5.2 Air quality

5.2.1 Introduction

"Clean" air is a mixture of about 78 per cent nitrogen and 21 per cent oxygen. The remainder is made up of gases such as argon, hydrogen, carbon monoxide, methane and carbon dioxide. Any pollutants that are released into the atmosphere from one part of the world can be distributed to places on the opposite side within a week. The atmosphere is a dynamic system, with complex and ceaseless processes of mixing, and unexpected linkages between causes and effects. It doesn't take much to make clean air dirty or change its chemistry, with disproportionately large consequences.

Interest in the air has been principally driven by a concern about human health effects arising from poor air quality. As industrialisation proceeded during the 19th and 20th centuries, a whole new range of emissions were released into the atmosphere. Many of the more obvious, visible signs of air pollution have been successfully tackled and human health has improved. One of the less obvious changes – the relatively small percentage increases in methane and carbon dioxide from the expansion of pastoral agriculture and burning fossil fuels – is now widely believed to be having a very significant impact on the health of the planet itself.

The causes of climate change and its consequences are more fully considered in the **climate change** chapter of this document. This chapter, however, touches upon greenhouse emissions as an air quality issue for the Wellington region, but the focus is primarily on more localised air quality management issues.

5.2.2 How successful has the Regional Policy Statement been?

The current *Regional Policy Statement for the Wellington Region 1995* was prepared without much data on air quality, and one of the main priorities has been to establish a good information base. The Air chapter (despite the absence of data on air quality for the region) sought to maintain and protect high quality air and to enhance air quality where there were identified problems. That chapter also had objectives for managing the effects of discharges of contaminants on human health and the environment and for managing greenhouse gas emissions (consistent, in both aspects, with central government policy or standards).

There has been definite progress in terms of data collection and developing a better understanding of air quality around the region. *The Regional Air Quality Management Plan for the Wellington Region 2000* has been particularly valuable in triggering relevant air quality and meteorological monitoring, development of an emissions inventory and providing a system for processing the necessary consents under the *Resource Management Act 1991* (RMA).

Air quality monitoring has shown that degraded air quality is only a problem in certain places under certain conditions. However, while the problems are not widespread or frequent, the RMA does require that something is done when standards or guidelines for managing human health are breached. The Regional Air Quality Management Plan and National Environment Standards provide a framework for identifying breaches and taking the necessary actions.

In New Zealand, transport emissions represent the fastest growing problem for local air quality and global effects. Motor vehicles are responsible for almost all the carbon monoxide, nitrogen dioxide and sulphur dioxide discharged in the Wellington region - these pollutants affect people's health. Vehicles are also responsible for nearly half the greenhouse gas emissions. The Regional Air Quality Management Plan provides a good regime for managing discharges from "fixed" sites (mainly industrial premises and activities), but does not include any rules controlling emissions from mobile sources. Even if it did, the RMA prohibits regional councils from having regard to the effects of climate change when assessing any discharge permit application.

Another major emission source in parts of the region (Masterton, Upper Hutt, and Wainuiomata) is domestic fires. The Regional Policy Statement indicated that Greater Wellington would "control" the effects of domestic emissions through the Regional Air Quality Management Plan, but the Plan leaves resolution of the issue to non-regulatory methods of education and advocacy rather than statutory controls.

Overall, there is certainly a much better idea about where degraded air quality occurs and what the sources are, but it would also be fair to say that actual air quality in these degraded areas is not improving.

5.2.3 What's changed and what are the air quality issues now and for the future?

In late 2005, the Ministry for the Environment introduced *National Environmental Standards for Air Quality*. The aim was to create a consistent approach across New Zealand for improving air quality by setting standards in relation to certain key pollutants of concern for human health.

The National Standard requires that Greater Wellington regularly tests for pollutants and to publicly notify all instances of the Standard being exceeded. The Standard also introduced the notion of "air-sheds" – there are now eight defined air-sheds in the region. If there is more than one instance where the Standard is exceeded per year in an air-shed, no further resource consents to discharge to air can be granted for that air-shed.

The following are some of the main air quality issues identified in *Measuring up 2005*:

- Transport emissions have a range of impacts, from releasing pollutants such as carbon monoxide, nitrogen oxides and particulates into the local environment around and alongside roads (e.g. central Wellington), through to widespread release of a principal greenhouse gas, carbon dioxide (also see **climate change**).
- Emissions from domestic fires cause air quality to exceed the National Environmental Standard for air quality on cold, still winter nights. This is caused by a temperature "inversion", when the earth cools rapidly and cold air is trapped at ground level (along with the smoke and emissions from the fires) beneath a warmer layer of air.
- While it is feasible, and desirable, to introduce the means of addressing domestic fire emissions, there are significant social and cultural consequences from imposing an across-the-board solution (such as banning fires). On the other hand, there is the prospect of poor community health outcomes if nothing is done.
- Odours are a chronic problem frequently reported to the Greater Wellington Pollution Hotline, but while high in number, incidents nearly all relate to a limited number of odour-causing activities and locations.

5.2.4 Comments and questions for you to consider

Air quality seems to be generally good in the region, but there are "hot spots" which Greater Wellington must manage. The resource consent process is effective in managing many fixed sources of pollution. But the main air pollution sources (domestic fires and emissions from vehicles), and the most common effect of air discharges (objectionable odour) are harder to deal with.

Question 1:

Do you think we have identified the right air quality issues? Are there other issues and aspects of air quality management that we should be recognising for the region?

Question 2:

How effective do you think the Regional Air Quality Management Plan and associated air quality management initiatives and actions have been during the last decade? What have been the main factors that have influenced good performance? How might we further encourage the positive factors and reduce the bad ones?

Question 3:

What role do you think the Regional Policy Statement should have for air quality management? Can air quality issues and management be left to the Regional Air Quality Management Plan and the National Environmental Standards?

Question 4:

Would it be helpful if the Regional Policy Statement identified priority emission sources or areas for air quality management – for example, for domestic emissions or for transport-related emissions in busy city centres? Is there sufficient public awareness of the consequences of breaching National Environmental Standards – that for some areas, a breach will prevent any resource consents for discharges to air being granted, thus potentially restricting further development?

Question 5:

To achieve its objectives for air quality, should the Regional Policy Statement be more directive in its policies, or should this be left to rules and/or standards in the Regional Air Quality Management Plan?

Question 6:

How active should local government be in promoting programmes like "Clean Heat" in areas where there are problems with domestic fire emissions?