



## Noise Policy in a more sustainable future

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### ABSTRACT

*This paper examines the issues that could arise regarding the implementation of noise policy in the context of the need and desire to deal with the effects of climate change. Is it going to be necessary to compromise the standards used or implied in noise policy in order to enable measures to tackle climate change to be put in place? Based on the author's extensive experience of developing and implementing noise management policy, this paper will consider how the pressures of tackling climate change could impinge on the outcomes that should be sought through noise management policy. The paper will consider the various types of noise policy that have and do exist and explore the issues that might now have to be addressed in order to secure a more sustainable future.*

### 1. INTRODUCTION

There is widespread concern about the effects of climate change. One of the consequences is the increasing demand for technological changes that reduce society's reliance on carbon generating processes for transportation and energy. It has been said that noise is the Cinderella pollutant, and whilst its adverse effects on health and quality of life are well known, the importance of effectively managing noise impacts rarely seems to be as high as concerns about, say, air pollution. Consequently, in the justifiable desire to tackle climate change, there is a risk that the management of noise will be downgraded because it is less important than undertaking developments or policy initiatives designed to reduce society's impact on the climate.

This paper examines the development of noise management policy and identifies some issues that will have to be addressed so that noise is effectively managed in a world where the need to tackle climate change is increasingly dominant.

### 2. WHAT IS NOISE MANAGEMENT TRYING TO ACHIEVE?

In an ideal world, noise (i.e., unwanted sound) would not exist. Maybe in the distant future that may be the case, but for the moment there are many day-to-day activities that generate noise and that noise can adversely affect people living or working near to the source. Whilst there is evidence of noise management dating back thousands of years<sup>2</sup>, it is arguably only in the last 60 years or so that policy makers started systematically seeking to manage the noise affecting their society. Certainly, that is the case for the UK which will be the focus of this paper.

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<sup>2</sup> For example, in the Holy Bible, in first book of Kings: Chapter 6, Verse 7 says "In building the temple, only blocks dressed at the quarry were used, and no hammer, chisel or any other iron tool was heard at the temple site while it was being built". An early example of construction noise management.

## 2.1. The “Wilson Report” (Ref 1)

In 1963 the final report from the Committee on the Problem of Noise was published by the UK Government. This is known colloquially as the Wilson report as the committee was chaired by Sir Alan Wilson FRS. The committee was asked “*to examine the nature, sources and effects of the problem of noise and to advise what further measures can be taken to mitigate it.*” The report described the work of the committee examining the impact of a very wide range of noise sources that were affecting society then. When considering the effect caused by the various sources, the focus appeared to be on the complaints that resulted. This can be seen from the following extracts from the report:

- The noise from brakes and brake gear on goods trains is a source of complaint (Para 213)
- In the last few years noise from motor-boats on rivers, lakes and the sea has begun to cause complaint (Para 233);
- In the majority of cases in which complaints are made about noise from industrial premises, the firms concerned go to considerable lengths to eradicate the cause of complaint (Para 357).
- Perhaps the machines which cause most complaint are rotary grass cutters and motor lawnmowers, and we have examined the possibility of quietening them. (Para 503).

The report noted that “the most readily available indication of annoyance in a community is complaint” (Para 36), but as is very well recognised today, the report also stated

*“Although this information enabled us to form a picture of the types of noise that caused complaint, we do not think that it always gives a reliable guide to the number of people who are annoyed, nor to the degree of their annoyance. For instance, many people who are annoyed do not complain, for one reason or another, although they may be disturbed as much as those who do complain. Nor is there any means of assessing the seriousness of a complaint or the weight which should be attached to complaints from representative bodies compared with those from individuals.”* (Para 37)

Nevertheless, in 1967, the first version was published of a British Standard to assist with the management of noise from industry entitled “Method of industrial noise affecting mixed residential and industrial areas” (Ref 2). As stated in the Foreword:

*“It gives a method of measuring a noise, together with procedures for predicting whether the noise in question is likely to give rise to complaints”*

The standard went on to note that

*“Although, in general, there will be a relation between the incidence of complaints and the level of general community annoyance, quantitative assessment of the latter is beyond the scope of the standard”*

Thus, policy makers and those preparing standards were reconciled that, although far from perfect, whether or not complaints arose was the best available measure then of effective noise management.

## 2.2. Circular 10/73 – Planning and Noise (Ref 3)

It was only 6 years later with the publication of this Circular that there was a shift in noise management. This document addressed noise from transportation and industry and declared

*“As part of the Government’s commitment to enhance the quality of the surroundings in which people live, they have been considering what can be done to contain and, where possible, reduce the impact of noise.”* Para 1

The expectation was not very high – to stop the noise impact from worsening and hopefully to reduce it.

In connection with new residential development potentially affected by road traffic noise, the language is clearer:

*“It is equally important that new noise-sensitive development should not be permitted if it would – now or in the foreseeable future – be exposed to unacceptable levels of traffic noise”* Para 6

At first sight, this appears to be an example of development ambitions being constrained by the prevailing noise environment. However, the document went on

*“There should be a strong presumption against permitting residential development in areas which are or are expected to become subject to excessive noise”* Para 7

Immediately, therefore, what appeared to be an absolute constraint on development was diluted by the phrase “strong presumption against”. Helpfully, Para 7 also defined the threshold as being noise levels in excess of 70 dB,  $L_{A10,18h}$ , and added that, if possible, a substantially lower value should be used.

The dilution continued with Para 7 going on to say:

*“Where it is proposed to grant permission for residential development in areas of high noise level, planning conditions should be imposed to ensure that as far as practicable the effects of noise are mitigated and that, in any event, the internal sound levels in the dwelling should conform to the criteria recommended in paragraph 8 below”*

The internal criteria were described as follows:

*“In any case it is essential that the building specification be such that in no dwelling is the internal  $L_{10}$  with windows closed greater than 50 dB(A)”* Para 8.

Thus, the focus of the policy in this document was preventing as far as possible new housing being exposed to unacceptable or excessive noise. However, if that was not possible than at least design the housing so that with windows closed an internal sound level criterion was met. Interesting, there was no mention of alternative ventilation although compensation regulations associated with new highways did include alternative mechanical ventilation as part of the additional sound insulation package.

### 2.3. Planning Policy Guidance: Planning and Noise – PPG 24 (Ref 4)

This policy document replaced Circular 10/73 in 1994 and had the stated aim of providing

*“advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burden of business”* Para 1

In one sense, policy moved on from simply trying (as far as possible) not to expose dwellings to very high levels of noise to a policy of generally minimizing adverse impacts, as long as that did not disrupt business too much.

Of course, the use of the word minimise implicitly includes although not stated, the concept of ‘as far as is practicable’. In the ridiculous extreme, noise from a source can be literally minimised by stopping the source from functioning. So, there is very much a ‘do the best you can’ flavour to this policy.

Very helpfully for new dwellings, the prevailing noise environment was classified into four separate categories, based in a numerical description of the existing noise exposure. The commentary for each category was as shown in Table 1

**Table 1**  
**Extract from PPG24**  
**(Annex 1 Paragraph 1)**

Noise Exposure Category	Commentary
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	Planning permission should normally be refused.

It is interesting to note that for Categories C and D, reflecting the higher levels of exposure, the word ‘normally’ is used in the context of planning permission not being granted (Category C) and being refused (Category D). This tended to mean that housing was built at these exposures as long as the building envelope insulation (along with associated ventilation) meant that appropriate internal levels were achieved with windows closed.

### 2.4. Current Noise Policy in England

During the late 1990s, with the advent of devolution, noise policy in the UK became the responsibility of the various governments and administrations in Scotland, Wales and Northern Ireland. Over the years the detail has evolved but the general thrust is still broadly similar.

In the first decade of the 21<sup>st</sup> century, there were periodic calls for a Noise Strategy in England. This was partly in response to the implementation of the Environmental Noise Directive and partly due to the adoption of an Air Quality Strategy. It was however, recognised that for a Noise Strategy

to be meaningful, there need to be a noise policy. Consequently, in 2010, the Noise Policy Statement for England (NPSE) (Ref 5) became the over-arching Government policy on noise. Figure 1 shows the policy vision and Figure 2 the policy aims.

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development

Figure 1 – Noise Policy Vision

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

Figure 2 – Noise Policy Aims

There several features to note:

- The policy covers the effect of noise on both health and quality of life;
- It covers all types of noise source<sup>3</sup>;
- Clear outcomes are sought (although not expressed numerically)
- Both the Vision and the Aims use the phrase ‘in the context of Government policy on sustainable development’;
- A distinction is made between significant adverse impacts and adverse impacts; and
- For the first time, the policy also includes a requirement to contribute, where possible, to the improvement of health and quality of life. The policy is not solely about reducing (adverse) noise impacts.

The NPSE uses the established concepts of No Observed Effect Level (NOEL) and Lowest Observed Adverse Effect Level (LOAEL). It also extends these concepts by introducing the Significant Observed Adverse Effect Level (SOAEL). This is the level above which significant adverse effects on health and quality of life occur. However, the explanatory note to the NPSE states that it is not possible to identify a single objective value to define SOAEL for noise that is applicable to all sources of noise in all situations. It is likely to be different for different noise sources, for different receptors and at different times.

Since its publication, the policy has been adopted by successive Governments and its principles can be found in various other policy documents subsequently published concerned with planning, energy and transportation.

There was some debate about the meaning of the word ‘avoid’ in the first aim. It does not mean ‘can’t have’. Instead, it means make every effort should be made so that significant adverse impacts do not occur. The reason is that the policy covers all sources and for historical legal reasons, there are certain circumstances where a significant adverse impact is lawfully allowed to continue. Also, there is the practical point. If it is accepted that a person who is genuinely highly annoyed by a source is significant adversely affected, there is not the technology available at present so that no-one at all

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<sup>3</sup> The NPSE does not cover noise in the workplace

is highly annoyed by, for example, a transportation source. Even at low levels of exposure, some people are genuinely highly annoyed – and, at present, that impact cannot be avoided.

In the National Planning Policy Framework (NPPF) (Ref 6), which, when first published in 2012, formally replaced PPG24, there is this policy statement

*“Planning policies and decisions should contribute to and enhance the natural and local environment by: ....*

*e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of .... noise pollution.” (Para 172)*

Consequently, there is a level of noise exposure that is unacceptable in absolute terms, and if that situation occurs, the proposed development associated with that impact must not occur.<sup>4</sup>

The NPPF is supported by on-line guidance, the Planning Practice Guidance on Noise (PPG(N)), (Ref 7), first published in 2014. The hierarchy of effect of noise is confirmed, ranging from no observed effect to an unacceptable effect, with qualitative descriptors being used to give examples of various degrees of effect which can occur.

Most dose-response relationships between exposure (impact) and effect are relatively continuous meaning that there are rarely any obvious thresholds defining LOAEL and SOAEL. Furthermore, these relationships show that even at low exposure (as noted above) there are still some who are genuinely highly annoyed, and at high exposures not all those affected are highly annoyed (although they may be experiencing non-cognitive adverse effects).

This feature means that defining LOAEL and SOAEL for any given situation from the evidence is relatively arbitrary. Consequently, such thresholds are not fixed and can justifiably be altered slightly without being materially detrimental to the noise management outcome.

The PPG(N) also assists with interpreting the phrase ‘in the context of Government policy on sustainable development’. It states:

***Can noise override other planning concerns?***

*It can, where justified, although it is important to look at noise in the context of the wider characteristics of a development proposal, its likely users and its surroundings, as these can have an important effect on whether noise is likely to pose a concern.*

When the PPG(N) was first published in 2014, this paragraph stated:

***Can noise override other planning concerns?***

*It can, but neither the Noise Policy Statement for England nor the National Planning Policy Framework (which reflects the Noise Policy Statement) expects noise to be considered in isolation, separately from the economic, social and other environmental dimensions of proposed development.*

Arguably, the original (2014) statement was clearer, confirming that the effect of the noise impact must not be considered in isolation and that the social and economic merits of the source must also be taken into account. The consequence of this approach is that a relatively greater noise impact can

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<sup>4</sup> This policy means that it is inappropriate to seek a policy outcome that is ‘acceptable’. Anything that is not unacceptable is, by definition, acceptable and that could mean a high noise exposure (and certainly a significant adverse impact) which is probably not would be intended by seeking an acceptable outcome.

occur with a source that has large social and economic benefit. An activity with limited benefit should not be permitted to cause a disproportionate adverse or significant adverse impact.

The link between noise impact and economics came sharply into focus with the pandemic. Although there were local variations, it was found that, overall, noise levels reduced in England by about 5 – 6 dB, and yet the economic impact of the Lockdown was huge. Therefore, it is essential to take into account the social and economic benefits of the noise making source when determining, for a particular situation, the thresholds at which LOAEL and, more importantly, SOAEL lie.

### **3. NOISE POLICY IN A MORE SUSTAINABLE FUTURE**

The current noise policy in England is arguably more mature and sophisticated than earlier iterations. The increased understanding of the effects of noise, including the non-cognitive health effects that can occur, the recognition that fixed thresholds are relatively arbitrary and that small changes in them will not alter the overall outcome, have assisted in reaching an effective policy framework.

For a climate-benefitting proposal, it would not be appropriate to go back to relying simply on avoiding complaints – as was the thrust of policy 50 – 60 years ago. Not only for the reason noted by the Wilson Committee (i.e., that not all people who are annoyed complain), but also because of the non-cognitive effects from noise exposure which can be damaging to health and yet not apparent to those affected.

However, the need to tackle climate change probably means that in addition to taking into account the economic and social benefits of a noise making activity, it will now become necessary to take account of the climate benefits.

Whilst Governments might be tempted to think that climate-benefitting activities must override all other considerations, it is possible to sustain an argument that there is a (high) level of exposure which cannot be allowed to occur regardless of the climate benefits that would accrue. In other words, the unacceptable level found in current policy should still apply. Otherwise, the price potentially being paid by the affected individuals would be too large, especially if the climate benefit may not manifest itself within their lifetime.

As with any noise generating development, considering the potential noise impact of a climate-benefitting proposal at an early stage should avoid this conflict. Furthermore, technological advances are continuing to occur helping to reduce the noise generated and hence reducing the impact. Nevertheless, it has to be recognised that there may be some situations when an expected unacceptable noise impact must prevent a climate-benefitting proposal from going ahead.

A potential difficulty arises when Governments decide to speed up the move to lower carbon technology by using the principle of Permitted Development Rights. This procedure means that there is no need to seek any form of regulatory consent for the development (because the development is deemed to be permitted) and, consequently, the potential noise impact and effect is given little to no attention. An example of that risk in the UK at present is the proposed move to the widespread use of Air Source Heat Pumps instead of gas boilers to heat domestic premises.

Other approaches being considered are rewarding people for being exposed to noise from climate benefitting developments, such as on-shore windfarms. In this case, the intention is that those people affected by noise will pay a lower amount for their electricity. However, this policy will not reduce the noise impact. There would instead be an expectation that those affected will have to ‘put up with the noise’ because they are effectively being paid to do so. But questions remain: Will those affected be able to ‘put up with the noise’ over a period of time? What might be the health effects of putting up with the noise? Furthermore, as mentioned above, adverse health effects from noise exposure can arise without the person being affected being aware of the issue. Should society condone imposing such effects despite the climate benefit that accrues? It appears to be an easy and elegant solution, but is it the correct solution?

As mentioned earlier in this paper, for around 50 years, a method of managing the noise impact affecting the inside of dwellings is by the use of enhanced building envelope insulation such as secondary glazing. The benefit of this measure, however, relies on the windows being kept closed.

Therefore, alternative ventilation is needed, and in many cases, passive ventilation is not enough and the sound insulation measures have to be supported by the addition of mechanical ventilation. That, of course, uses energy which does not help with addressing climate change. The questions are: How should the impact of a noise generating proposal of any sort be considered if the only way to meet Government policy is through the use of mechanical ventilation? Where should the balance be struck? Should there be a recognition that the new development cannot go ahead because, without mechanical ventilation, an unacceptable impact would occur? Or is the increased impact on those affected a price that can justifiably be paid for the new development? Or, maybe, the climate disbenefit of mechanical ventilation is sufficiently small so that it can still be used as part of noise mitigation?

#### **4. CONCLUSIONS**

Having looked at the evolution of noise policy over a period of about 60 years, various issues have been raised regarding implementing noise policy in a more sustainable future. As promised in the abstract, various questions have been asked but, carefully, the author has avoided attempting to answer most of them. This is simply because there is not, at present, a simple solution.

The need to tackle climate change is manifest. But effective noise management is also very important, especially for those affected. Until technology means that the noise generated by climate-benefitting activities is reduced to virtually nothing, acousticians (and politicians) are going to have to grapple with these issues.

#### **5. ACKNOWLEDGEMENTS**

The thoughts set out in this paper reflect conversations with acoustics and other professionals over many years in both formal and informal surroundings. At times, it has been no more than a single sentence that has sparked a thought which has assisted in developing this paper. To all of you – thank you.

The views expressed here belong entirely to the author and do not necessarily reflect the views of any organisation currently or previously associated with him.

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