the site at times of the day representative of periods when future occupants will be present, and could perceive no noise, odours or other emissions that could give future occupiers reasonable cause for annoyance and affect amenity; and

- make early contact with the local authority, local businesses, transport infrastructure owners and existing residents (as applicable, and expending effort proportionate to the scale of the proposed development) to provide additional reassurance that there are no known air quality or noise concerns on the site or in the surrounding area.

If the developer does not carry out and report these basic checks, air and noise pollution issues may come to the fore at a later stage. This could require them to revisit decisions around design which could lead to additional costs and/or delays to the determination of the planning application.

If there is any doubt about the acceptability of the current or future air quality or sound environment on site for a pollution-sensitive development to proceed, the developer must make a proportionate quantitative assessment of current levels of air and noise pollution as outlined in section 4.1.2.

4.1.2 Pollution-sensitive development: Initial quantitative assessment of environmental conditions on site

Developers must demonstrate an understanding of the site and its surroundings where there is any uncertainty around risks posed by current or future levels of air and/or noise pollution. Suitably qualified and experienced professionals should be appointed to carry out an initial assessment of current and future levels of air and/or noise pollution at the proposed site, including visiting the site to experience the existing sound environment in context.

Levels of both air and noise pollution should be assessed at the proposed location of the most exposed building façade, at the height of the most exposed front door, window or balcony (excluding windows of rooms with non-sensitive uses such as corridors and stairwells), and include any reasonably foreseeable future increases in levels of air and/or noise pollution. The advice of the local authority, and that of other relevant parties such as transport providers and asset owners, should be sought as to any likely future changes to sources of air and/or noise pollution in the vicinity of the proposed development.

The initial noise assessment should include the acoustic effect of any existing site features that are expected to remain (e.g. retained buildings, ground levels) and exclude the acoustic effect of any site features that are not expected to remain (e.g. buildings expected to be demolished, ground level changes, fences and barriers expected to be removed) if development were to proceed. The noise levels should be free-field sound pressure levels representative of a 'typical worst case' 24-hour day.

Where the principal sources of air pollution in an area relate to road traffic or other activities taking place at ground level, it may be assumed that the most exposed receptor height for air pollution will also be at ground level. This cannot be assumed to be the case for noise pollution, however. If there are obstacles or terrain features between source and receptor, ground level windows may be shielded from noise while upper storeys are more exposed. In such instances, other heights, such as

upper bedroom windows likely to be subject to greater levels of noise than those on the ground floor, should be considered.

National air quality and strategic noise maps such as those published on DataMapWales may provide an estimate of the average levels of certain types of air and noise pollution in a given area. However, such maps are generally retrospective and high-level and may not reflect the current and future situation, or local details. They are a starting point and should not be relied upon at a local level to determine compliance with numerical criteria at specific sites. Instead, representative values should be obtained through measurement and/or modelling, and adjusted where appropriate to predict air and noise pollution levels at the most exposed window heights and for future years, if increases in pollutant emissions are expected or considered likely. The most recent Local Air Quality Management reports and the evidence gathered by the planning authority during the preparation of its local development plan may inform this assessment.

It is recommended that a trained and experienced acoustician visit the site in person at an early stage to carry out a simple subjective assessment of the current sound environment, in order to identify any unusual acoustic features that might affect the site's suitability or influence the approach to building layout and design.

The initial air and noise pollution assessment should be carried out at the earliest opportunity, prior to commencing detailed layout or building design. The assessment should provide an early indication of site suitability for pollution-sensitive development and (if air and noise pollution levels are not so high as to immediately rule the site out for such purposes) the level of detail, time and expense likely to be required in terms of air quality, noise and soundscape design and mitigation, in order to potentially obtain planning permission.

When proposing a pollution-sensitive development, the developer will be required to include the results of the initial assessment as part of the planning application to demonstrate how the environmental conditions on site were considered and how this assessment feeds into the more detailed assessment of the relationship of the development to its surroundings outlined in section 4.2 and detailed design as described in section 4.3.

4.1.3 Environmental conditions considered unsuitable for pollution-sensitive development

The following criteria should be applied to identify whether sites are, in their current condition, considered inherently unsuitable for pollution-sensitive development:

- a) For air quality, the national default site acceptability criteria for pollution-sensitive development are the national air quality objectives, as set out in regulations. An area with air pollution levels failing to comply with the national air quality objectives would ordinarily be declared an AQMA. A local authority may also wish to designate an area at risk of being declared an AQMA as unsuitable for certain types of pollution-generating development.

- b) For the sound environment, the national default site acceptability criteria for pollution-sensitive development are as follows:
1. The day-evening (0700-2300) average noise level $L_{\text{day-evening}} = L_{\text{Aeq,16h}}$ (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined should not exceed 72 dB.
 2. The night-time (2300-0700) average noise level L_{night} (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined should not exceed 66 dB. (*Not applicable to noise-sensitive developments unoccupied at night-time.*)
 3. The maximum noise level $L_{\text{Amax,F}}$ should not exceed and should be unlikely to exceed 80 dB on more than 20 occasions per night. (*Not applicable to noise-sensitive developments unoccupied at night-time.*)
 4. For sound of an industrial or commercial nature within the scope of BS 4142, including any domestic air source heat pump sound, an assessment carried out in accordance with that standard and regulator guidance⁶ should not indicate that significant adverse impacts are likely.
 5. None of the main sources of sound that are currently identifiable by a listener on site should already be associated with a history of complaints from nearby building occupants who are currently subject to levels of exposure similar to or lower than those likely to be experienced by future occupants of the proposed development.

A planning authority may set more ambitious site acceptability criteria for pollution-sensitive development in its development plan or as part of other appropriate guidance. Such criteria may apply to the entire local authority/administrative area or to certain parts of it. Where more stringent local criteria exist, they should take precedence over the national default criteria. Air quality objectives and noise guidelines are likely to become tougher in future and local authorities are encouraged to be ambitious where this is reasonably practicable.

Developers should establish a dialogue with the planning authority at the earliest possible opportunity if they believe there is, exceptionally, a justification for relaxing any locally set site acceptability criteria for a specific development, whilst maintaining compliance with the default national site acceptability criteria. An example of such a possible justification might be that the vast majority of dwellings in a proposed development will be compliant with the local criteria, while only a small minority of properties will not, but will still be compliant with the national criteria. Planning authorities should have clear and transparent reasons for not following locally established criteria in any particular case.

⁶ 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>

4.2 Relationship of development with the surrounding area

If the nature and scale of the proposed development mean it will neither result in any worsening of levels of air or noise pollution in the surrounding area, nor risk increasing public exposure to existing sources of air and noise pollution, then action under this section may not be required, and the developer should consider section 4.3.

The planning authority will need to be satisfied that the impact of a proposed development on air or noise pollution in the surrounding area is acceptable. It will require evidence which demonstrates an understanding of the relationship between a proposed development and the surrounding area, including any necessary air quality, noise and soundscape assessments which identify all relevant impacts and any required mitigation measures.

The purpose of this step in the process is to establish whether the nature and scale of proposed development will increase pollution levels in the surrounding area and/or increase exposure to pollution for people and the environment. Its focus is primarily on capturing and responding to the impacts of potentially polluting or pollution-generating development.

Building on the assessments carried out in sections 4.1.1 and 4.1.2, as appropriate, at this stage a site and context analysis should consider the implications of the proposed development for air and soundscape quality in the surrounding area. Potential constraints identified by a site and context analysis include the risk of a new development increasing pollution to unacceptable levels or having a detrimental effect on local amenity or the environment, including wildlife habitats or species. The potential opportunities include using good design to improve existing air and soundscape quality at the site and in the area around the proposed development, and creating places conducive to good health and well-being, both for the occupants of the proposed new development and for neighbouring communities.

It is important to establish whether any air quality or noise problems already exist in the wider area beyond those which may have been identified in the assessments in sections 4.1.1 and 4.1.2, by consulting bodies responsible for receiving and acting on complaints, notably the local authority. The existence of an air quality or noise problem does not necessarily preclude further development but the implications must be fully identified and understood. In some circumstances it may be possible for a new development, if it is well designed, to help to solve an existing air quality or noise problem in the surrounding area.

4.2.1 Requirements for airborne pollution assessment

Any airborne pollution assessment should be proportionate to the nature and scale of development and potential impacts.

The purpose of an airborne pollution assessment is to determine the likely changes in levels of, or exposure to, air or noise pollution as a result of the development, including movement to and from the site. This assessment will aid the planning authority in determining the significance of the impacts and the acceptability of development.

The developer should contact the planning authority as early in the process as possible in order to establish the assessment methodology, including where mitigation may be acceptable. Where policy and SPG have already been prepared this will be the primary guide for informing the development of a suitable assessment methodology as this will specifically reflect local circumstances. The onus is on the developer to ensure they undertake an assessment within the parameters set by the planning authority. A failure to undertake a proper and appropriate assessment will likely result in a delay to the determination of the application. Whilst the purpose of this TAN is to improve the location, siting and quality of development proposals coming forward through the iterative steps described, a planning authority may request further information where information submitted as part of a planning application is insufficient to determine an application.

Where the pollution expected to arise from a proposed development comes from increasing road traffic on existing roads and/or solid fuel combustion, the airborne pollution assessment should focus principally on predicting changes to air quality, both in the immediate and long term. An example of a situation where noise should be assessed alongside air quality is where the development changes the character of the road traffic noise, for example by increasing the proportion of delivery vehicles passing by sensitive receptors.

The basic steps of a quantitative air (and noise) pollution assessment are:

- 1) Establish a baseline by determining the existing air (and, where appropriate, noise) pollution levels;
- 2) Establish, as far as possible, a future baseline determining the future air quality (and, where appropriate, noise) picture without the proposed development; and
- 3) Predict, as far as possible, the future air quality (and, where appropriate, noise levels) with the proposed development in place.

Environmental Protection UK and the Institute of Air Quality Management (IAQM) have produced guidance on undertaking an air quality assessment in a planning context (<http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>) and this will provide a valuable starting point for developers and applicants in considering air quality impacts.

The assessment of air quality (and, where appropriate, noise) should include the following information (this is not an exhaustive list and should not be regarded as such):

- a. agreed assessment methodology;
- b. relevant air quality standards (national and/or local);
- c. any on-site pollution sources and expected changes in emissions as a result of the development (including an assessment of the expected traffic changes and prediction of the impact these changes will have on local air quality and noise levels);
- d. effects on local receptors, particularly sensitive receptors such as schools and hospitals;
- e. effects on biodiversity, including impacts on wildlife and the resilience of ecosystems;
- f. further potential mitigation measures beyond those measures and interventions that can be required as principles of good design; and
- g. how the development and mitigation measures will meet any requirements of the development plan, PPW, this TAN and Welsh Government transport and air quality aims for Wales.

The nature of the proposed development will determine the factors to be appropriately covered in an airborne pollution assessment. An assessment of traffic emissions will form a significant part of an air quality assessment in cases where development generates significant additional traffic movements, such as for some residential, commercial and industrial developments. It may be the case that traffic movements associated with a development are unavoidable and require mitigating, rather than preventing. Planning authorities are best placed to advise developers on

the local context and may require minimum mitigation for all developments in certain localities which reflect the local authority's preference for certain technologies or measures, for example, active travel infrastructure or electric vehicle technology. Where appropriate, they may wish to apply a damage costs approach whereby the emissions from a development are assigned a monetary value which should be spent on mitigation measures.

The cumulative impact of developments within an area should be taken into account in any assessment. PPW already notes the importance of assessing the cumulative impacts of commercial, industrial and other potentially polluting development. At a plan level, where planning authorities have identified the potential cumulative impacts of their plan strategies and accounted for any negative effects by setting requirements for mitigation these should determine the approach to be taken by developers.

As part of air quality assessments, existing development as well as extant planning permissions and development plan allocations should be taken into account to ensure developers can robustly demonstrate that cumulatively the effects of a proposed development on local air quality are acceptable. Information should be available on the planning register to facilitate this and advice may be sought from the local authority to determine appropriate parameters, however, the onus is on the developer to determine that their development will neither exacerbate existing negative impacts nor cause any new unacceptable impacts to arise. Where this is not demonstrated to the satisfaction of the planning authority, the developer is responsible for rectifying the problem, otherwise planning permission may be refused.

A proportionate approach should be taken to any assessment of increases in traffic noise in a local area likely to result from development. Average noise levels are relatively insensitive to modest changes in vehicle numbers. In general, increases in traffic are more likely to generate a significant increase in air pollution than they are to generate a significant increase in perceived noise, because of the non-linear response of the human ear to sound intensity. A 25% increase in road traffic would normally be needed to increase average traffic noise levels on a busy road by around 1 decibel. However, where an air quality assessment can be enhanced to generate noise outputs alongside air quality outputs, this is to be encouraged as good practice. Furthermore, if traffic generated by a development is considered likely to significantly change the sound character of a road, for example by a noticeable increase in the number of delivery vehicles, the impact of this should be assessed from a changing soundscape perspective.

4.2.2 Biodiversity and ecosystem considerations

In respect of protected sites and species and effects on biodiversity and ecosystems resilience, there will be a need for a multi-disciplinary approach involving air quality practitioners to identify and understand air quality impacts and ecologists to identify

and understand the ecological effects. Developers should recognise that close collaboration between these two disciplines and those involved in design will be required when drawing up proposals. The scope of any air quality assessment to report on the impact on biodiversity and ecosystems would need to be agreed with the planning authority, with advice from environmental health colleagues and any specialist input from environmental scientists, ecologists and Natural Resources Wales, as appropriate. This would include identifying projects which may need to be considered as part of any cumulative (or in-combination) assessment. Key factors to consider would include:

- Assessment should be undertaken by suitably qualified, experienced and competent air quality assessors.
- Assessments should be proportionate to the risk, which will depend on individual circumstances but should be sufficiently robust to enable conclusions to be drawn regarding air quality impacts.
- Assessment should be undertaken with a suitably qualified ecologist in order that the ecological effects of air quality impacts can be determined.

The IAQM has produced guidance on assessing air quality impacts on designated nature conservation sites⁷. This guide will evolve over time with the input of wider stakeholders and professional bodies but will provide an essential starting point for developers when considering air quality impacts. The JNCC is undertaking various work to improve data and evidence on how changes in atmospheric pollutant concentrations and deposition interact with the attributes of ecosystem resilience⁸.

4.2.3 When a soundscape assessment can add value

To predict the impact of a changed sound environment on human receptors, it is not enough to simply predict what those changes will be. The impact of a change will depend on the human context in which it occurs. To properly understand the context and how any acoustic changes are likely to be perceived requires the use of soundscape assessment techniques. See TAN 11 Supporting Document 1: Soundscape Design for further guidance in relation to this.

⁷ Institute of Air Quality Management, A guide to the assessment of air quality impacts on designated nature conservation sites.

<https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

⁸ <https://jncc.gov.uk/our-work/air-pollution>

4.3 Design

If the nature and scale of the proposed development are such that decisions around its design will have negligible impact on the air and soundscape quality experienced by people, or on pollution being emitted to the environment, then action under this section may not be required, and the developer should consider section 4.4.

The planning authority will require evidence to demonstrate that the design of a proposed development does not result in unacceptable impacts on the environment or on air and soundscape quality experienced by people but has positive impacts for people and the environment.

PPW People and Places: Achieving Well-being Through Placemaking and Placemaking in Action.
TAN 12 Design;; Site and context analysis guide: Capturing the value of a site

4.3.1 Addressing impacts and improving the quality of proposals through good design

Section 4.1 considered initial site conditions to ascertain whether they are suitable for the development being proposed, and what might constitute an unacceptable outcome for pollution-sensitive development in terms of air quality, noise or soundscape.

Section 4.2 considered the wider surrounding area requiring the need for developers and applicants to understand and, where possible, quantify the potential direct and indirect emissions and increases in public and/or environmental exposure to air and noise pollution that could be expected to arise from their proposed development.

The detailed consideration of the surrounding area in section 4.2 should be used to refine what constitutes an unacceptable outcome in the local context, and identify any opportunities for local environmental improvements to be made through decisions at the design stage. It will be for developers and applicants to demonstrate, through good design, that unacceptable outcomes will be prevented, that adverse impacts are minimised, and, as far as reasonably practicable, that local environmental quality has been preserved or enhanced by the proposed development.

Prior to detailed design, the potential impacts of a proposed development on air or soundscape quality may be uncertain, sometimes ranging from overall beneficial to unacceptable, with the actual likely impact of the development only fully determined at the design stage. It is important that this range of possible air quality and soundscape outcomes be established prior to detailed design, so that the risks can be minimised and opportunities for benefits harnessed in the course of the design

process. It is not acceptable to design first and consider the air quality and soundscape impacts afterwards.

The amount of detail required in terms of air quality, noise and soundscape design for a development will depend upon a number of factors and should be proportionate to the scale of the proposal and the levels of risk and opportunity for air quality and soundscape improvement.

It should never be assumed that a prospective site for pollution-sensitive development considered to be appropriate based on the initial assessment of environmental conditions at the site specified in section 4.1.2 will not be refused permission on air quality or noise grounds. The granting of planning permission will require the developer to demonstrate that they have followed good design in terms of air quality, noise and soundscape, and upon the acceptability of the predicted outcomes in the context of local and national planning policy and any relevant standards.

4.3.2 Principles of good design for air quality

Designing for air quality is likely to be problematic where environmental conditions at site indicate an existing or potential air quality problem. This may equally be the case where the development itself is likely to generate unacceptable impacts in the immediate locality. In both cases it will not be appropriate to increase the exposure of people or the environment to poor air quality. Taking into account the aim of PPW to reduce, or at least minimise, the emission of and exposure to air pollution, the following design measures should be considered, as far as practicable:

- Utilising new, cleaner technologies.
- Setting minimum emission standards for combined heat and power (CHP) and biomass installations.
- Designing developments so the places where users of the development spend the most time are situated away from pollution sources.
- Designing development not to create a ‘street canyon’ whereby pollution is unable to disperse and is concentrated in a particular area.

The Welsh Government has set out ‘Welsh Development Quality Requirements 2021’ which require new affordable homes to not use fossil fuel-fired boilers for domestic provision of hot water and space heating. The Welsh Government’s ambition is that private developers adopt this standard by 2025. Further changes to the Part L of the Building Regulations (Conservation of Heat and Power) are also due to be introduced in 2025. Developers and planning authorities should bear this in mind, along with any further evolution of standards in the future, when considering requirements for new developments.

Developers should be aware of the potential for significant air pollution resulting from the use of solid fuel sourced heating systems. Where at all possible it is

recommended that these are avoided. Evidence of the impact of, for example, wood and coal burning in terms of particulate matter and other pollution is substantial. Where other forms of heating are easily accessible, developments should be designed to exclude the use of solid fuel heating systems, and where possible eliminate the potential for retro fitting of such systems into the development.

Where a development requires a Design and Access Statement to be produced, principles of good design for air quality should be included within this as appropriate. Where a Noise and Soundscape Design Statement is to be prepared air quality impacts should be accounted for as part of its preparation. In both instances this will be beneficial in satisfying evolving building regulation requirements and other design requirements and mitigation such as green infrastructure, active travel connections, EV charging, speed limits and street design.

4.3.3 Noise and Soundscape Design Statement (NSDS)

Placemaking should be at the heart of the design and management of the sound environment in and around any development. The aim should not solely be about preventing unwanted or harmful sound, i.e. noise, from reaching people's ears. This has historically been the primary goal of acousticians working for developers. However, it is no longer enough to aim to achieve the guideline internal noise levels specified in documents such as BS 8233, ProPG⁹ and Building Bulletin 93¹⁰. While this remains important, it is also necessary to consider the sounds that people do want to be able to hear in a given context. For dwellings, hospitals, care homes and similar uses, this will include maintaining an auditory connection with the outside world, to support mental well-being. The quality of the acoustic environment outside such buildings, both natural and human, should be such that allowing it to remain audible inside enhances the indoor acoustic environment for occupants.

When the noise risk associated with a proposed development, for occupants and/or neighbours, is not negligible, or when there is high potential for better placemaking through soundscape design, especially where high-profile or innovative developments are proposed, a Noise and Soundscape Design Statement (NSDS) should be produced as part of the application. This will be necessary to demonstrate how good design has been employed to achieve appropriate sound environments, both indoor and outdoor, for people within and around the development. When a development requires a Design and Access Statement to be produced, an NSDS should be incorporated into it.

The level of detail contained in an NSDS, and the level of noise control and/or soundscape improvement committed to, should be proportionate to the nature

⁹ Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, ProPG: Planning & Noise: New Residential Development.
<https://www.ioa.org.uk/publications/propg>

¹⁰ Department for Education and Education Funding Agency, Building Bulletin 93: Acoustic design of schools: performance standards.
<https://www.gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards>

and scale of the proposed development and the risks and opportunities that it presents in the local context.

The noise and soundscape design of a development should have regard to the need to minimise the exposure of people to external sources of air pollution. For example, for pollution-sensitive developments alongside busy roads, there will be both noise and air quality benefits from minimising the exposure of occupants to the external environment at the most exposed façade, and concentrating natural ventilation and external amenity areas on the side of the building furthest from the pollution source. In a similar way, vegetation blocking the line of sight between source and receptor can bring benefits in terms of both air quality and (perceived if not actual) noise exposure.

Where the nature and scale of the development are such that there is little potential for soundscape design to result in better placemaking, an NSDS can focus principally on noise control measures. For residential developments, this could equate to an Acoustic Design Statement (ADS) as advocated in ProPG. However, for large or high-profile developments, those where the outdoor sound environment is intended to be ‘vibrant’, and those where there is clear scope for achieving better outcomes through innovative co-design with local communities, a participatory approach to design, including soundscape design, should be taken. See TAN 12: Design and TAN 11 Supporting Document 1: Soundscape Design for further guidance.

Table 2 outlines the triggers for action in relation to noise and soundscape when proposing new development by defining the nature of NSDS expected in various categories of noise risk and soundscape design potential.

Section 3 of TAN 11 Supporting Document 1: Soundscape Design provides examples of what might be expected to fall into each category of NSDS, although what is considered appropriate for an area and/or project/scheme needs to be determined on a case-specific basis.

Table 2 Noise and Soundscape Design Statement (NSDS) framework

Unacceptable noise risk	Do not proceed with development.		
High noise risk	<p>Achieve good acoustic quality through good acoustic design.</p> <p>NSDS to be at least equivalent to a Stage 2 ProPG ADS for medium and high risk developments (if residential development being proposed).</p>	<p>Achieve good acoustic quality through good acoustic design.</p> <p>Where practicable, use a soundscape design approach¹ to deliver enhanced outcomes.</p> <p>NSDS to include content at least equivalent to a Stage 2 ProPG ADS for medium and high risk developments (if residential development being proposed) and evidence that opportunities for good soundscape design have been taken where practicable.</p>	<p>Achieve good acoustic quality and a better soundscape through good acoustic and soundscape design.</p> <p>NSDS to include content at least equivalent to a Stage 2 ProPG ADS for medium and high risk developments (if residential development being proposed) and a soundscape assessment and evidence of good soundscape design¹.</p>
Medium noise risk	<p>Ensure good acoustic quality through good acoustic design.</p> <p>NSDS to be at least equivalent to a Stage 2 ProPG ADS for low risk developments (if residential development being proposed).</p>	<p>Ensure good acoustic quality through good acoustic design.</p> <p>Where practicable, use a soundscape design approach¹ to deliver enhanced outcomes.</p> <p>NSDS to include content at least equivalent to a Stage 2 ProPG ADS for low risk developments (if residential development being proposed) and evidence that opportunities for good soundscape design have been taken where practicable.</p>	<p>Ensure good acoustic quality and a better soundscape primarily through good soundscape design.</p> <p>NSDS to contain a soundscape assessment and evidence of good soundscape design¹ and any elements of a Stage 2 ProPG ADS considered necessary in addition to ensure good acoustic quality (if residential development being proposed).</p>
Low noise risk	<p>Ensure good acoustic quality through good acoustic design.</p> <p>NSDS to be at least equivalent to a Stage 2 ProPG ADS for low risk developments (if residential development being proposed).</p>	<p>Ensure good acoustic quality through good acoustic design.</p> <p>Where practicable, use a soundscape design approach¹ to deliver enhanced outcomes.</p> <p>NSDS to include content at least equivalent to a Stage 2 ProPG ADS for low risk developments (if residential development being proposed) and evidence that opportunities for good soundscape design have been taken where practicable.</p>	<p>Achieve a better soundscape through good soundscape design.</p> <p>NSDS to contain a soundscape assessment and evidence of good soundscape design¹.</p>
Negligible noise risk	No NSDS required.		<p>Achieve a better soundscape through good soundscape design.</p> <p>NSDS to contain a soundscape assessment and evidence of good soundscape design¹.</p>
	Low potential for better placemaking through soundscape design	Medium potential for better placemaking through soundscape design	High potential for better placemaking through soundscape design

¹ A suggested stepwise approach to soundscape design is outlined in Section 7 of TAN 11 Supporting Document 1: Soundscape Design.

For developments with high potential for better placemaking through soundscape design, the applicant should either follow the soundscape design framework described in Section 7 of Supporting Document 1 or provide written justification for taking an alternative approach to soundscape design.

For developments with medium potential for better placemaking through soundscape design, the applicant should have regard to the soundscape design framework described in Section 7 of Supporting Document 1 and, if an NSDS is required on noise risk grounds, provide evidence that opportunities for good soundscape design have been taken where practicable.

The following quantitative tests may be used where relevant to support a case for not producing a full NSDS as part of a planning application based on ‘negligible noise risk’ arising from a proposed development¹¹:

1. The day-evening (0700-2300) average noise level $L_{\text{day-evening}} = L_{\text{Aeq,16h}}$ (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined does not exceed 55 dB.
2. The night-time (2300-0700) average noise level L_{night} (plus any relevant BS 4142 character correction for industrial/commercial sound) from all sound sources combined does not exceed 45 dB. *(Not applicable to noise-sensitive developments unoccupied at night-time.)*
3. The maximum noise level $L_{\text{Amax,F}}$ does not exceed and is unlikely to exceed 60 dB on more than 10 occasions per night. *(Not applicable to noise-sensitive developments unoccupied at night-time.)*
4. For sound of an industrial or commercial nature within the scope of BS 4142, including any domestic air source heat pump sound, an assessment carried out in accordance with that standard and regulator guidance¹² indicates that adverse impacts are unlikely.
5. Sound of an industrial or commercial nature outside the scope of BS 4142 (e.g. music or other entertainment sound) is not generally perceptible on site.
6. Local knowledge and site visits carried out at times representative of when people will be present post-development identify no other acoustic features of potential concern on site, such as frequent daytime aircraft noise events.

¹¹ Levels of noise pollution should be assessed at the proposed location of the most exposed building façade, at the height of the most exposed front door, window or balcony (excluding windows of rooms with non-sensitive uses such as corridors and stairwells), and include any reasonably foreseeable future increases in levels of noise pollution. The local authority’s advice, and that of other relevant parties such as transport providers and asset owners, should be sought as to any likely future changes to sources of noise pollution in the vicinity of the proposed development. The assessment should include the acoustic effect of any existing site features that are expected to remain (e.g. retained buildings, changes in ground level) and exclude the acoustic effect of any site features that are not expected to remain (e.g. buildings expected to be demolished, fences and barriers expected to be removed) if development were to proceed. The noise levels should be free-field sound pressure levels representative of a ‘typical worst case’ 24-hour day.

¹² 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>

When determining proposals the planning authority will need to be satisfied that the applicant has demonstrated they have considered soundscape design at the outset in accordance with the guidance in this TAN and Supporting Document 1. In this respect, it should be clear that the design of the scheme has been informed by soundscape design, as an element of placemaking, and the measures proposed (either integrated in the design of the scheme or mitigation measures) are reasonable and acceptable to the planning authority.

4.3.4 Addressing impacts on nearest neighbours through good design

All development has the potential to increase the exposure of people and the environment, including habitats and species, to air and noise pollution. Even the simple removal of existing structures on a site can lead to adverse impacts, if those structures were previously shielding existing dwellings from existing noise sources.

Developers should identify and assess the area of impact of the air quality and soundscape changes likely to result from their proposed development, based on its nature and scale, and focus their design efforts accordingly.

Pollution-sensitive development can itself emit air and noise pollution once in use. Examples include smoke from chimneys and garden bonfires, odours from kitchens and waste storage areas, and noise from air conditioning units, air source heat pumps, barking dogs, and human activities such as the playing of music. Such emissions can have adverse impacts on the health and well-being of occupants of buildings and compromise the amenity value of gardens, balconies and other outdoor spaces. While these may not all be planning matters, they should nevertheless all be borne in mind when designing buildings and the outdoor spaces associated with them.

The potential for such emissions to cause adverse impacts at neighbouring properties (whether existing or part of the same proposed development) is dependent on proximity. Existing well-spaced detached dwellings are far less likely to affect one another than densely packed dwellings or mixed building uses in urban areas, with converted flats and dwellings of multiple occupation presenting the highest noise risks. Developers should strongly consider the potential for neighbour-to-neighbour impacts at the design stage. However, the challenge is to achieve quality, liveable places with the appropriate soundscape in higher density and mixed-use environments and soundscape design approaches, as well as sound insulation, can help to achieve this.

In some cases, risks can be reduced to acceptable levels through good design (for example, site layout, orientation and landscape integration to ensure good dispersion of air pollutants and shielding neighbours from line of sight with any external noise sources), high levels of noise insulation and making adequate provision for the long-term maintenance of noise-generating mechanical services.

In some high-density settings, however, domestic combustion and noisier forms of renewable energy may simply not be viable due to the high risk of adverse impacts on neighbouring properties and their potential to create a statutory nuisance.

Cumulative impacts of emissions from all relevant properties should be considered in the design process, as should the potential for gradually increasing levels of neighbourhood air and noise pollution over time ('creeping background').

4.3.5 Development whose nature and/or scale has the potential to cause adverse air quality and soundscape impacts for the local area

This section is principally concerned with the potential impact of developments whose air and noise pollution emissions may extend beyond a building's immediate neighbours, to potentially adversely affect the wider community and/or environment. These will typically be developments of an industrial or commercial nature, including hospitality, recreation and entertainment. They may also include establishments such as schools, which are likely to generate high levels of additional traffic concentrated at specific times of day.

The requirements for good design are twofold: to prevent unacceptable outcomes (including both the creation of new problems and making existing problems worse), and to achieve and maintain as high a standard of air and soundscape quality as is reasonably practicable.

Anticipating and acting to prevent unacceptable outcomes at the planning stage will make it easier later on for an industrial site to operate without creating significant pollution (a significant adverse impact in BS 4142 noise terms). It will make it easier for an entertainment venue to operate without creating a public nuisance, an objective of the licensing regime. It will also make it easier for businesses generally to operate without risk of creating a statutory nuisance and being served with an abatement notice by the local authority.

From the perspective of a future occupant, it is essential to remove or at least minimise the potential for unacceptable outcomes through good design. It is not acceptable to simply rely upon permit/licence conditions and other future constraints upon activity on site to prevent those unacceptable outcomes from occurring. Developers will need to ensure they engage with environmental regulators or licensing authorities, where relevant, as well as planning authorities prior to designing their proposals. This will increase confidence that the design of the development meets not only planning requirements but also the particular requirements of the environmental permitting and licensing regimes.

Furthermore, industrial or commercial operators not only need to avoid generating significant pollution or creating a nuisance in order to stay in business, it also makes business sense to maintain a good relationship with their local community. To this end, businesses will wish to demonstrate that they are following best practice when it

comes to minimising any adverse impacts on the local community or environment. Thoughtful site design is an important component of this and yet another reason for developers to employ good design in relation to air quality, noise and soundscape, beyond merely avoiding the worst potential effects.

4.3.6 Ventilation and overheating

Climate change is causing more frequent extreme heat events, and designing for natural ventilation in the form of openable windows (possibly with shutters to assist with overheating, particularly on south-facing windows) is preferable to complete reliance on mechanical ventilation and air conditioning, which require energy, generate noise and can break down. This is because even if windows sometimes have to be kept closed for noise or other reasons (for example when a room is being used for sleeping or office work), there are likely to be other times when the room is unoccupied or being used for less sensitive activities. At those times, people should have the ability to choose to open their windows for ventilation, for cooling and/or simply to hear the sounds of the world outside.

Windows that can never be opened as a design measure to reduce the risk of building occupants complaining about noise or other emissions from neighbouring properties are strongly discouraged and suggestive of poor location. Pollution-sensitive properties should be located and designed so that at least some of their windows can be opened at any time of day or night whilst maintaining acceptable internal noise levels and indoor air quality, while the windows on the most exposed façade(s) are expected to be kept closed during sensitive periods but can be opened at other times.

If levels of noise (or other emissions such as odour) at a façade of a pollution-sensitive development are such that it is possible the occupants will sometimes wish to close some or all of the windows on that façade for noise (or other) reasons, this should be clearly stated in the NSDS, to inform the building's ventilation and overheating design. Ventilation and overheating strategies should never assume windows can be opened for ventilation or thermal comfort when the NSDS has flagged that they might sometimes need to be kept closed.

Where there are tensions between the requirements of a proposed residential development relating to noise ingress, ventilation and thermal comfort, further advice may be found in 'the AVO Guide'¹³. This guidance should be consulted primarily in cases where reasonably practicable attempts to use good acoustic design to achieve the internal target levels recommended by BS 8233 and ProPG have been exhausted.

¹³ Association of Noise Consultants and Institute of Acoustics, Acoustics, Ventilation and Overheating Residential Design Guide.
<https://www.association-of-noise-consultants.co.uk/avo-guide>

4.4 Construction phase

Developers should, as a matter of course, follow all relevant codes of practice, guidelines and standards (e.g. BS 5228) to prevent significant adverse impacts and minimise adverse impacts during the construction phase of any development project.

Planning authorities should ensure the impacts associated with construction phases can be adequately controlled.

Best practice guidance often addresses a single form of impact such as noise, vibration, dust or odour, and does not normally assess their combined impacts. Developers should consider whether moderate risks of annoyance and complaints due to noise, dust, odour, congestion, travel disruption, etc. when assessed individually may actually stack up to result in high risks of major impacts upon people's well-being when experienced in combination.

The Welsh Government places particular emphasis on the need to consult and inform local people in advance of any activities that may have adverse impacts on their well-being, however temporary.

As a general rule, people are far more tolerant towards potentially annoying activities that are transient in nature, and less annoyed by them, if the person carrying out the activity informs them in advance of what to expect, when and for how long.

Annoyance and complaints are far more likely when people do not know about the potentially annoying activity in advance, nor how long they are likely to be subjected to it. Unexpected increases to levels of dust and noise, inconvenience caused, hours of activity and the duration of the construction project can all be expected to result in annoyance and complaints. Developers should always be proactive in contacting local people in advance to inform them of such changes and the reasons for them, and never leave it until they receive complaints to provide such information.

When granting planning permission in the vicinity of an AQMA, planning authorities should work with their air quality colleagues to ensure that construction activities associated with the development will not hamper efforts to achieve compliance with the relevant air quality objectives.

5 DEVELOPMENT MANAGEMENT: DETERMINING ACCEPTABILITY OF POLLUTION IMPACTS FOR POLLUTION-SENSITIVE AND POLLUTION-GENERATING DEVELOPMENT

Section 4.1 considered initial site conditions to ascertain whether they are suitable for the development being proposed, and what might constitute an unacceptable outcome for pollution-sensitive development in terms of air quality, noise or soundscape.

Section 4.2 considered the wider surrounding area requiring the need for developers to understand and, where possible, quantify the potential direct and indirect emissions and increases in public and/or environmental exposure to air and noise pollution that could be expected to arise from their proposed development.

The detailed consideration of the surrounding area in section 4.2 should be used to refine what constitutes an unacceptable outcome in the local context, and identify any opportunities for local environmental improvements to be made through decisions at the design stage. It will be for developers to demonstrate, through good design, that unacceptable outcomes will be prevented, that adverse impacts are minimised, and, as far as reasonably practicable, that local environmental quality has been preserved or enhanced by the proposed development.

PPW states that proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable it will be appropriate to refuse planning permission.

5.1 Determining environmental conditions considered unsuitable for pollution-sensitive development

Planning permission should normally be refused for pollution sensitive development at sites where national air quality objectives are, or are close to being breached, because it would be unacceptable to introduce new receptors into an area already experiencing high levels of air pollution.

In some circumstances, the presence of an AQMA may not automatically preclude development, however, such circumstances will be exceptional and only rarely justifiable. This may include circumstances:

- where it is not realistic to avoid development and a carefully planned approach is proposed through the development plan with a clearly defined mitigation strategy and/or where there is an action plan in place to address the non-compliant air pollution concentrations in the AQMA which will not be unduly affected by the development; or

- where concentrations of the non-compliant pollutant are steadily decreasing and compliant or almost compliant levels are projected by the completion date of the development and will not be adversely affected by the development when completed or during construction phase.

The purpose of PPW and this TAN is to reduce or at least minimise pollution and to prevent the creation of problems, recognising that there are no safe thresholds for air pollution. The need for pollution-sensitive development alone will not be sufficient justification in the absence of a carefully planned local approach. The need for the development must be weighed against the potential harm from introducing new receptors into an area of poor air quality and the balance will normally be weighted in favour of avoiding increases in exposure to air pollution. Some AQMAs, however, are extensive in terms of their geography and impact and where this is the case, locally based actions should be in place to achieve the right balance.

Special consideration should be given to areas which were previously designated AQMAs or where levels of air pollution are approaching national air quality objectives. There may be complex local issues which increase susceptibility to breaching national air quality objectives and it may be appropriate to treat these areas in a similar manner to existing AQMAs to avoid further problems being created. In all such cases developers will be required to provide robust evidence of design and mitigation that prevents unacceptable outcomes.

Planning permission should normally be refused for pollution-sensitive development at sites that fail to meet one or more of the acoustic criteria referred to in section 4.1.3, but an exception might be made, for example, where a problem already exists and the development will help to solve that problem, by reducing noise exposure for existing residents whilst still protecting the occupants of the new buildings.

5.2 Assessing pollution impacts generated by development

A development directly or indirectly generating air or noise pollution may have a range of adverse impacts, such as on:

- health and well-being, from exacerbating respiratory and cardiovascular illnesses to causing annoyance and sleep disturbance;
- amenity, including on the ability of people to enjoy areas of landscape and historic and cultural value;
- biodiversity, including impacts on wildlife and the resilience of ecosystems;
- wider social impacts, including educational attainment and costs to the health service; and/or
- the local economy, including through making an area less attractive to investment and reduced productivity of workers resulting from ill health.

An inappropriately located or poorly designed development may cause an air quality or noise problem where none previously existed or may make an existing air quality

or noise problem worse. This should be avoided and is likely to result in planning permission being refused.

Developers should identify all such potential adverse effects at an early stage, and demonstrate, using the steps identified in this TAN and in other appropriate guidance, that unacceptable outcomes will not occur as a result of the proposed development. What constitutes an unacceptable outcome sufficient for the planning authority to consider it appropriate to refuse planning permission will depend on the local context but will include:

- a breach of national or local air quality objectives, or worsening of air quality in places where there is already a breach, potentially causing the designation or extension of an AQMA;
- levels of industrial or commercial sound, including any domestic air source heat pump sound, at sensitive human receptor locations, predicted to result in significant adverse impacts according to BS 4142;
- noise requiring people to close windows at times when they previously did not have to in order to meet the recommended internal sound levels specified in documents such as BS 8233, ProPG¹⁴ and Building Bulletin 93¹⁵;
- noise or other emissions preventing people from enjoying outdoor living spaces, such as gardens and balconies, to the extent that they could enjoy them prior to the proposed development;
- the noticeable degradation of locally important sound environments, such as the predominantly natural soundscape of a tranquil green space or other appropriate soundscapes;
- an increase in noise (whether an increase in loudness, an increase in unpleasantness or both) large enough to be perceived as a significant change by a typical listener in the local context, the magnitude of that perceived change rather than the absolute sound level resulting in a significant adverse impact on health (including annoyance and sleep disturbance) or amenity;
- an adverse impact on a sensitive habitat (for example, from ammonia emissions creating or worsening exceedences of critical loads of nitrogen deposition);
- an adverse impact on the local population health of a protected species (for example, noise disrupting the foraging of local populations of bats).

5.2.1 Air quality impacts and mitigation

Development likely to result in significant trip generation will need careful consideration from an air quality perspective. This will particularly be the case where

¹⁴ Association of Noise Consultants, Institute of Acoustics and Chartered Institute of Environmental Health, ProPG: Planning & Noise: New Residential Development.

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

¹⁵ Department for Education and Education Funding Agency, Building Bulletin 93: Acoustic design of schools: performance standards.

<https://www.gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards>

such development is being proposed in the vicinity of existing AQMAs. Often, locational and design choices will be mutually beneficial for both air quality and decarbonisation but care will be required to avoid any inadvertent unacceptable impacts on air quality when making location, density, mix of uses, siting and other design choices, or when choosing appropriate mitigation measures. Where development is being proposed in the vicinity of areas with existing air quality problems minimum direct on-site and wider off-setting mitigation measures should be required, for all sizes of development, to ensure that the development does not worsen the air quality in the area in the short, medium or long term. It will not be acceptable for development (where it is pollution generating) to cause unacceptable impacts and facilitate the deterioration of poor existing air quality or increase exposure to it in the surrounding area.

Whether impacts can be effectively addressed through design will be the first consideration (see section 4.3). Where design is not able to minimise impacts to acceptable levels and there is likely to be a locational justification for proceeding with development, on-site or direct mitigation may be considered. It will not be acceptable, however, for proposed development itself (particular where it is pollution sensitive) to be subject to unacceptable effects of exposure to air pollution.

On-site or direct mitigation should take account of any local transport implementation strategies, Local Air Quality Management plan priorities and any development plan policies and proposals aimed at reducing the need to travel, promoting active travel or public transport alternatives or decarbonising transport modes.

The expectation is that development is more appropriately located and developers take advantage of opportunities to contribute to better places in the first instance. It may not always be feasible to include design measures or direct on-site mitigation to prevent air or noise pollution arising from a proposed development. Where wider off-site measures may have indirect or longer term benefits it may be possible to address this through compensation. However, this should only be considered where there is an overriding need for development and after design and other on-site mitigation measures which have a directly beneficial effect in reducing emissions have been exhausted. Local authorities may wish to apply a 'damage costs' approach in these circumstances, where the monetary cost of pollution generation is worked out and developers must seek to spend this money on measures in the area.¹⁶

Any direct mitigation measures or off-site (off-setting) proposals must be assessed on how implementable and appropriate they are based on what type of development is being proposed, the size of the development, the conditions of the local area and the local air quality.

¹⁶ Environmental Protection UK and Institute of Air Quality Management, Land-Use Planning & Development Control: Planning For Air Quality
<http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

Mitigation measures can be secured either through a Section 106 agreement or a Community Infrastructure Levy where this is in place. This would enable investment for infrastructure in the wider area that can alleviate the added burden of the development. For example, improved road junctions or better public transport. The onus is on the developer or applicant to demonstrate how a financial contribution is sufficient to fund tangible measures which will avoid worsening air quality.

5.2.2 Impacts on biodiversity and ecosystem resilience

Air pollution can affect biodiversity, the resilience of ecosystems and the services they provide. Air pollution continues to cause widespread changes to sensitive ecosystems across Wales despite some significant improvements. Poor air quality can lead to direct and indirect losses in biodiversity, modification of habitats and damage to ecosystem condition and functioning. Pollutants can settle onto land and water bodies and be taken up by plants and animals or cause changes to both land and water-based habitats. There are two categories of consideration in determining impacts – pollutants that have an effect on vegetation and habitats in gaseous form and those which have an impact through deposition. Reducing air pollution is a key part of halting and reversing the decline in nature. In particular, the effects of nitrogen deposition and ground-level ozone on ecosystems are a concern for habitats and wildlife, because many of the thresholds for protection of ecosystems are exceeded.

Poor air quality can also contribute to climate change with some pollutants having a warming effect while others contribute to cooling. Therefore, whilst the impacts are complex, reducing air pollution will help to address climate change both globally and locally and will have benefits for ensuring the resilience of ecosystems as well as ameliorating direct effects on biodiversity.

The practice guidance available referenced in section 4.2.1 from IAQM¹⁷, and others such as JNCC, should assist planning authorities in evaluating the effects of air pollution on habitats and species. Planning authorities should seek the input of both air quality and ecology practitioners when assessing air quality impacts and ecological effects. Where there is uncertainty regarding the evaluation of an impact on a designated site or a protected species then a precautionary approach should be adopted. Natural England have produced guidance which may prove useful¹⁸.

5.2.3 Air source heat pumps

¹⁷ Institute of Air Quality Management, A guide to the assessment of air quality impacts on designated nature conservation sites.

<https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

¹⁸ <http://publications.naturalengland.org.uk/publication/4720542048845824>

Domestic air source heat pumps can generate sound of an industrial or commercial nature, and the recommended method for assessing the likelihood of adverse noise impacts is therefore BS 4142. This British Standard takes into account the existing level of background sound, the local context, and any tonal characteristics.

For a single domestic air source heat pump being installed on its own, permitted development rights (PDR) may allow a simpler assessment method than BS 4142 to be applied. However, such a method will not provide the same level of assurance as BS 4142, and it should not be applied in situations where there will be more than one heat pump contributing to the sound environment.

Ground source heat pumps do not have the same potential to generate outdoor sound as air source heat pumps, and so do not require detailed noise assessment in support of a planning application.

5.3 Applying the ‘agent of change principle’

Where pollution-sensitive development is proposed in the vicinity of existing pollution-generating activities, developers, as the ‘agents of change’, must use good design or take other steps sufficient to ensure, to the satisfaction of the planning authority, that such development will not pose a risk to the continuation or, where reasonably foreseeable, growth of those pollution generating activities. This is particularly important if there is a significant possibility that complaints by new residents would lead to a positive determination of statutory nuisance, and a subsequent abatement notice being issued on an existing activity.

Developers will need to clearly identify in their NSDS any emissions (including noise, dust, odours, vibration and other forms of pollution) from existing activities that could cause a nuisance or other unacceptable impact on users of the proposed scheme, and the likelihood of such an outcome occurring. In so doing, they should take into account not only the current activities that might cause a nuisance, but also those activities that businesses or other facilities are permitted to carry out, even if they are not doing so at the time of the application being made.

The agents of change will need to clearly specify in their NSDS the design measures or other forms of mitigation proposed to address any adverse impacts so identified. Adopting such an approach may not prevent all complaints from the new residents/users about noise or other effects, but it should result in a better living or working environment, and help to mitigate the risk of a statutory nuisance being found if the new development is used as designed, for example, keeping some windows closed and using alternative ventilation systems at noise-sensitive times.

In addition to design of the development itself, it may sometimes be possible to work with the owners/operators of existing businesses or other activities in the vicinity, including transport asset owners, to explore whether potential adverse effects could be mitigated at source. Where this is the case, it may be necessary to ensure that

these source control measures are in place prior to the occupation of the new development. Where multiple development sites would benefit from such source control measures, developers are encouraged to work collaboratively to spread this cost. Examples of source control measures could include increased sound-proofing on a music venue, enclosing an outdoor activity such as waste sorting within a building to contain emissions, or installing and arranging for the future maintenance of noise barriers along major transport routes.

It can be helpful for developers or applicants to provide information to prospective purchasers or occupants about the measures that have been put in place, to raise awareness and reduce the risk of post-purchase/occupancy complaints.

DRAFT

REFERENCES

The following is a non-exhaustive list of guidance documents current at the time of writing this TAN, relevant to air quality, noise and soundscape assessment and design. Developers and their contractors 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 planning policy.

Air Quality Expert Group, Impacts of Vegetation on Urban Air Pollution, July 2018. https://uk-air.defra.gov.uk/library/reports.php?report_id=966

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>

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.

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

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.

Defra, Scottish Government, Welsh Government and Department for Agriculture, Environment and Rural Affairs, Local Air Quality Management Technical Guidance (TG16), April 2021. <https://laqm.defra.gov.uk/air-quality/featured/uk-regions-exc-london-technical-guidance>

Department for Education and Education Funding Agency, Building Bulletin 93: Acoustic design of schools: performance standards – Version 17, February 2015.

<https://www.gov.uk/government/publications/bb93-acoustic-design-of-schools-performance-standards>

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>

Environmental Protection UK and Institute of Air Quality Management, Land-Use Planning & Development Control: Planning For Air Quality, January 2017. <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf>

Greater London Authority, Using Green Infrastructure to Protect People from Air Pollution, April 2019. https://www.london.gov.uk/sites/default/files/green_infrastruture_air_pollution_may_19.pdf

Highways England, Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, Design Manual for Roads and Bridges. <https://www.standardsforhighways.co.uk/dmr>

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>

Institute of Air Quality Management, A guide to the assessment of air quality impacts on designated nature conservation sites – Version 1.1, May 2020. <https://iaqm.co.uk/text/guidance/air-quality-impacts-on-nature-sites-2020.pdf>

Institute of Air Quality Management, Guidance on the assessment of odour for planning – Version 1.1, July 2018. <https://www.iaqm.co.uk/text/guidance/odour-guidance-2014.pdf>

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

Keep Britain Tidy, Raising the standard: The Green Flag Award guidance manual, 2016. <https://www.greenflagaward.org/media/1019/green-flag-award-guidelines.pdf>

Public Health Wales and Welsh Government, Working together to reduce outdoor air pollution, risks and inequalities: Guidance to support policy and practice development across the NHS in Wales, April 2018. <https://gov.wales/sites/default/files/publications/2019-06/working-together-to-reduce-outdoor-air-pollution-risks-and-inequalities.pdf>

RSSB, Railway Noise & Vibration and Line-side Residential Planning Applications: Guidance for Local Planning Authorities and Developers, January 2019.

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

Welsh Government, Active Travel Act Guidance, July 2021. <https://gov.wales/active-travel-act-guidance>

Welsh Government, Site & Context Analysis Guide: Capturing the value of a site, March 2016. <https://gov.wales/sites/default/files/publications/2018-09/site-context-analysis-guide.pdf>

Welsh Government, Technical Advice Note (TAN) 12: Design, March 2016. <https://gov.wales/technical-advice-note-tan-12-design>

Welsh Government, Technical Advice Note (TAN) 18: Transport, March 2007. <https://gov.wales/technical-advice-note-tan-18-transport>

World Health Organization, WHO global air quality guidelines, 2021. <https://apps.who.int/iris/bitstream/handle/10665/345329/9789240034228-eng.pdf>

DRAFT

GLOSSARY

Acoustic design – an approach to design relating to the acoustic 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.

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).

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.

Appropriate soundscape – the right acoustic environment in the right time and place (from a user perspective), which 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.

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.

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 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 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).

Tranquillity – 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 ACRONYMS

ADS	Acoustic Design Statement
AQMA	Air Quality Management Area
BS	British Standard
dB	decibel
IAQM	Institute of Air Quality Management
JNCC	Joint Nature Conservation Committee
MTAN	Minerals Technical Advice Note
NSDS	Noise and Soundscape Design Statement
PPW	Planning Policy Wales
ProPG	Professional Practice Guidance
SA	Sustainability Appraisal
SEA	Strategic Environmental Assessment
SPG	Supplementary Planning Guidance
TAN	Technical Advice Note
WHO	World Health Organization

APPENDIX 1: THE ROLE OF GREEN INFRASTRUCTURE IN AIR QUALITY AND SOUNDSCAPE

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.

As stated in PPW, good design can help to ensure high environmental quality, and landscape and green infrastructure considerations are an integral part of the design process.

There may 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. But some species of vegetation emit air pollution themselves in the form of volatile organic compounds (VOCs). This potentially enhances the formation of pollutants such as particulate matter and ground level ozone. Furthermore, 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.

For an individual development, planning authorities and those proposing schemes should not assume that including trees, shrubs and hedgerows on the site – even 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. If developers wish to gain credit for green infrastructure in relation to air and/or soundscape quality, they must demonstrate that they have employed good design 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 the 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. This reduces 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. This will reduce the stress levels associated with proximity to busy roads and ensure people have options other than going indoors (where they would be exposed to other forms of air pollution) when they want to enjoy peace and quiet;
- encouraging exercise and other outdoor recreation, thus 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 development proposals. Further consideration is contained in Chapter 3, but, 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 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 (as attractive alternatives to those provided by the kerbside).

APPENDIX 2: DATA AND INFORMATION FOR PLAN MAKING

Existing information relating to air quality, noise and soundscape	
The nature of the information and what it tells me	How it may be taken into account
The nature of the information and what it tells me	What can help me avoid making a problem worse or creating a problem elsewhere?
<p><i>Any nationally modelled maps of air and noise pollution produced by the Welsh and UK Governments</i></p> <p>Environmental noise maps show estimated average levels of road traffic and railway noise across Wales, and identify noise hotspots ('priority areas').</p> <p>Air quality maps show estimated average concentrations of air pollutants across Wales, and identify areas of non-compliance with the air quality objectives.</p> <p><i>Intelligence gathered by local authorities in the course of discharging their Local Air Quality Management duties (which should not be limited simply to considering the presence or otherwise of Air Quality Management Areas)</i></p> <p>Local authorities will already possess a large amount of information and planning authorities should make use of intelligence held by colleagues with responsibility for Local Air Quality Management. Intelligence and plans under this regime will develop over time, particularly as air pollution concentrations improve or worsen so it is important that local planners keep up-to-date with the latest information.</p>	<p>Take into account because:</p> <ul style="list-style-type: none"> • Existing sensitive receptors in areas with high levels of pollution would need protection. • Introducing new receptors into such areas is not acceptable and pollution-sensitive development should be located elsewhere. • The location and distribution of development should be carefully considered to avoid the creation of new pollution problems, particularly as a result of the cumulative effects of increasing road traffic and/or industrial emissions generated from proposed development. • The maps may indicate where borderline problems exist, allowing action to be taken to avoid making things worse, for example where the cumulative effects of increasing road traffic and/or industrial emissions generated from proposed development in areas in the vicinity may make a borderline problem worse. • The maps may act as a trigger for further action, for example, specifying airborne pollution assessments. <p>Action to be taken:</p> <p>Consider how this informs plan strategy and subsequent policies and proposals and whether avoidance is necessary. For the purposes of planning it is not sufficient to merely highlight or draw a line around a problem area. Rather, pollution problems need to be understood in the context of places – how they are distinct and how they function. Decisions on plan strategy, particularly in terms of future locations for development, should at the very least take the bullet points above into account. The result could be policies and allocations which enable appropriately located development and which may specify requirements for better design which reduces or minimises pollution and which creates appropriate soundscapes.</p> <p>This information could be considered as part of identifying planning related evidence and information which has synergies with air quality, noise and soundscape and/or as part of initiatives to reduce the need to travel and encourage travel by more sustainable modes.</p>

Maps of noise complaint hotspots, which may be generated from the data accumulated over time through the increasing use of smartphone noise reporting apps as well as by other more traditional logging methods

Environmental health officers will have records of noise complaints, either received directly from complainants or via smartphone technologies like The Noise App (TNA). The extent to which these are spatially mapped is likely to be variable but officers will know where complaints are highest. TNA records will provide co-ordinates and times of noise complaints, including recordings. If this information was mapped it could tell planners where most hospitality and domestic complaints occurred and what caused them. This in turn should inform better planning responses.

Take into account because:

- Understanding where and why complaints emerge can help to formulate local policies to help deal with problems which exist.
- Understanding noise problems in the context of places – the nature of urban form and development relative to the emergence of complaints – can provide intelligence on what can be done to avoid them and design more effectively. This would help to avoid the creation of similar problems elsewhere and raise the bar in terms of encouraging better design elsewhere.

Action to be taken:

It may be particularly important to enhance understanding of areas proposed for mixed use developments, re-purposing town centres and potential office conversions or the regeneration of older industrial/commercial areas where compatibility between different uses requires careful consideration. It may also be important generally, given the rise in working from home, where acoustic protection needs to be suitable in the daytime for office work.

International and British soundscape standards contain methods that may be used to gather reliable data on how existing communities in complaint hotspots perceive and experience their sound environments, to inform development plans.

Maps of licensed entertainment venues and other cultural sites that could be at risk of receiving noise complaints from inappropriately located or poorly designed noise-sensitive development

EHOs will have lists of known licensed venues. In addition to the information on known complaints this information, if spatially mapped, would help to flag potential conflicts or opportunities which may emerge in terms of compatibility of uses and will enable the agent of change principle to be fully considered. Similarly, other cultural venues and sites will be known and could be mapped to aid understanding of how best to manage mixed use areas.

Take into account because:

- The presence and/or pattern/distribution of venues will influence the type of development to be created or re-purposing undertaken. For example, the creation of flats in a vibrant area may suit those who want a busy nightlife but not those who want a quiet life yet easy access to services. However, vibrancy may not be the same or consistent across areas and opening and closing times may vary.
- Need to consider the agent of change principle.

Action to be taken:

International and British soundscape standards contain methods that may be used to gather reliable data on how existing communities in the vicinity of entertainment and cultural venues perceive and experience their sound environments, to inform development plans.

<p>Maps showing the locations of major industrial activity</p> <p>Regulators including local authorities and Natural Resources Wales will have information on industrial activity. Ideally this should be available in spatial form.</p>	<p>Take into account because:</p> <ul style="list-style-type: none"> • Pollution-sensitive development may not be appropriate in close proximity to such uses taking into account the agent of change principle. <p>Action to be taken:</p> <p>Pollution-sensitive development should not be allocated in areas where existing pollution problems exist.</p> <p>Where it is unavoidable as part of plan strategy to locate pollution-sensitive development in particular areas then appropriate design and mitigation to minimise or compensate for the effects of pollution and/or to support agent of change could be specified through appropriate policies and supporting guidance.</p> <p>The location and distribution of development should be carefully considered to avoid the creation of new pollution problems.</p>
<p>Intelligence held by Welsh Government and local authority transport teams on traffic flows, and maps of any proposals for major changes to transport infrastructure</p> <p>Major new road projects will be known and routes safeguarded. It would be useful to pinpoint and map other highways proposals, including carriageway improvements, junction improvements and traffic calming or traffic free schemes and major investments in active travel infrastructure.</p>	<p>Take into account because:</p> <ul style="list-style-type: none"> • This enables tensions and opportunities to be identified. For example, whether growth can be facilitated; whether growth should be directed elsewhere; or where specific attention may be required in terms of design and whether mitigation measures may be appropriate. <p>Action to be taken:</p> <p>Consider how this informs plan strategy and subsequent policies and proposals and whether avoidance is necessary or whether wider mitigation measures such as electric vehicle charging or other behavioural measures may be appropriate or whether site design requirements may be possible.</p>
<p>Maps showing other activities that present high risks of generating complaints, such as military low-flying</p> <p>There is no ‘off the shelf’ information on risks of complaint generation. The risks of low flying jets will be known, issues with airports will be known – noise contours and buffers will exist. There may be very localised specific risks associated with off-roading or with motor bikes.</p>	<p>Take into account as appropriate:</p> <ul style="list-style-type: none"> • Consider design and mitigation which could help alleviate problems. • Consider implications for tranquillity and strategies associated with protecting tranquillity.

<p>Tranquillity & Place</p> <p>Natural Resources Wales</p> <p>A new nationally consistent Tranquillity & Place resource that identifies tranquillity as a relative landscape and soundscape quality as perceived or experienced within its place context.</p> <p>The Tranquillity & Place resource includes the degree to which places and ecosystems deliver:</p> <ul style="list-style-type: none"> • a relative abundance, perception or experience of nature, natural landscapes and greenspaces • relative freedom from intrusive visual disturbance and human influence • relative dark skies • visually tranquil places <p>Available from 2022-23:</p> <ul style="list-style-type: none"> • acoustic environments where natural sounds are more prominent than noise and are appropriate to context • Tranquillity & Place (combined) <p>Also available from DataMapWales:</p> <ul style="list-style-type: none"> • Tranquil Areas Wales 2009 • Tranquil Areas Wales 1997 <p>The multi-dimensional nature of this information will add nuance and layers to existing approaches.</p>	<p>Take into account because:</p> <ul style="list-style-type: none"> • Tranquillity & Place mapping provides a national evidence base for use at a strategic and local scale, where people live, to inform provision for wellbeing benefits. • Tranquillity & Place mapping can be used to conserve and protect tranquillity as a special quality of designated landscapes; conserve tranquillity in valued areas and identify areas for enhancement, recognising the importance of tranquillity for people and wildlife. • Accessible quiet spaces in urban areas, developed areas, villages or along accessible waterfronts or river banks can be mapped for their quiet respite. • Tranquillity approaches can dovetail with soundscape approaches where tranquil and restorative environments are the desired outcome. • Tranquillity has limited resilience, subtle changes in noise, visual intrusion and light pollution may have marked effects on tranquillity. • It provides a contrast with areas of complaint where anti-social behaviour may be problematic and where considering the variety of information will aid understanding about the differences between areas and shed light on remedies for improvement to ensure areas are welcoming, be they vibrant or tranquil. <p>Action to be taken:</p> <p>International and British soundscape standards contain methods that may be used to gather reliable data on how existing communities with either good or poor access to tranquil green space perceive and experience their sound environments, to inform development plans.</p> <p>Complete in 2022-23, Tranquillity & Place spatial data and information identifying acoustic environments where natural sounds are more prominent than noise and are appropriate to context.</p>
---	---