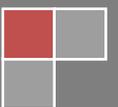


2013

Plan Topics

Air Quality



Air Quality

Air quality planning is needed to maintain and, in some areas, improve the life-supporting capacity of the air. Planning is also necessary to avoid, remedy or mitigate any adverse effects resulting from poor air quality on the environment. Adverse effects on air quality can occur at a global, regional and local level and result from a variety of factors. This guidance note focuses on how air quality can be managed under the RMA at the regional and local level.

Guidance note

Introduction to Air Quality effects and the legislative context

Regional Air Quality Planning

District Air Quality Planning

Key issues for Air Quality Planning

Best Practice examples



Introduction to air quality effects and the legislative context

Managing activities that can have an adverse effect on air quality is a complex issue. This is primarily due to the multiple factors that result in poor air quality, many of which are not directly controlled through the Resource Management Act 1991 (RMA). The government has a [series of initiatives](#) underway to address air pollution nationwide. Local authorities are also working to improve air quality in each region. This guidance note focuses on managing regional and local air quality under the RMA. These are defined as follows:

Regional = affects whole regions, cities and/or airsheds (for example, emissions from transport and domestic heating).

Local = affects just the immediate vicinity (for example, emissions from specific discharges, often large industrial plants or specific roadway intersections).

Air quality management under the RMA is directly impacted by:

- the need for regional councils to achieve compliance with [the national environmental standards for air quality](#),
- the different [functions](#) regional councils and territorial authorities have in managing air quality effects, including their role in respect of [greenhouse gas emissions](#), and
- the requirements of regional (air quality) plans.

Air quality effects

Air quality in New Zealand is primarily managed to protect human health. This is, therefore, the focus of this guidance note. See [the air we breathe](#) for more information on the adverse effects of air pollution.

Poor air quality can adversely affect human health. Air pollution further degrades the wider environment and reduces amenity. The main source of air pollution nationally is home heating, with transport being the primary source in Auckland.

Table 1 characterises typical air quality issues by source, whether or not the issue is localised or can affect regional air quality, and its potential effects on people and the environment. The sources in Table 1 are examples only.

Table 1: Themes for air quality issue identification

Issue	Example sources	Potential effects		
Agrichemical spray drift	Horticulture and weed spraying	Local air quality	Skin irritation, stress, headaches, vegetation damage	Livelihood of organic growers
Chemical or gaseous contaminants	Motor vehicles, industry, oil refining, foundries, volcanoes	Regional and local air quality	Respiratory illness, nausea, complex toxicological effects	Corrosion, visibility and photochemical smog



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Combustion products	Domestic heating, boilers, power stations, backyard fires, rural burn-off, road-seal burning, motor vehicles	Regional and local air quality	Respiratory and cardiovascular disease, reduced infection resistance, nerve and organ damage, increased risk of cancers, premature death.	Deposition, corrosion, smog and visibility
Odour	Pig farms, landfills, wastewater treatment, composting	Local air quality	Health, nuisance and stress	Detracts from amenity and enjoyment
Particulate matter (PM ₁₀ and PM _{2.5})	Home heating fires, motor vehicles especially diesels, most combustion sources	Regional and local air quality	Premature death (including post-neonatal respiratory mortality), respiratory and cardiovascular disease, adverse effects on lung function development, aggravation of asthma, etc.	Visibility degradation, smog, deposition
Total suspended particulate (TSP)	Quarries, stockpiles, unsealed roads	Local air quality	Respiratory, eye and nose irritation, lung disease (if hazardous dusts)	Deposition, corrosion, smog and visibility

Long-term exposure to air pollutants can result in premature death in humans, estimated in 2012 at 1,175 deaths each year in New Zealand. The social cost of air pollution in New Zealand is estimated to be around \$4.28 billion each year. More information on the effects of air pollution on human health can be found in the [Updated Health and Air Pollution in New Zealand Study \(HAPINZ\) report](#).

Air pollution also adversely affects the wider environment, and in particular, can have significant adverse effects on ecosystems (e.g. nitrogen dioxide is toxic to plants and reduced plant growth), visibility (e.g. sulphur dioxide can form secondary particulate matter that causes haze and reduces visibility) and built structures (e.g. nitrogen dioxide forms acids in the presence of moisture and these can be corrosive to building materials at high concentrations).

The legislative context and background

The purpose of the RMA is to promote the sustainable management of natural and physical resources, **including safeguarding the life supporting capacity of the air**. Of particular relevance for air quality management is section 7(f), which states that persons exercising powers under the RMA must have particular regard to:

“maintenance and enhancement of the quality of the environment”.



Regional council and territorial authority functions for air quality under the RMA

The primary responsibility for managing air quality under the RMA lies with regional councils (and unitary authorities). However, territorial authorities have a responsibility to manage the effects of land use and subdivision, which can also impact on air quality. Both regional councils and territorial authorities also have particular requirements under the [national environmental standards for air quality](#).

Regional councils

Regional councils have responsibilities under s30 of the RMA for the control of discharges of contaminants to air. Regional council responsibilities also include the strategic integration of infrastructure with land use (under s30(1)(gb)) and regional transport planning under the Local Government Act 2002.

Regional Policy Statements and Plans

A regional policy statement may provide policy guidance with respect to the management of air quality. A regional plan (if one is prepared) must give effect to the provisions of the regional policy statement. Therefore, if the regional policy statement addresses air quality, any regional (or district) plan must give effect to its provisions.

Effective regional air quality management requires a combination of the national environmental standards for air quality, regional policy statements and regional plans (including resource consents processed under the requirements of regional plans).

All regional councils in New Zealand have a regional policy statement and regional plan that control air discharges. Some councils have regional plans specifically for air quality ("air plans"), while others incorporate air quality issues into broader based 'natural resource management plans' dealing with land, air and water quality and quantity issues.

Regional plans are different for each region, reflecting different local air quality issues.

Territorial authorities

Territorial authorities have responsibilities under s31 to control the subdivision of land, and to achieve integrated management of the effects of the use, development or protection of land and associated natural and physical resources of the district. This includes effects on amenity values and effects of the land transport system. Territorial authorities also have responsibilities under the Health Act, but these are not relevant to district plan provisions.

Effects of climate change

Climate change effects are a matter to be given particular regard under s7 of the RMA. The roles of regional councils in respect of greenhouse gas emissions are:

- Section 70A requires that when making rules to control discharges to air "a regional council must not have regard to the effects of such a discharge on



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- climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases"; and
- When considering an application for a discharge permit or coastal permit relating to discharges of greenhouse gases, s104E requires that "a consent authority must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases"

Integration of regional council and territorial authority roles

The different functions of regional councils and territorial authorities may cause tensions when managing air quality, such as allowing incompatible activities to be situated in proximity, for example allowing residential housing alongside existing wastewater treatment plants. To effectively manage air quality, relationships need to be managed and roles integrated.

The RMA requires district plans to 'give effect to' regional policy statements. Further, district plans must not be inconsistent with the relevant regional plan. It is therefore important for regional policy statements to provide clear direction on how the air quality issues of the region are to be managed. Equally, it is critical that there is effective engagement between regional councils and territorial authorities when both regional and district plans are being prepared and reviewed.

Developing good dialogue and partnership agreements are the best means of ensuring clarity of roles and responsibilities. These may be formalised through the regional policy statement, regional plans, delegations or negotiated memorandums of understanding. The integrated management of land use and transport activities that may result in adverse effects on air quality is also essential to meet the requirements of the [national environmental standards for air quality](#). This is important because polluted airsheds face constraints on development (e.g. requirements for new industry to offset emissions).

National environmental standards for air quality

The [Resource Management \(National Environmental Standards for Air Quality\) Regulations 2004](#) are national environmental standards (NES) under ss 43 and 44 of the RMA. The national environmental standards for air quality were introduced in October 2004 and are designed to protect public health and the environment by setting concentration limits for clear air, regulating or prohibiting certain activities that pollute the air and imposing air quality monitoring and reporting requirements on regional councils.

The regulations contain a number of mandatory requirements:

- prohibitions (bans) on certain activities that discharge significant quantities of dioxins and other toxics into the air;
- health-based standards for ambient (outdoor) air quality;
- a requirement to monitor and give public notice if an air quality standard is (or is likely to be) breached;
- extended deadlines for compliance with the ambient standard for PM₁₀ for certain airsheds (depending on the level of pollution);



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- requirement for new industry (only) with significant PM₁₀ emissions to offset these emissions in polluted airsheds;
- restrictions on granting consents that would breach the ambient standards for carbon monoxide, sulphur dioxide, oxides of nitrogen and/or ozone;
- emission and efficiency requirements for new wood burners installed in urban areas;
- requirement for regional council to give public notice and prohibition (ban) on the installation of new solid fuel burning open fires in polluted airsheds after 1 September 2011;
- a requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions.

Regional councils and unitary authorities are responsible for managing air quality under the Resource Management Act.

One of the first requirements of the air standards was for regional councils (including unitary authorities) to identify areas where air quality is either likely to or known to exceed the air standards; these areas are known as [airsheds](#). As of January 2012, there are 71 gazetted airsheds. Of these, around 25 are likely to exceed the national environmental standard for particulate matter less than ten micrometres in diameter (PM₁₀) (as at time of writing, winter 2013). Because they exceed the PM₁₀ standard (or are likely to), these airsheds face restrictions on the granting of resource consents.

The Ministry for the Environment has published detailed guidance for councils and practitioners on how these restrictions apply, and more generally how to implement the national environmental standards for air quality:

[2011 Users' Guide to the Revised National Environmental Standards for Air Quality](#)

In 2011, the national environmental standards for air quality were [amended](#) to provide additional time for compliance with the PM₁₀ standard. The Ministry for the Environment has published specific guidance on compliance for councils:

[Clean Healthy Air for All New Zealanders: The National Air Quality Compliance Strategy to Meet the PM₁₀ Standard](#)

Requirement for local authorities to observe national environmental standards for air quality

Sections 44A(7) and 44A(8) require local authorities to observe national environmental standards and to enforce them to the extent which their powers enable them to do so.

Relationship of the national environmental standards for air quality with plans, designations and resource consents

Sections 43B and 43D of the RMA set out the relationship between the national environmental standards for air quality, rules in plans, designations and resource consents as outlined below.

Rules in plans

The national environmental standards for air quality do **not**:

- prevail over a rule that is more stringent than the regulations, if this is expressly provided for by the national environmental standards for air quality (s43B(1)).

A rule in a plan must not be more lenient than the national environmental standards for air quality. This is called the 'stricter provision prevails' principle (s43B(3)).

Designations

The national environmental standards for air quality do **not** apply to existing designations unless either:

- the designation lapses, or
- any conditions of the designation which are relevant to the national environmental standards for air quality are altered (whichever is the earlier) (s43D(1)).

The national environmental standards for air quality **do** apply to and must be considered by the territorial authority when considering:

- a designation that requires an outline plan, where the outline plan process under s176A has not been completed at the time the national environmental standards for air quality were made (s43D(3))
- any new notice of requirement (s43D(4))

Resource consents

The national environmental standards for air quality do **not** apply to:

- a resource consent that existed when the regulations were made. Therefore, the national environmental standards for air quality do not affect consents that existed before 6 September 2004 (except for s128 reviews relating to water, coastal and discharge permits, see below) (s43B(5))
- a resource consent for which a decision on notification was taken prior to 6 September 2004 (s43B(7)). This was the date of the gazettal of the regulations.

The national environmental standards for air quality **do** apply to:

- Any review under s128(1)(ba) of the RMA for any water, coastal or discharge permit (s43B(6)).
- The "renewal" process for any resource consent under s124.

A resource consent must not be more lenient than the national environmental standards for air quality. This is called the 'stricter provision prevails' principle (s43B(3)).

See the [2011 Users Guide to the regulations](#), and the [national environmental standards for air quality pages](#) on the Ministry for the Environment website for more information.



Regional Air Quality Planning

Information gathering

The first step in regional air quality planning is to obtain a clear understanding of the current (and historical) state of the environment, and the pressures that may affect air quality.

Information required to manage regional air quality issues

A comprehensive framework for managing ambient air quality will include all the elements shown in Table 2.

Table 2: Elements of an air quality management framework*

Element	Details
Ambient air quality standards	Based on health and environmental indicators. Provided by national environmental standards. Augmented by national ambient air quality guidelines and ambient targets specified in regional plans.
Monitoring networks	Must include both air quality and meteorology. Additional monitoring to that required for the purposes of the national environmental standards may be necessary.
Emission inventories	Emissions quantified by source and location.
Predictive models	Validated numerical prediction tools to calculate spatial, short and long-term impacts. Models are used to estimate projections for emissions inventories and the dispersion characteristics of an airshed to ultimately provide the comprehensive understanding of the airshed that is so necessary for determining action.
Regulatory instruments	Regulations, regional plans, by-laws, incentives, etc.
Communication	System to give information to public on air quality. Includes reporting requirements under national environmental standards.
Strategy	Policies and measures to ensure standards are achieved and maintained (e.g. regional plans, airshed action plan).

* Source: [2011 Users Guide to NES for air quality](#)

The ability to source suitable data to characterise the state of the environment will need to be considered against each of the elements of an air quality management framework. In order to effectively manage air quality in an airshed or region, it will be necessary to answer the following questions:



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- What are we trying to achieve? (national environmental standards for air quality, regional plan ambient air quality targets/goals, national ambient air quality guidelines).
- What data are available on:
 - air quality (pollutant monitoring)
 - meteorology (meteorological monitoring)
 - topography
 - emissions (source, profile)
 - dispersion characteristics
 - population exposure (location, demographics, mortality and morbidity, health effects, costs)?
- What are the limitations of the data?
- What is the data showing us (current/historical trends)?
- Are there appropriate quality control mechanisms in place (ie, is the data validated)?
- What do we know that we don't know? (uncertainties, error bars, upper and lower bounds on estimates)
- Are there areas where good air quality is important, eg, national parks or pristine areas, communities with vulnerable populations? (This can help identify priorities).

The extent of data required will depend on whether relevant standards/guidelines are likely to be exceeded, as well as the size and complexity of the airshed or air quality management area. See the [Good Practice Guide for Air Quality Monitoring and Data Management](#) on the Ministry for the Environment's website for more information on establishing an air quality monitoring network.

Only once the current state of ambient air quality is adequately characterised and understood, is it possible to estimate the future state of air quality for a given area. This in turn requires air quality projections to determine whether relevant standards are likely to be met in future, and if not, what emissions mitigation and/or activity management measures will be required to meet them. Projections are also necessary to test the effectiveness of different policy options. Projections may be based on emissions inventories, predictive models and desktop analysis.

Information required to manage local air quality issues and amenity effects

Sources of information on localised air quality issues and amenity effects will include:

- council staff observations
- air quality monitoring data, including visibility monitoring
- public complaints
- public consultation and perceptions, including consultation with tangata whenua.

Developing ambient air quality targets

All regional councils have plans that include either air quality targets, objectives and/or goals. In any case, the national environmental standards for air quality provide baseline ambient air quality protection. The [2011 Users Guide to the national environmental standards for air quality](#) provides a plain English outline of what the regulations mean, and suggestions on how they might be implemented. The Ministry for the Environment



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has also published [guidance on compliance for councils with airsheds that exceed the PM₁₀ standard](#).

For pollutants (and time averaging periods) not covered by the national environmental standards for air quality, the national [ambient air quality guidelines](#) provide the minimum requirements for outdoor air quality to protect human health and the environment. [Section 3.3](#) of the guidelines provides a framework for using the air quality guidelines and establishing regional ambient air quality criteria. The guidelines also recommend when a regional council should take or consider taking action.

A number of regions have developed regional targets in accordance with this framework, which are more stringent than the air standards and/or the ambient air quality guidelines. These targets are intended to ensure air quality is maintained in areas where it does not breach the guidelines, and improved in areas where it does breach, or is close to breaching the guidelines. These regional targets take precedence over the air standards and guidelines.

Objectives

Objectives should express the overall aim of how the council proposes to manage air quality and address both air quality management areas and local issues.

- Where air quality is cleaner than the relevant standard, guideline or target, the objective should aim to maintain that quality, or even improve it.
- Where air quality is degraded, the objective should include a commitment to its improvement.

Regional plans generally include objectives for managing ambient air quality as well as localised air quality effects eg, dust, odour and agrichemical spray drift. The [Ministry for the Environment's good practice guides](#) include background information and guidance for managing odour and dust.

Policies

Policies should describe how air quality objectives are to be achieved and guide decision-making. They should aim to:

- achieve the emissions reductions required to meet the air standards, target or guideline values where they are breached
- minimise adverse health effects
- provide direction to territorial authorities on what matters should be managed through their district plans.

Policies could include:

- restricting the installation of solid fuel burners for home heating
- promoting measures to address motor vehicle exhaust emissions
- avoiding adverse effects from agrichemical spray drift
- applying ambient air quality targets
- restricting outdoor burning.

Rules

A regional plan may include rules to implement the policies, and can include rules to allocate the capacity of air to assimilate a discharge of a contaminant (s30(1)(fa)(iv)).

Rules for managing air quality could include:

- Rules that prohibit activities (e.g. banning outdoor burning in an urban area), require resource consent (e.g. to deal with the effects of industrial discharges) or specify standards (e.g. to place restrictions on home heating).
- A [catch-all rule](#) for industrial and trade premises that are not addressed elsewhere in the plan.
- Rules requiring [bufferzones](#) to manage reverse sensitivity issues.
- Rules requiring adoption of the [best practicable option](#) approach.
- Rules to manage the potential cumulative effect resulting from discharges, which when taken individually are minor, but may have significant cumulative effects.

Effective rules should:

- Be supported by clear policies, and where necessary, include either guidance or a definition to restrict interpretation. For example, if no objectionable odour or dust is included as a standard, the plan should identify the assessment criteria and the process used to determine if an air discharge is objectionable.
- Be cross-referenced both within the plan and to other plans to avoid repetition or conflict. Rules about waste management, land use or water discharge can contain conditions related to effects on air quality, and may reduce the need for separate rules.
- Set clear and definitive thresholds or levels where possible, such as that combustion processes over 10 MW are a discretionary activity.

Catch-all rule for industrial and trade premises and other discharges

Section 15 of the RMA distinguishes between discharges from industrial and trade premises and other discharges. Under s15(1), any discharge of a contaminant into air from any industrial or trade premises is allowed only if it is expressly authorised by a rule in a plan, a resource consent, or by regulations.

The opposite presumption applies to discharges of contaminants into air from any other source under s15(2): that is, unless there is a relevant rule in a plan, discharges of contaminants into air from sources other than industrial or trade premises can take place without a resource consent.

Therefore, without rules in a plan, discharges of contaminants into air from industrial or trade premises, no matter how minor, require resource consents, while possibly significant discharges from other sources do not.

A key function of regional plan rules is allowing minor discharges into air from industrial and trade premises that are unlikely to have any significant adverse effects, and to regulate any other discharges that may have significant adverse effects. A catch-all rule can be used for industrial and trade premises that are not addressed elsewhere in a plan.

Best practicable option

Under s2 of the RMA, the best practicable option (BPO) is defined as:

best practicable option, in relation to a discharge of a contaminant or an emission of noise, means the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to

(a) The nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and

(b) The financial implications, and the effects on the environment, of that option when compared with other options; and

(c) The current state of technical knowledge and the likelihood that the option can be successfully applied.

The best practicable option can be used:

- where there is a lack of effects information
- where a precautionary approach is justified, or
- for issues such as odour where the effect is difficult to quantify and there are many contributing variables.

The best practicable option may only be used in a rule in circumstances as defined in s70(2) of the RMA, i.e. where the council is satisfied that having regard to –

(a) the nature of the discharge and the receiving environment; and

(b) other alternatives, including a rule requiring the observance of minimum standards of quality of the environment,—

the inclusion of that rule in the plan is the most efficient and effective means of preventing or minimising those adverse effects on the environment.

The best practicable option is often justified on an effects basis for air quality issues requiring certain technical approaches. Plan changes should be considered when the best practicable option is no longer necessary.

Methods (optional)

A regional plan may also include methods, other than rules, to implement policies.

Using methods other than rules may be appropriate for:

- some industrial discharges, eg, best practice guidance, responding to complaints
- outdoor burning, e.g. providing information and best practice guidance, use of bylaws.
- home heating (in some regions), eg, providing information, use of economic instruments, responding to complaints.
- [transport](#) sources, e.g. advocacy to improve use and maintenance of vehicles, and transport planning to lower emissions from vehicles and to reduce congestion.

Cross-boundary issues

The ability of a regional council to manage air quality can be affected by cross boundary issues, which can arise between:

- districts within a region, e.g. reduced ambient air quality in one district affecting another
- land and coast, e.g. emissions from ships
- regions, e.g. inconsistent policies such as for burning vegetation or home heating controls
- the region and the rest of New Zealand, e.g. consistency of ambient air monitoring data collection
- countries, e.g. smoke from Australian bushfires.

The importance of identifying and managing cross-boundary issues has been highlighted through the [national environmental standards for air quality](#), specifically the introduction of airsheds as the fundamental areas of air quality management. While airsheds are generally aligned to geophysical areas this is not always the case. For instance, the boundary between Nelson City Council and Tasman District Council is not based on geophysical criteria and air pollution can readily cross this boundary from one jurisdiction to the other.

Environmental results expected

A regional plan may state the environmental results expected to be achieved from the plan. These can include indicators or measures to assess progress towards achieving the plan's air quality objectives.

Indicators or measures could include, for example:

- ambient particulate (PM₁₀) concentrations do not exceed national ambient standard by 1 September 2016 (polluted airsheds) or by 1 September 2020 (heavily polluted airsheds)
- a 50% reduction in the number of complaints relating to air quality by a certain date, and/or
- ambient air quality remains within regional criteria.

Monitoring and review

Both monitoring and reviewing plan effectiveness is an important component of managing air quality effects, and is particularly important when working towards compliance with the air standards.

A council should develop and implement a clear regional air quality monitoring strategy to measure progress against air quality objectives and compliance with the air standards.

Ambient air quality monitoring is the primary means of assessing compliance with ambient air quality standards, guidelines and targets. The [Ambient Air Quality Guidelines](#) and the [Good Practice Guide for Air Quality Monitoring and Data Management](#) provide information on ambient air quality monitoring programme design.



Regional air quality monitoring strategy

An effective air quality monitoring strategy should:

- monitor the state of the environment
- monitor compliance with the national environmental standards for air quality in accordance with the requirements of [Regulation 15](#)
- fill information gaps that have been discovered
- test assumptions implied by the plan provisions
- measure whether the plan is effective, by comparing actual results with the anticipated environmental results and measuring progress towards achieving the objectives
- monitor consent compliance and complaints
- monitor any delegations or transfer of powers

Further information on designing an effective ambient air quality monitoring programme is provided in the [Good Practice Guide for Air Quality Monitoring and Data Management](#).

Mandatory ambient air quality monitoring

[Regulation 15](#) of the national environmental standards for air quality requires councils to monitor air quality in airsheds where it is likely the standard will be breached. The monitoring must be carried out:

in that part of the airshed where –

(A) there are one or more people; and

(B) the standard is breached by the greatest margin or the standard is breached the most frequently, whichever is the most likely.

Monitoring must be carried out in accordance with the methods specified in [Schedule 2](#) of the regulations.



District Air Quality Planning

Territorial authorities do not have a specific air quality management function under the RMA. However, territorial authorities do have the primary responsibility for land use which includes the location of activities that may discharge contaminants to air such as industry, intensive farming, agrichemical spray drift and motor vehicles). These activities can be partly managed through district plan provisions.

Territorial authorities are also able to make bylaws under the Local Government Act 2002. This could include bylaws for the purpose of:

s.145 (b) protecting, promoting and maintaining public health and safety;

[Regulation 28](#) of the national environmental standards for air quality provides for bylaws to be more stringent than the regulations.

As an example, Rotorua District Council, in collaboration with the Bay of Plenty Regional Council, has developed the (Rotorua) [Air Quality Control Bylaw 2010](#). This requires:

- only approved (clean) wood burners and pellet fires can be installed in the Rotorua Airshed
- from 1 May 2012, an owner of a house cannot sell it with a working open fire or non-compliant burner
- from 1 May 2015, there is a ban on using (all) indoor open fires.

Territorial authorities also issue consents under the Building Act relating to (amongst other things) domestic fires. Territorial authorities therefore, should ensure these are compliant with the design standards for emissions and efficiency in the national environmental standards for air quality.

A good working relationship between regional councils and territorial authorities can significantly assist in effectively and efficiently addressing air quality issues.

Identification of issues - district plan

Specific air quality issues that territorial authorities should consider are:

- sensitivity and reverse sensitivity of land uses
- the air quality effects of land transport
- any functions for air quality that have been transferred to them under s33 of the RMA.

Sensitivity and reverse sensitivity

Territorial authorities should consider both sensitivity and reverse sensitivity effects when considering where to locate new developments. For example, a territorial authority may consider using activity status, [buffer zones or separation distances](#) to both protect new development from pollution and potentially polluting industry from unreasonable constraints imposed by new development.



Responding to issues - district plan

District plans include objectives, policies and rules to manage the effects of land use and transport on the environment, which can include effects on air quality.

When developing district plans, territorial authorities need to consider the role of regional councils in managing air discharge matters. Territorial authorities should work with the regional council to address air quality issues identified in the regional policy statement or regional plan. The integration of regional council and territorial authority roles is critical for effective air quality management.

Rules in a district plan could include requiring [bufferzones](#) to manage air quality effects that are qualitative in nature (such as odour) and [sensitivity and reverse sensitivity](#) effects. Some district plans have integrated air quality issues into other parts of the plan. Sensitivity and reverse sensitivity of land uses are often considered with other rural or industrial amenity issues, and the air quality effects of transport with other transport issues.

A territorial authority will also need to consider the potential impacts of the national environmental standards for air quality on any outline plan and new notice of requirement. A designation and/or land use may include conditions relating to air quality (e.g. a large supermarket granted consent with conditions relating to the use of service vehicles) and the national environmental standards for air quality.

Information requirements for resource consents - district plan

Where air quality is a relevant issue, assessment criteria should require the following matters to be addressed:

- the suitability of the site and the surrounding environment for the proposed activity
- the impact on amenity values
- the prevention of nuisance
- the impact on the road, transport networks and surrounding environment
- the risk and impact of potential pollution insofar as it may affect other land uses.

A land-use consent can include conditions relating to the air standards, insofar as it is relevant to the functions of the territorial authority and the application.



Key issues for Air Quality Planning

Managing the air quality effects of home heating

The main source of PM₁₀ emissions in urban areas in New Zealand is solid fuel burning in home heating appliances.

The national environmental standards for air quality require all new wood burners in urban areas to have:

- an emission of less than 1.5 grams of particles per kilogram of dry wood burnt, and
- a thermal efficiency of greater than 65 per cent.

The national environmental standards for air quality further require a ban on any new solid fuel burning open fires in polluted airsheds after 1 September 2011. Regional councils are required to publicly notify this ban.

A reduction in PM₁₀ concentrations and associated health impacts is expected as a result of the design standard for new wood burners and the ban on new open fires. However, it is likely that additional measures will be required in some airsheds to meet the PM₁₀ standard by 2013.

Measures to reduce emissions from home heating might include:

Rules:

- fuel/appliance bans/restrictions such as:
 - banning the use of existing open fires
 - banning the use of new/existing coal or old wood burners
 - introducing more stringent emission limits than the design standard

Methods:

- economic instruments including:
 - financial contributions/incentives for conversions to cleaner forms of heating
- education including promoting:
 - burning of dry wood
 - correct operation / maintenance of solid fuel burners
 - installation of low emission wood burners and pellet burners
 - appropriate choice of appliance size
 - energy efficiency measures
 - use of cleaner methods of home heating on high pollution nights
 - conversion to non-solid fuel burning heating devices.

See the Ministry for the Environment [guidance for councils on complying with the PM₁₀ standard](#) for more information.



Managing the air quality effects of land transport

Land transport can have significant adverse effects on air quality, and is the primary source of air pollution within Auckland. See [Auckland Air Facts](#) and [Emissions from Motor Vehicles in Auckland](#) for more information.

There are many complex technical factors influencing vehicle emissions and their impact on air quality. Examples of these factors include:

- vehicle fleet composition
- vehicle technology and fuel standards
- vehicle maintenance
- speed and level of service
- road design.

While regional councils and territorial authorities have no direct control over most of these factors, the implications of regional and district planning on land-use patterns, transport and therefore air quality needs to be considered. The [Good Practice Guide on Assessing Discharges to Air from Land Transport](#) provides clear, comprehensive guidance on considering air quality impacts from land transport. In addition to this, the New Zealand Transport Authority has a website specifically directed to managing [air quality issues associated with transport](#). This includes a [screening tool](#) for basic air quality assessment.

The air quality effects of land transport should be managed as part of an overall plan to reduce the impacts of transport on human health and the environment. Any policy must be carefully integrated with existing or proposed policies to provide consistency and transparency. This is essential for long term, sustainable transport.

Some regional plans include specific policies requiring assessment of transport projects. Many regional policy statements, regional plans and district plans already include qualitative provisions requiring the 'maintenance or enhancement of air quality' be considered in RMA decision-making.

In general, the adverse effects of transport emissions are reduced where motor vehicle travel is reduced and/or the level of public transport service is improved.

Some options for managing adverse effects on air quality arising from land transport are:

- including air quality as an assessment criterion in district plan rules
- location policies, such as separating sensitive activities (i.e. any facility where there are likely to be groups of sensitive people such as schools, child care facilities, hospitals) from possible pollution hotspots. For example pollution hotspots may occur close to:
 - busy roads
 - congested areas
 - busy intersections
 - roads with a high proportion of heavy diesel vehicles
 - areas with poor dispersion (eg, valleys)
- urban design controls

- strategic land-use planning.

Including assessment criteria for air quality

Assessment criteria could include air emissions from new roads and the potential impact on the surrounding environment.

Location policies

Location policies can include:

- recognising the hierarchy of roads within the district
- locating new housing in close proximity to public transport (ie, reducing the need to travel by private motor vehicle), or
- specifying suitable setbacks from major arterial roads or intersections.

Policies can also be developed to address reverse sensitivity (eg, restricting certain land uses near existing or planned road and rail corridors).

Urban design controls

Urban design such as mixed used development that aims to reduce private vehicle use or the siting, orientation and design of roads and intersections that reduces air quality impacts.

Strategic land-use planning

This could involve developing planning approaches that promote land-use patterns that reduce dependency on private vehicles.

The [Good Practice Guide for Assessing Discharges to Air from Land Transport](#) includes detailed guidance on how to identify and assess the effects of potential pollution hotspots. The guide also provides examples and discussion of mitigation options.

Chapter 8 of the [Good Practice Guide for Assessing Discharges to Air from Land Transport](#) includes guidance on the evaluation of community air pollution effects. This methodology could be utilised to quantify and assess the likely benefits of any specific option.

Reverse sensitivity

Regional councils and territorial authorities should consider using buffer zones and separation distances to manage pervasive effects (e.g. odour, dust and spray drift) or for incompatible land uses (e.g. motorways and early childhood education centres).

Table 3 provides examples of performance based rules for managing air quality reverse sensitivity issues.



Table 3: Performance based rules for managing (air quality) reverse sensitivity

Rule option	Advantages	Disadvantages
Sensitive receptors		
<p>Performance standard for zoned areas.</p> <p>Where zoning exists performance standards may be linked to the zone.</p> <p>For example, industrial zones must meet national environmental standards for air quality with occasional allowances for objectionable odour; residential zones must meet more stringent targets in regional plan and no objectionable odours.</p> <p>This approach takes into account the expected air quality and/or amenity levels of different zones.</p>	<ul style="list-style-type: none"> • Allows recognition of different amenity expectations in different environments (e.g. reduced amenity in industrial areas as opposed to residential). • Allows flexibility and innovation in providing solutions to meet the levels. 	<ul style="list-style-type: none"> • External air quality may prove difficult to achieve over time. • Enforcement would be very difficult. • Impractical for any existing urban development areas - only really applicable to "green fields" sites.
<p>Setback rule for new residential subdivisions.</p> <p>Setback rules are useful where land is currently undeveloped and available.</p> <p>They may be used for existing roads, and proposed roads.</p>	<ul style="list-style-type: none"> • Provides comfort to councils and roading authorities that substantial air quality protection is being undertaken. • Provides basic protection of outdoor areas. • Easy to enforce but relies on modelling of emissions. 	<ul style="list-style-type: none"> • The most complex and prescriptive rule, with potentially high cost of site-by-site assessment of environmental effects for air quality and mitigation. • Based around an achievable reduction in emissions, not an absolute level. • May be restricted to larger green-field developments.
Road corridors		
<p>Performance standard for new roads.</p> <p>Requires conformance with a set performance standard. For example, all vehicles on this link must meet Euro IV (or more stringent) emission standards.</p>	<ul style="list-style-type: none"> • Sets a simple level for new roads. • Recognises future development areas, where development is likely. • Resource consent could still be an option for roads that do not meet this rule. 	<ul style="list-style-type: none"> • The air quality levels included in the rule may prove difficult to achieve • Only applies to new roads.



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Rule option	Advantages	Disadvantages
<p>Performance standard for new roads.</p> <p>An alternative option is to set the performance standard in relation to the ambient air quality based on projected vehicle numbers for the road type.</p>	<ul style="list-style-type: none">• Ignores low volume roads where air quality is not significant.• Recognises future development areas, where development is likely.• Recognises existing ambient air quality levels.	<ul style="list-style-type: none">• Only applies to new roads.

Air discharge permits

[General advice on consenting](#) is provided elsewhere on the QP website. Depending on the application, air quality assessment is likely to require specialist advice. The QP website contains general guidance on [obtaining specialist advice](#).

In any case, practitioners preparing or reviewing an assessment of environmental effects for air quality need to be at least aware, if not familiar with, guidance specific to assessing discharges to air provided by the Ministry for the Environment:

- [Good Practice Guide for Atmospheric Dispersion Modelling](#)
- [Good Practice Guide for Assessing Discharges to Air from Industry](#)
- [Good Practice Guide for Assessing Discharges to Air from Land Transport](#)

In addition to this, roading proposals should be guided by the following New Zealand Transport Agency guidance document:

- [NZTA Guide to assessing air quality effects for state highway asset improvement projects](#)

Best Practice Examples

Agrichemical spray drift

[Policy AQL7](#) of the (operative) [Canterbury Natural Resources Regional Plan](#) provides measures for avoiding agrichemical spray drift, and is supported by a range of both regulatory and non-regulatory methods to achieve the policy.

[NZS 8409:2004: Management of agrichemicals](#)

Published by Standards New Zealand - September 2004

Provides practical and specific guidance on the safe, responsible and effective management of agrichemicals, including plant protection products (herbicides, insecticides, fungicides), veterinary medicines, fumigants used in rural situations and agricultural use of detergents and sanitizers.

Air quality management areas

The Waikato is an extremely [diverse region from an air quality perspective](#). To address this, Waikato Regional Council has [gazetted 20 urban areas](#) as airsheds for the purposes of the national environmental standards for air quality. These include areas where the national PM₁₀ standard is currently exceeded and is being actively managed to achieve compliance by mandated deadlines.

However, the gazetted airsheds also include areas that do not currently exceed the PM₁₀ standard. Some of these urban areas are earmarked for future population growth. Waikato Regional Council is thus strategically managing air quality in all urban areas to avoid and/or mitigate future exceedances of the PM₁₀ standard.

Best practicable option

[Policy 6.1.3.4 of the Waikato Regional Plan](#) promotes using the best practicable option approach under appropriate circumstances. The plan includes thorough explanation and principal reasons to support this policy.

[Rule 9.1.9 of the Operative Regional Air Quality Plan](#) for Northland includes comprehensive requirements for agrichemical application and uses the best practicable option approach.

Buffer zones and separation distances

[Policy A5-1.8](#) of the [Nelson Air Quality Plan](#) specifically addresses location issues with respect to discharges to air. Method A5-1.8.viii of this policy advocates the physical separation of incompatible activities through zoning, buffer areas, covenants or similar mechanisms.

Catch all rule

[Rule 6.1.9.2 of the Waikato Regional Plan](#) provides a best practice example of a discretionary catch all rule.

Codes of practice

[EnviroPork](#): The pork industry guide to managing environmental effects has replaced the Code of Practice: Pig Farming (1997). The purpose of EnviroPork is to provide a basic guide that is applicable to all pig farmers, irrespective of size and type of production system. [EnviroPork](#) gives an overview of how the RMA works and highlights activities on the farm that may have an impact on the environment.

The Department of Labour's [Code of Practice for spray painting involving the use of isocyanates](#).

The Ministry for the Environment's [Factsheet For Workshops On Air Pollution And Dust Control](#).

Cross-boundary effects

Cross-boundary effects are recognised in Section A5-1.10 of the [Nelson Operative Air Quality Plan](#).

District plan / regional plan integration

[Issue 5.4 of the Waitakere City District Plan](#) identifies air quality as a significant resource management issue and includes provisions relating to the air quality effects of land-use decisions.

District plan rules

[Rules rur20-rur31 of the New Plymouth District Plan](#) differentiates zones and includes minimum separation distances to manage any potential amenity and reverse sensitivity effects on land uses.

The [Franklin District Auckland Council District Plan Operative Franklin Section 2000](#) contains objectives, policies and methods relating to amenity, and conflict between activities in rural areas. Refer to: [part 16, rural issues](#); [part 17, objectives policies and methods, rural](#).

Health effects of air pollution

[Updated Health and Air Pollution in New Zealand Study](#) , Kuschel et al. March 2012
This study estimates the impacts (mortality, morbidity and economic cost) of air pollution on health in New Zealand. Estimated impacts are split by source (traffic, domestic, industry, natural).

Home heating

Chapter A5 of the [Nelson Air Plan](#) includes objective A5-1, policy A5-1.6 and supporting methods to reduce emissions from home heating.



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[Rule 36.3.7.5 in the \(operative\) Tasman Resource Management Plan](#) has a point-of-sale rule that requires non-compliant wood burners to be upgraded when a house is sold.

Nelson City Council has developed a [home heating tips](#) webpage on its website. The page includes a number of resources including clean home heating methods and better burning tips. This is an easy to use resource for the public.

Integrated management

Method 6.1.7 in the [Environment Waikato Regional Plan](#) clarifies the respective roles of the regional and district councils, and how the relationship between air quality functions and the effects of land uses will be managed.

Information requirements for resource consents

The Ministry for the Environment's [Good Practice Guide for Assessing Discharges to Air from Industry](#) provides detailed guidance on the assessment of discharges to air, including information requirements for resource consent applications.

The [Auckland Regional Council TP 152](#), Assessing Discharges of Contaminants to Air (draft) also provides guidance for applicants in the Auckland region.

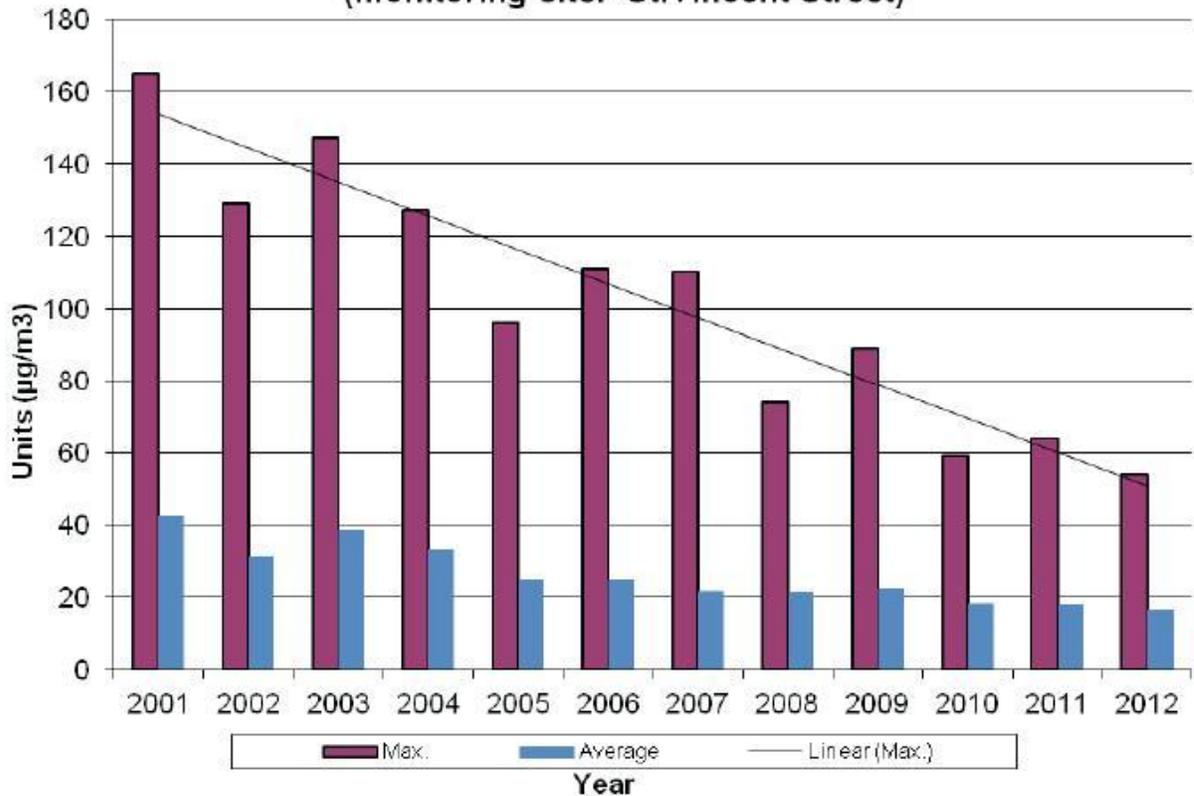
Section 3.4 of the [Canterbury Natural Resources Regional Plan](#) includes detailed schedules for specific activities for applicants in the Canterbury region.

Plan provisions to meet the national environmental standards for air quality

[Chapters 5](#) and [6](#) of the [Nelson Air Quality Plan](#) sets out objectives, policies and rules on how the Council proposes to achieve compliance with the air standards, as well as managing pollutants not included within the air standards. The Plan includes a straight line path projection for PM₁₀ and objectives, policies and rules to achieve the straight line path. The plan is comprehensive and clear - and working well in practice. The figure below shows improvements in Nelsons air quality since 2001.



Airshed A - Yearly Data (monitoring site: St.Vincent Street)



Source: [Nelson City Council, 2012](#)

Methods to manage air quality effects from transport

Assessment criteria and methods for assessing discharges to air from transport are provided in the Ministry for the Environment's [Good Practice Guide for Assessing Discharges to Air from Land Transport](#).

The [Nelson Resource Management Plan](#) includes objectives (D010.1), policies (D010.1.1, D010.1.3 and D010.1.4) and rules (e.g. [RUr.46](#)) relating to the construction of major new roads. Assessment criteria include the noise and air emissions from the road and taking account of the nature of nearby activities.

Chapter 8 - Transportation of the [Auckland Council District Plan Operative Manukau Section 2002](#) contains issues (8.2.2), objectives (8.3.1), policies (8.4.1) and rules relating to managing air quality effects from transport.

Monitoring provisions

[Nelson City Council's Operative Air Quality Plan](#) includes comprehensive monitoring provisions. The Plan specifies a range of indicators to measure progress towards specific and measurable anticipated environmental results.



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A number of regional councils around New Zealand provide real-time ambient air quality monitoring data on their websites:

- [Bay of Plenty Regional Council](#)
- [Environment Canterbury Regional Council](#)
- [Environment Southland](#)
- [Greater Wellington](#)
- [Marlborough District Council](#)
- [Otago Regional Council](#)
- [Tasman District Council](#)
- [Waikato Regional Council](#)

Outdoor burning

Tasman District Council has produced the "[Good Practice Guide to minimise smoke emissions from outdoor burning](#)" to reduce the adverse air quality effects arising from outdoor burning. This good practice guide is a non-regulatory method described in [Chapter 34](#) of the Tasman Resource Management Plan.

Policy development

[Waikato Regional Council Air Quality Strategy](#)

Published by Waikato Regional Council – July 2011

This policy document focuses on compliance with the PM₁₀ standard in the Waikato region. It clearly identifies council's role and responsibility regarding air quality management in the (extremely diverse) Waikato and sets out a strategy for achieving compliance. Importantly, it acknowledges the need to work closely with local authorities as well as providing important social context (e.g. population, median income) and estimates of health impacts from air pollution in each airshed.

[Ngāpuna Dust Operational Plan](#)

Published by Bay of Plenty Regional Council – January 2012

This policy document focuses on compliance with the PM₁₀ standard in the Ngāpuna industrial estate of Rotorua. It outlines a staged approach whereby council will work with industry initially to encourage and educate, moving to light handed enforcement and more education and then finally to enforcement action to ensure compliance by 2016.

Tangata whenua

[Whanau Ora Health Impact Assessment](#)

Published by the Ministry of Health 2007

The Whanau Ora Health Impact Assessment tool is a formal approach used to predict the potential health effects of a policy on Maori and their whanau. It pays particular attention



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to Maori involvement in the policy development process and articulates the role of the wider health determinants in influencing health and well-being outcomes.

The [Updated Health and Air Pollution in New Zealand Study](#) discusses, and quantifies, air pollution impacts for Maori in New Zealand. This builds on research by Hales et al. (Hales S, Blakely T, Woodward A. (2010). Air pollution and mortality in New Zealand: cohort study, *Journal of Epidemiology and Community Health*. doi:10.1136/jech.2010.112490).

Wood burner references

[AS/NZS 4012:1999: Domestic solid fuel burning appliance - Method for determination of power output and efficiency](#)

Published by Standards New Zealand - July 1999

Specifies a method and requirements for determining the heat output and efficiency from batch feed solid fuel burning appliances.

[AS/NZS 4013:1999: Domestic solid fuel burning appliances - Method for determination of flue gas emission](#)

Published by Standards New Zealand - July 1999

Specifies a method and requirements for determining the rate of particulate emission from batch feed solid fuel burning appliances.

[AS/NZS 4886:2007: Domestic solid fuel burning appliances - Pellet heaters - Determination of flue gas emission](#)

Published by Standards New Zealand - February 2007

Specifies a method and requirements for determining the rate of particulate emission from pellet burners.

[AS/NZS 5078:2007: Domestic solid fuel burning appliances - Pellet heaters - Method for determination of power output and efficiency](#)

Published by Standards New Zealand - February 2007

Specifies a method and requirements for determining the heat output and efficiency of pellet burners.

[AS/NZS 2918:2001: Domestic solid fuel burning appliances - Installation](#)

Published by Standards New Zealand - November 2001

Specifies requirements for appliance and flue installation for solid fuel burning appliances in dwellings.



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