

A review of air quality management areas in Great Britain: implications for land-use planning

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Abstract

With air quality now a clearly recognised *material consideration* in land use planning processes in GB, the designation of *air quality management areas* (AQMA) in over a quarter of local authorities in England, Scotland and Wales is causing local planners to re-evaluate the potential impact of development on local air quality.

Traffic emission sources account for over 95% of the AQMA designated in the UK, with predicted exceedences of the long-term nitrogen dioxide (NO₂) air quality objective causing their designation in the main. Designation of an AQMA requires an *air quality action plan* to reduce exceedences of the air quality objectives, and this will require actions to address traffic flow, generation and overall traffic movements in our rural and urban areas alike. Local authorities, through their air quality action plans and strategies, and more importantly their local transport plans and local development plans will need to identify methods for ensuring air pollutant concentrations do not deteriorate further in areas where the public is exposed.

Locations designated as AQMA therefore provide the starting point for identifying specific areas where planning processes should be focused on improving local air quality. This paper examines how the various spatial shapes and scales of AQMA designations may affect land-use planning processes, and how the scientific assessment process undertaken to determine AQMA locations may conflict with, or assist in informing the strategic and development control planning processes operating within local government in GB.

1 Introduction

The Air Quality Strategy for England, Scotland, Wales and Northern Ireland¹ established the local air quality management (LAQM) regime delivered by local government in the United Kingdom. Following a phase of a scientific review and assessment process in 2000 and 2001, local authorities had a duty to identify locations where specific air quality objectives (AQOs) are not predicted to be met by future target dates, and declare such areas as *air quality management areas* (AQMAs). Air quality objectives for seven pollutants (including nitrogen dioxide, PM10 and sulphur dioxide) were established and regulated through the Air Quality (England) Regulations 2000², and local authorities across Great Britain have a duty to *work towards* achieving the AQOs, which are health-based.

AQMA designation is a statutory requirement of local authorities³, following which *air quality action plans* are required to provide solutions to localised pollution hot spots⁴. Land-use planning is fundamental in helping deliver air quality improvements locally⁵, and whilst the Environmental Health profession has largely been responsible for undertaking the scientific assessment process to determine where AQO exceedences are likely, determining AQMA location and boundaries, the process has required input from other local government disciplines. Land use and transport planning are important contributory disciplines for effective local air quality management, but evidence suggests that land-use planning officers have been less involved in the first phase of LAQM than might have been expected⁶.

Determining AQMA boundaries has emerged as a highly varied process⁷ with some authorities having declared, or anticipate declaring a much larger area than that defined by the scientific assessment process of identifying areas of AQO exceedences, and some authorities are anticipating designating their whole authority an AQMA. Methods for determining the exact boundary of an AQMA are also highly variable, and various local factors, including the local authority political regime, may influence AQMA boundary decisions, as well as the scientific methods used during the air quality assessment work⁸.

By January 2002, 69 of the 120 local authorities across Great Britain anticipating AQMAs had officially declared their AQMAs. This paper examines the AQMAs in terms of the sources of emissions, the spatial scale and physical shape of the AQMA. Local authorities are required only to consider locations where the general public might reasonably be expected to be exposed³, and this paper discusses how local authorities are declaring AQMAs in relation to residential property. A further requirement of the air quality assessment process is to have consideration for future land use development, and its potential impact on air quality. Air quality is not only a material consideration with respect to individual planning applications, but may be a material consideration if further AQMAs are required due to a particular planning proposal. An AQMA may need to be extended if a proposed development were to be granted. In this respect, the consideration of future developments becomes particularly significant as AQMAs are proposed and designated. This paper considers the

extent to which local authorities have addressed future development in their LAQM duties. Evidence is drawn from local authority air quality review and assessments housed in the UK National Review and Assessment Archive at U.W.E.*

2 Survey Methods

An appraisal of local authority air quality scientific assessments was undertaken during 2000 and 2001. Review and Assessments from 120 local authorities predicting potential AQO exceedences were examined. These local authorities will require AQMAs to be designated and declared. In conjunction with the appraisal work, an examination of declared AQMAs to date has been undertaken, as individual local authorities have officially declared their AQMA(s). This examination has provided an understanding of the approach to determining the actual AQMA typology, and the type of land-use included within the designated area.

3 Appraisal Results

Table 1 indicates the sources of air emissions contributing to the air quality objective exceedance predicted by 120 local authorities who have or will declare an AQMA.

Figure 1 indicates the physical shape or typology of the AQMAs officially designated to date. AQMAs are described in terms of the type of land use encompassed, such as a road network, or city centre designation.

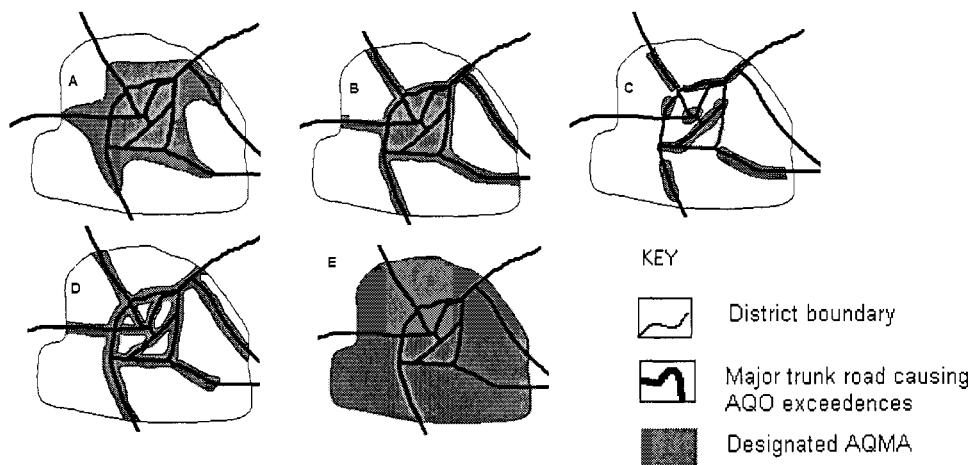
* The authors of this paper are contracted by the Department of the Environment, Food and Rural Affairs, and devolved administrations to appraise all UK air quality review and assessment reports (contract EPG1/3/182) under which the maintenance of the national archive of assessment reports is a requirement

Table 1: Emission source responsible for air quality objective predicted exceedences

Emission source(s)	% of local authorities
Traffic only ^{a, b}	74
Traffic mainly (minor contribution from industry) ^{a, b}	12
Traffic ^{a, b} and industry ^{b, c}	5
Industry only ^{b, c}	4
Traffic ^{a, b} and construction emission source ^b	1
Traffic ^{a, b} and domestic source ^c	1

^a NO₂ objective(s) ^b PM10 objective(s) ^c SO₂ objective(s)

Figure 1 Diagrammatic illustrations of some AQMA typologies identified. A (city centre designation); B (urban road and centre designation); C (individual road designation); D (urban road network designation); E (whole borough designation).



For each AQMA the number of residential properties within the AQMA was estimated. Table 2 provides an estimate of the number of individual residential properties encompassed within individual AQMAs. In a third of local authorities with designated AQMAs, the evidence was unclear from the AQMA map. Other local authorities provided street names and an indication of whether one or both sides were encompassed, without specifying the number of individual properties. The results in table 2 include those local authorities with more than 1 AQMA. 65% of local authorities declaring to date have declared a single AQMA within their authority, with 12% declaring 2 AQMAs, 7% declaring 3 AQMAs, 6% declaring 4 AQMAs and the remaining 9% of local authorities declaring between 5 and 20 individual AQMAs.

Table 2: Number of residential properties within designated AQMAs in GB

Number of properties	% of local authorities ^a
not clear or stated	32
all properties (whole borough)	19
51-100 properties	12
>200 properties	10
2-20 properties	6
21-50 properties	6
101-200 properties	3
one street (both sides)	3
both sides of 3 roads	3
both sides of 4 streets	3
isolated building(s)	1
one street (one side)	1

^a accounts for 69 local authorities declaring AQMAs as of January 2002

Table 3 illustrates the level to which future planned developments have been considered in the air quality assessment process in most declaring local authorities.

Table 3: Consideration of planned developments during LAQM review and assessment process

Consideration criteria	% of local authorities ^a
No consideration	51
Some consideration	45
Explicitly	4

^a accounts for 106 of the 120 local authorities to declare AQMAs

4 Discussion

Traffic emissions are responsible for almost all anticipated and declared AQMAs in GB, indicating the importance of transport and land-use planning policies for promoting improvements in local air quality.

With roads and motorways being a significant source of air emissions, the AQMAs reflect the pattern of the road network, with local authorities choosing to declare whole roads, or linked roads. A significant number of local authorities have declared their whole authority an AQMA, especially in London. In this case, residential, commercial, industrial and open space is all encompassed within the designation. Local authorities can choose to declare any part, or all of their authority, and have a duty to simply ensure that areas of air quality objective exceedences, where members of the public might be exposed, are declared.

Whole borough declarations have wider implications for Local and Unitary Development Plans (LDPs and UDPs) than other AQMAs, in so much as every planning application submitted is encompassed within the AQMA and is therefore subjected to the same rigorous procedures for considering air quality, irrespective of the potential threat to local air quality posed. More localised AQMAs provide a specific focus for the consideration of local air quality as a material planning consideration, as well as air quality action planning.

Some local authorities have chosen to declare only the residential properties affected, whereas others have chosen to declare a wider area to encompass land which may not necessarily be locations where the public currently may be exposed. By choosing the latter, air quality as a material planning consideration will be more readily accepted, and any potential risk imposed by planned development recognised.

Local authorities identified the number of properties within their AQMAs in a variety of ways, with some choosing to list individual property boundaries encompassed in the AQMA order(s), and others choosing to name specific streets only. Many chose not to specify or make clear the properties included. Although the majority of local authorities have, and anticipate declaring one single AQMA, for the long-term NO₂ objective, some authorities have chosen to declare a series of individual, smaller AQMAs rather than to join the areas up to make a larger AQMA. For air quality action planning purposes, the larger AQMA encompassing residential and non-residential land use will ensure actions and measures to meet the air quality objectives are delivered over a potentially wider area. As discussed previously, individual and more focused AQMAs will provide a focus for planning processes in identifying more exactly where air pollution hot spots are posing a health risk.

With only half of the local authorities surveyed having considered future development in their assessment work, the implication is that further designated areas may be required, or proposed AQMAs further extended, following future air quality assessment work. Local authorities have been advised to consider any potential development proposed in light of the impact it may have on future local air quality³, and by not doing so the local authority runs the risk of not highlighting the potential for air quality impacts at the earliest stage possible to help inform the land use planning process.

In recent years a body of case law in respect of proposed development and its potential impact on local air quality has emerged⁵. Planning proposals that have tested air quality as a material consideration have included those to develop tracts of land alongside a motorway for residential purposes, and a large retail development close to residential property.

5 Conclusions

Over a quarter of local authorities across GB are designating air quality management areas. AQMAs provide a clearly defined area where the public is at risk of exposure to future exceedences of the air quality objectives, thereby

assisting the land use planning profession to ensure that proposed development is sensitive to potential impacts on local air quality.

However, whilst AQMAs are a useful tool in providing an indication of future risk of exposure, their determination through a process of scientific assessment has not been undertaken through a wholly consistent approach, with local authorities using a variety of approaches to determine such areas^{7, 8}. As a result, some locations may require an AQMA but have not been designated, and other locations may be declared through an overly cautious approach. Therefore, air quality must be considered as a material planning consideration with respect to every planning proposal. Where an AQMA exists, local authorities must ensure that development seeks to either eliminate or reduce the AQMA status, and not further enlarge it. Central government, and others have sought to provide guidance to local government land-use planners on this issue^{9,10}, and local government may expect further challenges relating to air quality as a material planning consideration in planning proposals in future.

Local government needs to develop air quality strategies, to ensure that all aspects of local government planning policy considers the potential impact on local air quality¹¹. This applies particularly to local land-use and transport planning processes, where policy decisions can exert a strong influence on health and environmental protection, including the management of local air quality.

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