

Regional Air Plan 2016



environment
SOUTHLAND
REGIONAL COUNCIL

Te Taiao Tonga

Schedule of amendments to the Regional Air Plan 2016

Date	Amendments	Provisions Affected
8 November 2023	Insert new policies as required by Clause 3.2 and Clause 3.3 of the National Policy Statement for Greenhouse Gas Emissions from Industrial Process Heat 2023.	Policy 5.3.3A Cumulative effects Policy 5.3.3B Updating emissions plans Page 74.
	Insert advice note for reference to the National Environmental Standards for Greenhouse Gas Emissions from Industrial Process Heat 2023.	Advice note inserted. Page 79.

Resource Management Act 1991

Southland Regional Council

Regional Air Plan 2016

It is hereby certified that this is a true and correct copy of the Regional Air Plan 2016

The Regional Air Plan was approved by Southland Regional Council resolution pursuant to Clause 17 of the First Schedule of the Resource Management Act 1991 on 5 October 2016.

The Council has further resolved that the plan shall become operative on 14 October 2016 in accordance with Clause 20 of the First Schedule of the Resource Management Act 1991.

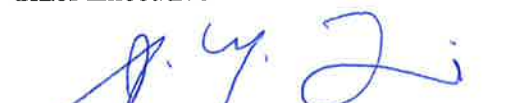
The Common Seal of the
Southland Regional Council
was affixed pursuant to a resolution of
the Council dated 5. October 2016

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Chief Executive



Chairman



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REGIONAL COUNCIL

Te Taiao Tonga

Regional Air Plan 2016

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Introduction to Regional Air Plan 2016

The existing Regional Air Quality Plan for Southland (1999) is being reviewed in two parts, called Stage 1 and Stage 2.

Stage 1, contains the updated policy framework is to propose new rules for domestic home heating, outdoor burning, the application of agrichemicals and fertilisers, and fire training. Stage 1 replaces Section 6 of the Regional Air Quality Plan for Southland (1999) from the date of notification of this plan.

Stage 2 encompasses the remaining framework from the Regional Air Quality Plan for Southland (1999). Stage 2 will be subject to review in the future. Until such time as the review of Stage 2 is completed, both frameworks in Stages 1 and 2 should be considered for any discharge of contaminants to air.

Stage 1:

Discharge of contaminants from domestic heating, outdoor burning, agrichemical and fertiliser use, and fire training

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Introduction

The Council has resolved to approach this review in two stages. The purpose is to immediately address ongoing exceedances of the NESAQ of PM₁₀ in the Gore and Invercargill Airsheds and allow for a more thorough review of the remainder of the Air Plan subsequent to this process.

Stage 1 will cover emissions from domestic and small scale heating sources, outdoor burning, application of agrichemicals and fertilisers, and fire training activities.

Stage 2 will cover emissions from all other sources not addressed in Stage 1, generally associated with industrial and commercial activities.

New rules for domestic home heating, outdoor burning, the application of agrichemicals and fertilisers, and fire training have been developed as Stage 1 of a review of the Regional Air Quality Plan for Southland (1999).

A key focus of Stage 1 is addressing ongoing exceedances of the NESAQ for PM₁₀ within the Gore and Invercargill airsheds.

Domestic home heating rules focus largely on reducing PM₁₀ (particulate matter less than 10 microns in diameter) concentrations in ambient (outdoor) air to achieve compliance with National Environmental Standards for Air Quality (NESAQ) in the Invercargill and Gore airsheds as well as measures to ensure domestic home heating does not result in localised air quality problems. Outdoor burning rules focus on minimising localised health and amenity effects regionally with stricter rules in the Invercargill and Gore airsheds to reduce contributions of this source to ambient PM₁₀ concentrations during the winter months when breaches of the NESAQ occur.

Agrichemical and fertiliser spray drift has the potential for localised adverse effects on non-target species. Rules have been proposed to minimise the effects of spray drift onto non-target species.

The plan framework has also been developed to ensure appropriate linkages between issues, objectives, policies and rules.

Plan Framework

The original Regional Air Quality Plan for Southland (1999) (the Plan) framework was based on identifying issues based largely by source with policies, methods and rules written for the following categories:

- ambient air quality;
- discharges of contaminants into air from industrial or trade premises;
- discharges of contaminants into air from any place (other than industrial or trade premises) or any other source (movable or not);
- odour;
- motor vehicle emissions;
- cross boundary issues.

There are different ways of classifying air quality issues. As our understanding of air quality issues has evolved, there has been a move away from classifying issues based on sources of emissions and a move towards classifications more closely aligned to effects. The two main ways of classifying effects are:

1. by the spatial extent of the effect for example global (e.g. greenhouse gases or ozone depletion), or ambient (i.e. across an airshed) or localised (i.e. in the vicinity of the discharge);
2. by the nature of the environmental effects (e.g. health versus amenity effects).

In the case of 1 (above), ambient issues typically occur as a result of a large number of sources combining to create an air quality problem. An example of this is emissions from solid fuel burning for domestic home heating which can result in concentrations of PM₁₀ in excess of NESAQ in the Invercargill and Gore airsheds. Localised issues occur typically as a result of emissions from one source (or a cluster of area sources near to each other) and as a result of inadequate dispersion of that source prior to it entering an area of exposure. Examples of this might be a plume from an home chimney that reaches the ground prior to adequate dispersion occurring or some agricultural spraying that results in drift beyond the target area.

While both options 1 and 2 above focus on actual effects and are appropriate ways of classifying issues, option 1 is more closely aligned with air quality management measures. As a part of this review the Plan has been rewritten around the following two key air quality issues for the region:

1. health and amenity effects of ambient (outdoor) air quality and compliance with the NESAQ;
2. health and amenity effects associated with localised air quality.

Chapter 1: Issues

Issue 1.1 Health and amenity effects of ambient air quality

Poor ambient air quality from the accumulation of contaminant discharges to air can have adverse effects on the environment, amenity values, human health, social and cultural wellbeing.

Issue 1.2 Health and amenity effects of localised air quality

Discharges of contaminants to air can have localised adverse effects on the environment, amenity values, human health, social and cultural wellbeing.

Chapter 2: Objectives

Ambient Air Quality

Objective 2.1 Compliance with NESAQ by improving ambient air quality

Improve air quality in areas where concentrations of contaminants exceed NESAQ.

Objective 2.2 Maintain or enhance ambient air quality

To maintain ambient air quality in those parts of the Southland region that have good air quality and enhance air quality in those parts of the region where it is poor or has been degraded, to reduce adverse effects on human health and the environment.

Objective 2.3 Ambient air quality: Invercargill and Gore

To reduce adverse effects on human health and the environment by ensuring that the ambient air quality in the Invercargill and Gore airsheds is improved towards complying with the NESAQ.

Localised Air Quality

Objective 2.4 Localised air quality

To avoid, remedy or mitigate any adverse effects upon the localised air quality environment (including health and amenity effects) from the discharge of contaminants into air.

Objective 2.5 Localised air quality: Maori culture and traditions

To ensure that Maori cultural and traditional beliefs are recognised and provided for when dealing with discharges to air.

Chapter 3: Policies

Ambient Air Quality

Policy 3.1 Emission limits

Set emission limits for new installations of small scale solid fuel burners and boilers in the Invercargill and Gore airsheds.

Rules 4.2, 4.3, 4.4 and 4.5

Policy 3.2 Phase out

Phase out the use of open fires from 1 January 2017 and small scale solid fuel burning appliances, excluding pellet burners and solid fuel cooking stoves, that do not meet specified emissions criteria no less than 20 years after installation in the Invercargill and Gore airsheds.

Rules 4.6 and 4.7

Policy 3.3 Incentives programme

Establish a targeted incentives programme within the Invercargill and Gore airsheds to:

- (a) encourage the use of cleaner heating options to reduce PM₁₀ in high concentration areas; and
- (b) promote incentives to assist and encourage people to install and/or convert to cleaner forms of heating within airsheds.

Policy 3.4 Outdoor burning in the Invercargill and Gore airsheds

Restrict discharges to air from outdoor burning and burning green waste within Invercargill and Gore airsheds between May and August inclusive.

Rules 5.1, 5.2 and 5.3

Policy 3.5 Education

Inform the community and business sectors of:

- the effects of discharges on ambient air quality,
 - how clean forms of heating and improved insulation are available to all households to mitigate adverse health effects, and
 - best practice guidance to minimise the effects of discharges from domestic heating and outdoor burning sources.

Policy 3.6 Ambient air quality

Use non-regulatory methods, in addition to rules for small scale solid fuel burners and outdoor burning, to maintain and enhance air quality including:

- (a) advocating for the installation of cleaner forms of heating;
- (b) advocating for the installation of improved insulation technology to improve energy efficiency in dwellings;
- (c) a good wood scheme;
- (d) collaborating with territorial authorities and Government;
- (e) undertaking education on how to enhance air quality;
- (f) financial and economic incentives;
- (g) best practice guidance for woodburner operation and outdoor burning.

Localised Air Quality

Policy 3.7 Objectionable smoke from domestic heating appliances

That small-scale solid fuel burning appliances be installed, maintained and operated in such a way as to avoid adverse effects from offensive or objectionable smoke from the appliance beyond the property boundary.

Rule 4.2 (b) (chimney height specifications solid fuel burners)

Rule 4.3 (chimney height specifications non-solid fuel burners)

Rule 4.4 (b) and (c)

Policy 3.8 Agrichemical and fertiliser drift

Any discharge from the application of agrichemicals or fertiliser which is likely to have an offensive or objectionable effect beyond the boundary of the target property, shall be managed such that the effect is suitably avoided, remedied or mitigated.

Policy 3.9 Odour

Any discharge of odour which is likely to have an offensive or objectionable effect beyond the property boundary, shall be managed such that the effect is suitably avoided, remedied or mitigated.

Policy 3.10 Particulate and dust

Any discharge of smoke or dust which is likely to have an offensive or objectionable effect beyond the property boundary, shall be managed such that the effect of smoke or dust is suitably avoided, remedied or mitigated.

Rule 5.1

Policy 3.11 Hazardous air pollutants

Require activities that result in the production of hazardous air pollutants to avoid or mitigate harmful concentrations of contaminants beyond the property boundary.

Policy 3.12 General adverse effects on the environment

Require any discharges of contaminants to air to avoid, remedy or mitigate adverse effects on:

- (a) the receiving environment;
- (b) human health and wellbeing;
- (c) cultural, spiritual and traditional values;
- (d) water quality;
- (e) navigable airspace.

Policy 3.13 Localised air quality

Require applications that seek to discharge contaminants to air, to comply with the NESAQ and have regard to the appropriate ambient air quality guidelines.

Policy 3.14 Outdoor burning

Any discharge from outdoor burning which is likely to have an offensive or objectionable effect beyond the property boundary, shall be managed such that the effect is suitably avoided, remedied or mitigated.

Policy 3.15 Fire Training

Enable the discharge to air from fire training activities provided that where the discharge may increase PM₁₀ concentrations during May to August inclusive, the effects of the discharge are suitably avoided, remedied or mitigated.

Chapter 4: Domestic Heating Rules

Rule 4.1 General conditions for small scale fuel burning appliances

The discharge from any small scale fuel burning appliance is a **permitted activity**, unless otherwise prohibited by Rules 4.5-4.8, subject to compliance with the following conditions:

- (a) at or beyond the boundary of the subject property, the discharge shall not result in adverse effects from any:
 - (i) objectionable deposition of particulate matter on any land or structure;
 - (ii) any noxious or dangerous levels of airborne contaminants;
 - (iii) offensive or objectionable smoke or odour;
 - (iv) smoke or water vapour that reduces visibility on any road or in any navigable airspace; or
 - (v) corrosion of any structure;
- (b) the appliance shall only burn fuels approved for use in the device and no prohibited fuels (Rule 4.9A);
- (c) the appliance is operated in accordance with the manufacturer's instructions;
- (d) if the NESAQ requirement of no more than three exceedances of PM₁₀ per year is not met in the Invercargill Airshed for any year after 2016 or no more than one exceedance per year is not met in the Invercargill Airshed for any year after 2020, then the discharge to air from any small scale fuel burning appliance in that airshed shall not cause visible smoke for a period of more than 2 minutes except in the case of a cold start when the discharge may cause visible smoke for a maximum period of 15 minutes;
- (e) if the NESAQ requirement of no more than one exceedance of PM₁₀ per year is not met in the Gore Airshed for any year after 2016, then the discharge to air from any small scale fuel burning appliance in that Airshed shall not cause visible smoke for a period of more than 2 minutes except in the case of a cold start in when the discharge may cause visible smoke for a maximum period of 15 minutes.

Explanation

Small scale fuel burning appliances are typically used for home heating but may also be used industrial and commercial applications where the area to be heated is small. These rules apply to all small scale fuel burning. All discharges to air from small scale fuel burning appliances can result in effects on the environment. The effects can be widespread typically as a result of a number of sources (ambient effects) or can occur near the vicinity of the discharge as a result of poor dispersion of a single plume (localised effects). Specific conditions in Rules 4.2 to 4.9A relating to stack heights and authorised fuels have been included to manage localised effects such as offensive or objectionable smoke and odour, noxious and dangerous

contaminants and corrosion. However, the conditions in 4.1 (a) are included to provide additional measures to Council should they be required.

Condition 4.1 (c) puts the responsibility on the operator of the burner to minimise particulate discharges by operating the burner in a manner consistent with the manufacturer's specifications. This is required because the device design alone does not ensure that particulate emissions are consistently low. Additional conditions 4.1 (d) and 4.1 (e) place further responsibility on the operator to ensure that they do not cause excessive visible smoke and thus contribute more particulate than necessary to the Invercargill and Gore Airsheds if non-compliance with the NESAQ occurs post 2016. Visible smoke occurs primarily as a result of light scattering by very small particles in the air and is an indicator of the presence of excessive particles. It should be noted, however, that the converse is not necessarily true (no visible smoke does not necessarily mean a clean discharge) as increasing the air flow can disperse particles and reduce the appearance of smoke.

Installations of Small Scale Fuel Burning Appliances

Rule 4.2 Small scale solid fuel burning appliances and small scale solid fuel boilers in the Invercargill and Gore airsheds

Within the Invercargill and Gore airsheds the discharge of contaminants to air from the burning of solid fuel in any small scale solid fuel burning appliance or small scale solid fuel boiler installed after the date of 6 September 2014 is a **permitted activity** provided the following conditions are met at all times:

- (a) a building consent application for the appliance was lodged prior to 6 September 2014; or
- (b) for small scale solid fuel burning appliances, at all times the appliance:
 - (i) complies with the emission, operational and other requirements of Appendix A;
 - (ii) the appliance complies with the stack requirements of Appendix B;
 - (iii) the appliance burns only fuels approved for use in the device and burns no prohibited fuels (Rule 4.9A).
- (c) for small scale solid fuel boilers:
 - (i) emission testing undertaken by a suitably qualified person demonstrates compliance with either the emission, operational and other requirements of Appendix A or a maximum emission limit of 300 mg/m³ adjusted to 0°C, 12 percent carbon dioxide, 101.3 kPa on a dry gas basis, when tested to a method equivalent to ISO 9096:2003;
 - (ii) the boiler complies with the stack requirements of Appendix B;
 - (iii) the boiler burns only fuels approved for use in the device and burns no prohibited fuels (Rule 4.9A).

Rule 4.3 Small scale liquid or gas fuel burning appliances in the Invercargill and Gore airsheds

Within the Invercargill and Gore airsheds the discharge of contaminants to air from the burning of liquid or gas in any small scale fuel burning appliance installed after the date of notification of this plan is a **permitted activity**, subject to complying with the following conditions at all times:

- (a) the appliance complies with the requirements of Appendix C;
- (b) the appliance burns only fuels approved for use in the device and burns no prohibited fuels (Rule 4.9A).

Rule 4.4 Small scale solid, liquid or gas fuel burning appliances outside of the Invercargill and Gore airsheds

The discharge of contaminants to air from any small scale fuel burning appliance installed after the date of notification of this plan is a **permitted activity** subject to complying with the following conditions at all times:

- (a) for wood burners being installed on properties less than 2 hectares in size, they must comply with the emission, operational and other requirements of Appendix A and the stack requirements of Appendix B;
- (b) for small scale solid fuel burners and open fires being installed, they must comply with the stack requirements of Appendix B;
- (c) for small scale liquid and gas burners being installed, they must comply with the stack requirements of Appendix C;
- (d) the appliance burns only fuels approved for use in the device and burns no prohibited fuels (Rule 4.9A).

Rule 4.5 Small scale solid fuel burning appliances, small scale solid fuel boilers and open fires within the Invercargill and Gore airsheds

Except as provided for in Rules 4.1-4.3, the discharge to air from any small-scale solid fuel burning appliance, small scale solid fuel boiler or open fire within the Invercargill and Gore airsheds installed after the date of 6 September 2014 is a **prohibited activity**, with the following exceptions:

- (a) industrial or trade premises where the open fire is used exclusively for the smoking and cooking of food for wholesale or retail sale;
- (b) where a building consent application for a small scale solid fuel burning appliance has been lodged prior to 6 September 2014.

Explanation

Concentrations of PM₁₀ in Invercargill and Gore can exceed the NESAQ for PM₁₀. The main source of PM₁₀ in these areas is solid fuel burning for domestic home heating. On their own, small scale fuel burning devices are unlikely to have significant adverse effects on the environment. However, collectively a number of high emission appliances can have an adverse effect, particularly in areas where meteorological conditions trap contaminants. Invercargill and Gore have meteorological conditions conducive to poor air quality.

To limit further degradation, as a result of installations of new burners in houses and those that previously used alternative fuels, and to facilitate improvements in PM₁₀ emissions from domestic heating as older burners are replaced with new burners at the end of their useful life, an emission criteria for new wood burner installations was introduced via the NESAQ design criteria. This criteria restricts the installation of wood burners to those meeting an emission limit of 1.5 g/kg when tested to AS/NZS 4013 (and an efficiency criteria of 65% when tested to AS/NZS 4012) on properties less than 2 hectares in size. These are specified in the NESAQ and require a wood burner (as defined in Regulation 3) to meet the design standard and thermal efficiency standard set out in Regulations 23 and 24, unless the wood burner is in a building on a property with an allotment size of 2 hectares or greater (Regulation 22). The emissions limit for particulate (1.5 g/kg) will ensure that only low emission burners can be installed thus providing controls on particulate emissions. The thermal efficiency of a device is the amount of “useful” heat that is released per unit of potential energy supplied in the wood. A thermal efficiency standard is imposed because low efficiency means more wood is burned to achieve a given heat output, and hence more particulate is emitted. This has been in effect throughout New Zealand since September 2005.

In Invercargill and Gore coal burning is a major source of PM₁₀ emissions. The NESAQ does not include particulate emission limits or efficiency criteria for new installations of coal/multi fuel burners. Coal/multi fuel burners typically emit more PM₁₀ than wood burners. The intent of Rule 4.2 is to make the particulate emission limit apply to coal burning appliances and therefore be consistent across wood and coal to ensure appliances that emit significant amounts of PM₁₀ are not allowed to be installed in the Invercargill and Gore airsheds. The rule also serves to make the emission limit for wood burners and coal/ multi fuel burners apply irrespective of the size of land the dwelling is located on within the Invercargill or Gore airsheds. This is because PM₁₀ concentrations anywhere within the Invercargill or Gore airsheds have the potential to contribute to unacceptable PM₁₀ concentrations. Condition 3.2 (a) allows for those who have lodged a building consent with the appropriate Territorial Authority to install the fuel burning appliance as a permitted activity.

Pellet burners are also excluded from the standards set out in the NESAQ (Regulations 23 and 24). While these typically emit less than 1.5 g/kg of particulate they are included in Rule 4.2 to ensure only low emission burners are installed and to provide controls on fuel quality and stack heights inside the Invercargill and Gore airsheds.

Rule 4.3 allows liquid, gas and other non-solid fuels to be used for domestic home heating. These fuels do not emit significant particulate relative to solid fuels and are therefore not subject to the same emissions testing regime. Appendix C specifies chimney height requirements for domestic scale solid fuel burners using these fuels to ensure all air contaminants are adequately dispersed prior to reaching ground level. Combined with the general conditions, rules requiring only the burning of authorised fuels should result

in the avoidance of noxious or dangerous levels of airborne contaminants and offensive or objectionable smoke or odour that causes an adverse effect.

Outside of the Invercargill and Gore airsheds emission limits for new installations of wood burners are 1.5 g/kg particulate and 65% efficiency as specified in the NESAQ (Regulations 23 and 24), unless the burner is in a building on a property with an allotment size of 2 hectares or greater (Regulation 22). Rule 4.4 also includes stack height criteria for all solid fuel burners and for liquid and gas burners to ensure dispersion is sufficient to avoid localised adverse effects. Combined with the general conditions in Rule 4.1 that allows the burning of authorised fuels, the chimney height conditions detailed in Appendices B and C should result in the avoidance noxious or dangerous levels of airborne contaminants and offensive or objectionable smoke or odour that causes an adverse effect. Chimney height conditions specify a height above the roof of the dwelling that minimises down-wash of the contaminant plume in the building wake, thereby preventing high ground level concentrations of contaminants (including high levels of carcinogens such as polycyclic aromatic hydrocarbons) close to the source.

Rule 4.5 prohibits the installation of any enclosed burner appliances or indoor open fires not meeting particulate emission limits. An exception is made for industrial or trade premises where the open fire is used exclusively for the smoking and cooking of food for wholesale or retail sale and for those who have lodged a building consent with the appropriate territorial authority prior to notification of this plan to install that appliance. The exception under Rule 4.5 (a) is made because of the small number of industrial or trade premises likely to undertake this activity and to allow for cooking of food for wholesale or retail sale using these methods.

Conditions are included to put the responsibility on the owner to operate the burner to minimise particulate discharges and to burn the correct fuel. The conditions relating to burner operation are required because the device design alone does not ensure that particulate emissions are consistently low and correct operation is important in minimising emissions. Burning the correct fuel is also important in terms of minimising particulate emissions and ensuring the appliance does not discharge hazardous air pollutants. Of particular concern in this regard in areas of New Zealand is the discharge of arsenic from the burning of treated wood.

Discharges from Small Scale Fuel Burning Appliances

Rule 4.6 Open fires in the Invercargill and Gore airsheds

Discharges to air from an open fire in the Invercargill and Gore airsheds are a **prohibited activity** after 1 January 2016 except:

- (a) from an open fire in an industrial or trade premises where the open fire is used exclusively for the smoking and cooking of food for wholesale or retail sale;
- (b) where the open fire(s) is located within a recorded heritage building; or
- (c) the open fire may be used for the burning of wood only until 1 January 2017.

Rule 4.7A Small scale solid fuel burning appliances installed or approved prior to 6 September 2014 in the Invercargill airshed

The discharge to air in the Invercargill airshed from a small scale solid fuel burning appliance, excluding pellet burners and solid fuel cooking stoves,¹ that was lawfully installed:

- (a) before 1 January 1997, is a **prohibited activity** after 1 January 2017 except the appliance may be used for the burning of wood only until 1 January 2019;
- (b) between 1 January 1997 and 1 January 2001, is a **prohibited activity** after 1 January 2022;
- (c) between 1 January 2001 and 1 September 2005, is a **prohibited activity** after 1 January 2025;
- (d) between 1 September 2005 and 1 January 2010, that does not meet the criteria specified in Appendix A is a **prohibited activity** after 1 January 2030;
- (e) between 1 January 2010 and 6 September 2014 that does not meet the criteria specified in Appendix A is a **prohibited activity** after 1 January 2034.

Rule 4.7B Small scale solid fuel burning appliances installed or approved prior to 6 September 2014 in the Gore airshed

The discharge to air in the Gore airshed from a small scale solid fuel burning appliance, excluding pellet burners and solid fuel cooking stoves,¹ that was lawfully installed:

- (a) before 1 January 1997, is a **prohibited activity** after 1 January 2017 except that the appliance may be used for the burning of wood only until 1 January 2020;
- (b) between 1 January 1997 and 1 January 2001, is a **prohibited activity** after 1 January 2022;
- (c) between 1 January 2001 and 1 September 2005, is a **prohibited activity** after 1 January 2025;

¹ A definition of solid fuel cooking stove is included in the Definitions of this plan.

- (d) between 1 September 2005 and 1 January 2010, that does not meet the criteria specified in Appendix A is a **prohibited activity** after 1 January 2030;
- (e) between 1 January 2010 and 6 September 2014 that does not meet the criteria specified in Appendix A is a **prohibited activity** after 1 January 2034.

Rule 4.7C Solid fuel cooking stoves installed or approved prior to 6 September 2014 in the Invercargill and Gore airsheds

The discharge to air in the Invercargill or Gore airsheds from a solid fuel cooking stove² that was lawfully installed prior to 6 September 2014 is a prohibited activity after 1 January 2022, unless burning wood only.

Rule 4.8 Small scale solid fuel boilers installed or approved prior to 6 September 2014 in the Invercargill and Gore airsheds

A small scale solid fuel boiler that either:

- (a) emits more than 300 mg/m³ adjusted to 0°C, 12 percent carbon dioxide, 101.3 kPa on a dry gas basis, when tested to a method equivalent to ISO 9096:2003; or
- (b) cannot comply with the emission, operational and other requirements of Appendix A;

and was lawfully installed before 6 September 2014 is a **prohibited activity** after 1 January 2034.

Explanation

The NESAQ for PM₁₀ is set at 50 µg m⁻³ (24-hour average) with one allowable exceedance per year. The NESAQ for PM₁₀ is currently breached in Invercargill and Gore. The main source of PM₁₀ in each airshed at times when breaches occur is solid fuel burning for domestic home heating. Reductions in PM₁₀ emissions from domestic home heating is required to meet the NESAQ targets for PM₁₀ of no more than one exceedance per year by September 2016 in Gore and September 2020 in Invercargill. Invercargill also has an interim target of no more than three exceedances per year by 2016. A reduction in PM₁₀ concentrations of around 56% is required in Invercargill, 42% of which must be achieved by 2016 in order to meet that target. In Gore, a reduction in PM₁₀ concentrations of 38% is required.

The rules prohibit existing open fires, high emission boilers and enclosed burners (wood, coal and multi fuel burners). Pellet burners and solid fuel cooking stoves are included in the definition of enclosed burners but are excluded from Rules 4.7A and 4.7B. Coal and wood boilers with heat outputs of more than 60kW are excluded from Rule 4.8 as typically domestic scale boilers would be rated at 50 kW or less. Discharges from boilers with higher heat outputs will be dealt with in revisions to the industrial rules.

² A definition of solid fuel cooking stove is included in the Definitions of this plan.

Coal and multi fuel burners, older wood burners and open fires emit more PM₁₀ per kilogram of fuel burnt than modern wood burners complying with an emission limit of 1.5 grams of particulate per kilogram of fuel burnt and an energy efficiency criterion of 65%. These enclosed appliances are prohibited based on dates of installation to promote equity in terms of years of useful life. Pellet burners are typically low emission irrespective of the date of installation and have therefore been excluded from the prohibition.

Multi-fuel burners are responsible for around 71% of the daily winter PM₁₀ from domestic heating in Invercargill and around 84% in Gore. Burning coal in a multi fuel burner results in emissions that are typically at least four times higher than an average wood burner that meets the NESAQ design criteria for wood burners. Similarly burning wood in multi fuel burners or older less efficient wood burners also results in higher emissions.

Open fires contribute around 7% of the daily winter PM₁₀ that comes from domestic home heating in Invercargill and emit at least twice the amount of particulate per kilogram of fuel burnt than a wood burner that meets an emission limit of 1.5 g/kg on average. In addition, because the airflow to an open fire is uncontrolled there is an oversupply of oxygen to the fire which results in greater fuel consumption and therefore more emissions. Open fires have very low efficiencies and the increased air flow can create draughts as cold air from outside of the house is drawn into the home to replace warm air leaving through the chimney. The use of open fires for the burning of coal is prohibited from January 2016 to assist in achieving compliance with the 2016 timeframes for meeting the NESAQ. Exceptions to the prohibition have been made to allow for food cooking and smoking in industrial and trade premises because of the limited number, and in heritage buildings where the open fire contributes authenticity.

Coal and wood fired boilers are sometimes used for central heating systems and can have relatively small particulate matter emissions owing to the different technology and automated fuel supply. Boilers that emit particulate matter at a rate less than 300 mg/m³ (adjusted to standard conditions) have emissions that are no more than modern solid fuel burning appliances that can be installed as a permitted activity under the plan and it is reasonable to allow for those boilers. Boilers that are unable to be operated within the emission limit or alternatively the emission limit specified by Appendix A for solid fuel burning appliances are to be phased out after 1 January 2034. It is expected that most well designed and operated boilers are capable of complying with limits. Recognising the cost of installing a boiler system is significant, the 1 January 2034 phase out will give households with boilers unable to be operated within the emission limit sufficient time to look at options around replacement of those systems.

A small number of solid fuel cooking stoves may be used in the Invercargill and Gore airsheds. These will be permitted until 1 January 2022 unless burning wood only owing to the small number, uncertainties about the emission levels, and cost and replacement issues.

Reductions in PM₁₀ concentrations from domestic home heating are required to meet the NESAQ in the Invercargill airshed. Compliance with the

NESAQ is required in the Gore airshed by 2016. Invercargill is required to reduce PM₁₀ concentrations to meet compliance with no more than three exceedances per year by September 2016 and compliance with no more than one exceedance per year by September 2020. This rule requires the replacement of multi fuel burners and older burners after they have been allowed the opportunity of a reasonable period of use whilst taking into account the required compliance dates for the Invercargill and Gore airsheds. Waiting for the natural replacement of burners would not result in sufficient reductions by the required timeframes. The specified phase out dates bring forward these reductions and provides more certainty around when a burner can no longer be used.

Rule 4.9A Fuels and materials used in small scale fuel burning appliances

The combustion in any small scale fuel burning appliance of any of the following materials is a **prohibited activity**:

- (a) from 31 December 2016, wood having a moisture content of more than 25% dry weight except when being used in a back country hut;
- (b) wood that is painted, stained, oiled or coated;
- (c) wood treated with preservatives or impregnated with chemicals, including but not limited to, wood treated with Copper-Chrome-Arsenic (CCA);
- (d) pellets containing greater than 10 mg/kg (dry) of copper and 0.02 w-% (dry) of chlorine;
- (e) composite wood boards containing formaldehyde or similar adhesives, including but not limited to, chip board, fibreboard, particle board and laminated boards;
- (f) metals and materials containing metals, including but not limited to cables;
- (g) materials containing asbestos;
- (h) materials containing tar or bitumen;
- (i) all rubber, including but not limited to, rubber tyres;
- (j) synthetic material, including, but not limited to, motor vehicle parts, foams, fibreglass, batteries, chemicals, paint and other surface-coating materials, or any type of plastics;
- (k) used oil from 1 January 2017 within the Invercargill and Gore airsheds;
- (l) peat;
- (m) sludge from industrial processes.

Rule 4.9B Used oil in small scale fuel burning appliances outside of the Invercargill and Gore airsheds

The combustion of used oil in any small scale fuel burning appliance outside of the Invercargill and Gore airsheds is a **discretionary activity**.

Explanation

These substances are prohibited from being burnt in small scale fuel burners primarily because they produce hazardous air pollutants including dioxins, furans and heavy metals. Hazardous air pollutants, are those pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects.

In the case of the moisture content of wood, the limit is imposed for PM₁₀ purposes (wood moisture content is a key factor influencing PM₁₀ emissions from wood burners). Burning wet wood is also very costly as the heat which would otherwise be available for space heating is used to drive off the moisture. This material will be permitted until 31 December 2016 to allow existing fuel stocks throughout the region to be burnt, although material being used in a back country hut is exempt from this requirement altogether.

Burning copper chrome arsenic treated wood results in an increase in arsenic concentrations in ambient air. Burning pellets containing high levels of copper and chloride may result in increased dioxin emissions. In New Zealand, the production of pellets may include concentrations of copper and chloride owing to the use of antisapstain. To demonstrate compliance suppliers of pellets may need to provide laboratory testing data for pellets to Council as product information for pellet fuel does not typically include these variables. Concentrations of copper and chloride in pellets is not adequately controlled through the standard for pellet fuel (NZS 4014.6 2007).

Small scale solid fuel burners are not designed to burn materials other than wood (or pellets for pellet burners) or in the case of multi fuel burners, coal. Under Appendix A appliances may only burn the fuels for which they were designed, so use of many the fuels listed above is not permitted irrespective of this rule. The rule is included to prohibit the burning of these items, rather than them becoming a discretionary activity for which a resource consent could be granted as would be the case in the event of non-compliance with Appendix A requirements.

Used oil can contain a number of different contaminants (including particulates, metals and halogens) so it is not appropriate to burn used oil in high density areas such as the Invercargill and Gore airsheds. However, in locations well removed from sensitive activities (such as neighbouring dwellings and schools) where the potential adverse effects associated with the burning of used oil can be avoided or mitigated via appropriate consent conditions it may be an appropriate activity. For example, conditions might require treatment of the oil by filtration or other methods to remove contaminants prior to combustion. Rule 4.9B therefore provides for the burning of used oil in small scale fuel burning appliances outside of the Invercargill and Gore airsheds as a discretionary activity.

Chapter 5: Outdoor Burning Rules

Note: Plan users should note that in addition to the outdoor burning provisions of the Proposed Regional Air Plan they may be subject to requirements stipulated by Southern Rural Fire Authority. Southern Rural Fire Authority is responsible for managing the outdoor fire season in Southland and issuing fire permits during restricted seasons. This includes both urban and rural areas under the Fire Prevention (Vegetation) Bylaw 2010 adopted by Gore District Council, Invercargill City Council and Southland District Council. For further information please contact Southern Rural Fire Authority - Phone: 0800 773 363 - Website: www.southernruralfire.org.nz

Rule 5.1 Outdoor burning outside of the Invercargill and Gore airsheds

The discharge of contaminants into air from the outdoor burning of vegetative matter, paper, cardboard and untreated wood is a permitted activity outside the Invercargill and Gore airsheds provided the following conditions are met:

- (a) burning shall only consist of vegetative matter, paper, cardboard and untreated wood generated on the same property, a property under the same ownership, or an adjoining property;
- (b) at or beyond the boundary of the property on which the burning is carried out, or above the property on which the burning is carried out, or on any public land, the discharge shall not result in adverse effects from any:
 - (i) objectionable deposition of particulate matter on any land or structure;
 - (ii) noxious or dangerous levels of airborne contaminants;
 - (iii) offensive or objectionable effects of smoke or odour;
 - (iv) smoke or water vapour that reduces visibility on any road or in any navigable airspace; or
 - (v) corrosion of any structure;
- (c) if the property on which the burning is carried out is less than 2 hectares in area, the material burned shall not exceed 2 cubic metres in any 24 hour period;
- (d) if the property on which the burning is carried out is more than 2 hectares in area, and more than 2 cubic metres of material is being burnt, the burning must not occur within 100 metres upwind or 50 metres in any other direction, of any residential unit or place of assembly that is not located on the property where the burning is occurring unless written permission has been obtained from the occupier(s) of the residential unit.
- (e) outdoor burning shall not occur within 100 metres of any national grid line or substation.

Rule 5.2 Outdoor burning in the Invercargill and Gore airsheds

The discharge of contaminants into air from the outdoor burning of vegetative matter, paper, cardboard and untreated wood is a permitted

activity in the Invercargill and Gore airsheds provided the following conditions are met:

- (a) outdoor burning is between 1 September and 30 April only, except where the discharge is from an outdoor open fire;
- (b) burning shall only consist of vegetative matter, paper, cardboard and untreated wood generated on the same property, or a property under the same ownership;
- (c) at or beyond the boundary of the property on which the burning is carried out, or above the property on which the burning is carried out, or on any public land, the discharge shall not result in adverse effects from any:
 - (i) objectionable deposition of particulate matter on any land or structure;
 - (ii) noxious or dangerous levels of airborne contaminants;
 - (iii) offensive or objectionable effects of smoke or odour;
 - (iv) smoke or water vapour that reduces visibility on any road or in any navigable airspace; or
 - (v) corrosion of any structure;
- (d) if the property on which the burning is carried out is less than 2 hectares in area, the material burned shall not exceed 2 cubic metres in any 24 hour period;
- (e) if the property on which the burning is carried out is more than 2 hectares in area, and more than 2 cubic metres of material is being burnt, the burning must not occur within 100 metres upwind or 50 metres in any other direction, of any residential unit or place of assembly that is not located on the property where the burning is occurring unless written permission has been obtained from the occupier(s) of the residential unit.
- (f) outdoor burning shall not occur within 100 metres of any national grid line or substation.

Explanation

Outdoor burning has the potential to cause adverse health and amenity effects, including reduced visibility, soiling of washing and buildings, smoke and odour nuisance. In addition, toxic and odorous substances can also be released if inappropriate materials are burnt. The discharge of toxic substances can be minimised by limiting the materials that can be burnt to vegetative matter, paper, cardboard and untreated wood. The main contaminant of concern from the burning of vegetative matter, paper, cardboard and untreated wood is particles in the air (PM₁₀).

Permitting outdoor burning in areas outside of the Invercargill and Gore Airsheds means that in these areas any form of outdoor burning can be carried out provided the conditions of Rule 5.1 are met. Permitting outdoor burning in areas inside of the Invercargill and Gore airsheds means that in these areas any form of outdoor burning can be carried out between the months of September and April inclusive provided the other conditions of Rule 5.2 are met. The use of barbecues, braziers, pizza ovens, outdoor fireplaces and other outdoor food or amenity related burning activities are all permitted activities as they are exempt from the definition for outdoor burning.

Outdoor burning can be carried out in a manner that causes only minor adverse effects if the fire burns hot, the fuel is dry and the distance to neighbouring properties and sensitive locations is adequate. For example, in rural areas adverse health and amenity effects of outdoor burning may be mitigated by allowing a buffer zone between the discharge and potentially affected parties. A distance of 100 metres is typically adequate if the material to be burnt is dry and burning is carried out according to good practice. On smaller properties and in urban areas it is more difficult to minimise potential effects because of the proximity to neighbouring properties. For smaller properties, the size of fires is limited to 2 cubic metres of material. This limit means fires in urban areas will be of short duration temporally limiting the potential effects.

In rural areas, burning larger amounts of material is appropriate if burning is to be used for disposing of tree fell or orchard prunings. In rural areas some smoke, odour or dusts may also be more acceptable. Additional requirements for a larger fire include the fire being at a distance of 100 metres upwind or 50 metres in any other direction of any residential unit or place of assembly, unless permission has been obtained. The purpose of this buffer distance is to minimise potential effects of the fire on neighbouring activities.

Deposition of particulate matter is a potential effect from outdoor burning and can cause corrosion accelerated degradation of buildings. Activities that result in these types of effects beyond property boundaries are not permitted.

Smoke or water vapour resulting in visibility degradation on roads or aircraft flight paths is a safety hazard. Activities that result in these types of effects are not permitted.

Discharges that result in noxious or dangerous levels of airborne contaminants have the potential to cause health effects and should not be permitted. In the case of outdoor burning, the material that can be burnt has been limited to minimise the potential for noxious or dangerous contaminants and buffer distances provided to reduce concentrations of contaminants at neighbouring dwellings. In addition, boundary rules have been included to ensure additional controls can be implemented should they be required.

Rule 5.3 Outdoor burning of animal carcasses and offal

The discharge of contaminants into air arising from the burning in the open of animal carcasses and offal is a permitted activity provided the following conditions are met:

- (a) the carcasses or offal are derived from the same property on which the offal pit or “dead hole” is situated or the activity is carried out by a local authority or government agency in the exercise of their statutory powers;
- (b) at or beyond the boundary of the subject property, or above the property on which the burning is being carried out, or on any public land, the discharge shall not result in adverse effects from any:

- (i) objectionable deposition of particulate matter on any land or structure;
- (ii) noxious or dangerous levels of airborne contaminants;
- (iii) offensive or objectionable effects of smoke or odour;
- (iv) smoke or water vapour that reduces visibility on any road or in any navigable airspace; or
- (v) corrosion of any structure;
- (c) burning does not occur within 200 metres of a residential unit or place of assembly;
- (d) burning does not occur within 100 metres of a property boundary;
- (e) there are no adverse effects on recorded historic heritage sites;
- (f) the burning comprises only of animal carcasses, vegetative matter, paper, cardboard or untreated wood, and;
- (g) the burning is carried out on any property outside the Invercargill and Gore airsheds.

Explanation

Offal pits, or "dead holes" as they are commonly referred to in Southland, are used for the on-farm disposal of dead stock across the region. Rule 55 in the Regional Water Plan for Southland sets requirements for the location of dead holes (offal pits).

Carcasses, or parts of a carcass must not create a nuisance under the Health Act 1956, and in particular, they must not be injurious to human health. Situations that can create risks to human health include microbial contamination of potable water supplies, infestations of vermin and other disease carriers, and the decomposition of stock on the surface. Where this occurs then either the Medical Officer of Health or Health Protection Officer at Public Health South should be notified.

Outdoor burning of animal carcasses and offal typically occurs in rural areas, and on an infrequent basis. Burning offal can result in significant smoke because of poor combustion conditions. However, because of the likely low frequency of the activity, the need for disease control, the nature of the amenity in the areas where it is being carried out and the requirement for setbacks from neighbouring dwellings and sensitive areas any adverse effects that might occur are considered acceptable. Adding material such as dry vegetation and wood to the offal is likely to increase fire temperatures and improve combustion. It is important no prohibited fuels are used in the burn. It is noted that open burning of oils including diesel is prohibited under the NESAQ.

Burning of offal in the Invercargill and Gore airsheds is not permitted owing to the potential for nuisance and the potential contribution to breaches of the NESAQ for PM₁₀.

Rule 5.4 Outdoor burning of stubble

The discharge of contaminants into air arising from the burning of stubble is a **permitted activity** provided the following conditions are met:

- (a) stubble burning does not occur within 300 metres upwind or 100 metres in any other direction, of any residential unit or place of assembly that is not located on the property where the burning occurs unless written permission has been obtained from the occupier(s) of the residential unit;
- (b) at or beyond the boundary of the subject property, or above the property on which the burning is being carried out, or on any public land, the discharge shall not result in adverse effects from any:
 - (i) objectionable deposition of particulate matter on any land or structure;
 - (ii) noxious or dangerous levels of airborne contaminants;
 - (iii) offensive or objectionable smoke or odour;
 - (iv) smoke or water vapour that reduces visibility on any road or in any navigable airspace; or
 - (v) corrosion of any structure.

Explanation

Stubble burning involves removing of crop residue left after harvest in the field through burning. It is used for clearing away straw, chaff and other plant material prior to drilling/planting the next crop.

A report into the value of stubble burning in New Zealand concluded that the practice was particularly suited to the nature of cropping systems in New Zealand and is particularly valued for removal of cereal crop residue prior to drilling small-seeded, high value crops such as ryegrass and clover grown for seed. The report concluded that stubble burning was a rapid, economic, and relatively environmentally benign way of dealing with crop residues without the need for removal of straw by baling or for stubble chopping followed by relatively intensive cultivation (Williams et al, 2013).

Like outdoor burning, the burning of stubble can result in localised health and amenity effects. Material is typically well seasoned owing to the timing of the burns which typically occur from late summer to early autumn. This improves combustion conditions by increasing fire temperatures and burn speed.

Rule 5.5 Outdoor burning

The discharge of contaminants into air arising from outdoor burning except as permitted by Rules 5.1-5.4 and prohibited by Rules 5.6-5.8 is a **discretionary activity**.

Explanation

Outdoor burning in urban areas has the potential to cause adverse health and amenity effects. In addition to localised effects associated with non-dispersed

smoke plumes, burning can contribute to elevated ambient concentrations of PM₁₀ and other contaminants.

Concentrations of PM₁₀ in Invercargill and Gore exceed the NESAQ for PM₁₀ during the winter months. In Invercargill and Gore airsheds outdoor burning in the urban area contributes around 1% of the wintertime ambient PM₁₀ concentrations but this may increase on any given day depending on the number of households carrying out burns. To reduce this source of PM₁₀ at times when these airsheds may breach the NESAQ, outdoor burning in the Invercargill and Gore airsheds during the months May to September has been classified as a discretionary activity for which a resource consent is required.

The use of barbecues, braziers, pizza ovens, outdoor fireplaces and other outdoor food or amenity related burning activities are all permitted activities as they are exempt from the definition for outdoor burning. These activities are permitted in the Invercargill and Gore airsheds during both summer and winter months because these sources are only used for short periods of time and are typically used less frequently during the colder winter months when breaches of the NESAQ occur.

During the summer months outdoor burning in the Invercargill and Gore airsheds can be carried out provided the conditions of the permitted activity are complied with. Whilst the contribution of outdoor burning to ambient air PM₁₀ is of less concern during the summer months there is still potential for localised effects.

In rural areas, burning larger amounts of material is appropriate if burning is to be used for disposing of tree fell or prunings. In these areas some smoke, odour or dusts may also be more acceptable. Larger fires are only allowed on properties greater than 2 hectares. Additional requirements for larger fires include the fire being at a distance of 100 metres upwind or 50 metres in any other direction of any residential unit, unless permission has been obtained. The purpose of this buffer distance is to minimise potential effects of the fire on neighbouring dwellings.

On smaller properties the size of fires is limited to 2 cubic metres of material. Smaller properties generate less material for disposal and are unable to provide the same buffer zones to mitigate effects. Fires on smaller sized properties will be of short duration temporally limiting the potential effects.

Outdoor burning is permitted only for vegetative matter, paper, cardboard and untreated wood as other materials may result in discharges of hazardous air pollutants. In particular it is important that only untreated wood be burnt as treatments can result in the discharge of toxic contaminants. In particular wood treated with copper, chromium and arsenic can result in elevated arsenic concentrations. Arsenic concentrations are elevated in a number of urban areas of New Zealand as a result of the burning of treated timbers (Cavanagh, Davy, Ancelet, & Wilton, 2012).

Painted timber is also of concern because of the potential for the paint to be lead-based. Burning of such materials has the potential to increase lead

concentrations in a localised area posing a risk for ingestion by animals or children, for example.

The discharge of contaminants from the burning of materials other than vegetative matter, paper, cardboard and untreated wood but excluding prohibited materials is a discretionary activity that requires a resource consent. Burning other materials may result in discharges that have minimal effects on the environment depending on the materials and the manner in which they are burnt. A resource consent procedure allows for the burning of other materials provided it can be demonstrated that the effects will be minor.

Condition 5.2 (b) specifies that any material being burnt within the Invercargill and Gore airsheds must have been generated on the property upon which the burning is carried out. This ensures that only materials originating from a property can be burnt on that property preventing any burning activity disproportionate to the property size and character as this could result in both more frequent burning and effects of greater magnitude than those anticipated by the permitted activity rule. A resource consent is required if materials originating from another property are to be burnt within these airsheds.

Rule 5.6 Outdoor burning in the Invercargill and Gore airsheds

The discharge of contaminants into air arising from outdoor burning of any materials in the Invercargill and Gore airsheds between 1 May and 31 August is a **prohibited activity**.

Explanation

The Invercargill and Gore airsheds are currently in breach of the NESAQ for PM₁₀. Breaches occur during the winter months as a result of increased PM₁₀ emissions from domestic home heating combined with meteorological conditions conducive to poor dispersion. Outdoor burning is only a small contributor to winter time PM₁₀ at around 1% of the winter time PM₁₀ emissions on average but could be a more significant contributor to NESAQ breaches on days when many households choose to burn or if households burn wet or green waste. Exceedances of the NESAQ have generally been limited to the months May to August inclusive so it is proposed that the ban apply to these months.

Outdoor burning does not include the burning of fuels in hangi, barbecues for food cooking purposes, fireworks, candles, lamps, outdoor patio gas heaters, smokers or similar small-scale burners or tools.

Rule 5.7 Burning of agricultural wrap and agrichemical plastic containers

The discharge of contaminants into air arising from burning agricultural wrap and agrichemical plastic containers is a **prohibited activity**.

Explanation

Disposal of used agricultural wrap (e.g. used for baleage or silage) has been a major problem on New Zealand farms ever since it was introduced as a crop protection material. A number of early air plans permitted the burning of polyethylene agricultural wrap as a pragmatic approach to its disposal despite combustion not being an ideal option. This was largely because of a lack of alternatives.

In more recent years, recycling agricultural wrap has become more feasible with local recycling options and industry developing products to reduce contamination from plastics. Information on recycling is readily available. A key focus is on keeping the wrap as clean as possible and collecting it immediately, shaking off any excess material on it, rolling it into a ball and storing it for collection.

An alternative to wrapping baleage into individual plastic wrapped parcels may also be an option for some farmers. The alternative involves placing the silage in a concrete bunker on the side of a bank, so that chopped grass can be dumped in at the top and drawn from the bottom in winter. Silage can also be placed in large heaps on the ground and rolled by tractor to push out all the air, then wrapped in a plastic cover held tight by tyres.

Burning agrichemical plastic containers is also prohibited. Plastics commonly contain chlorine and other contaminants that result in emissions of hazardous air pollutants including dioxins and furans when burned. Agrichemical containers can be recycled through various collection programmes.

Rule 5.8

Fuels and materials used for outdoor burning

The discharges to air from outdoor burning (excluding fire training activities authorised under Rule 7.1) of any of the following materials is a **prohibited activity**:

- (a) wood that is painted, stained, oiled or coated;
- (b) wood treated with preservatives or impregnated with chemicals, including but not limited to, wood treated with copper-chrome-arsenic (CCA);
- (c) composite wood boards containing formaldehyde or similar adhesives, including but not limited to, chip board, fibreboard, particle board and laminated boards;
- (d) metals and materials containing metals, including but not limited to cables;
- (e) materials containing asbestos (except for the processing of vehicle brake shoes subject to a resource consent under Rule 5.3);
- (f) material containing tar or bitumen;
- (g) all rubber, including but not limited to, rubber tyres;
- (h) synthetic materials, including, but not limited to, motor vehicle parts, foams, fibreglass, batteries, chemicals, paint and other surface-coating

materials, or any type of plastics including agricultural wrap and agrichemical containers;

- (i) used oil;
- (j) peat; or
- (k) sludge from industrial processes.

Explanation

Outdoor burning is permitted by Rules 5.1 and 5.2 only for vegetative matter, paper, cardboard and untreated wood as burning other materials may result in discharges of hazardous air pollutants. Outdoor burning of other materials except those listed in this section requires a resource consent under Rule 5.5. Materials listed in Rule 5.8 are prohibited from being burnt. A resource consent application to burn these materials cannot be sought or granted.

Materials listed in Rule 5.8 are prohibited from being burnt because of the likelihood of release of toxic compounds. These include dioxins and furans, heavy metals, lead and arsenic depending on the substances being burnt. These compounds are dangerous to human health and can cause both chronic and acute health effects.

Rule 5.9 Outdoor Burning of Unwanted Organisms and Diseased Vegetative Matter

Notwithstanding Rules 5.1 - 5.8 outdoor burning of unwanted organisms and diseased vegetative matter is a **permitted activity** where the burning is directed or carried out by a local authority or government agency in the exercise of their statutory powers.

Chapter 6: Agrichemicals and Fertilisers Rules

Rule 6.1 Agrichemicals using hand-held application methods

The discharge of contaminants to air from the application of agrichemicals using hand-held application methods is a **permitted activity** provided the following conditions are met:

- (a) the substance is approved under the Hazardous Substances and New Organisms Act 1996 and the use and discharge of the substance is in accordance with all conditions of that approval; and
- (b) the discharge must be undertaken in such a way that agrichemicals do not get sprayed or drift onto any adjoining property.

Explanation

This rule allows the small scale application of agrichemicals to be carried out by people provided they can operate in such a way as to ensure it does not get sprayed or drift onto any adjoining property. The scale of application is limited for laypeople because of their lack of expertise in the application of agrichemicals. Limiting the scale minimises the potential for adverse effects from the activity.

This rule allows the small scale application of agrichemicals to be carried out by people provided they can operate in such a way as to ensure it does not get sprayed or drift onto any adjoining property. The scale of application is limited for laypeople because of their lack of expertise in the application of agrichemicals. Limiting the scale minimises the potential for adverse effects from the activity.

Rule 6.2 Agrichemicals using other than hand-held application methods

The discharge of contaminants to air from the application of agrichemicals using other than hand-held application methods is a **permitted activity** provided all of the following conditions are met:

- (a) the discharge of agrichemicals to air must comply with the mandatory requirements of NZS8409:2004, as they relate to the discharge of agrichemicals to air;
- (b) the substance is approved under the Hazardous Substances and New Organisms Act 1996 and the use and discharge of the substance is in accordance with all conditions of that approval;
- (c) the discharge does not result in adverse effects beyond the boundary of the property being sprayed;

- (d) where agrichemicals are applied:
 - (i) every person, other than an agrichemical contractor, applying agrichemicals shall be:
 - under training for, or hold, a current GROWSAFE® Introductory Certificate, or an equivalent national qualification, or
 - be under direct supervision of a person holding a GROWSAFE® Applied Certificate or GROWSAFE® Registered Chemical Applicators Certificate, or an equivalent national qualification; and
 - (ii) every agrichemical contractor applying agrichemicals shall hold a GROWSAFE® Registered Chemical Applicators Certificate, or an equivalent national qualification;
- (e) any contractor using aerial application must ensure that:
 - (i) the pilot holds a current Pilot's Agrichemical Rating approved by the Civil Aviation Authority; and
 - (ii) the aircraft company/organisation must have AIRCARE™ or an equivalent national accreditation;
- (f) the property owner or occupier who authorises the discharge shall ensure that:
 - (i) all adjoining landowners or occupiers who are within 500 metres of the perimeter of the application site shall be notified at least 24 hours but not more than 30 days prior to the application.
- (g) for application in sensitive areas that are amenity areas or public places as defined in New Zealand Standard on the Management of Agrichemicals (NZS 8409:2004):
 - (i) place a public notice in a local newspaper or letter drop in the area to be sprayed at least seven working days prior to the application date; and
 - (ii) place signs in the immediate vicinity of the spraying during the spray period and any required stand down period afterwards, or where spraying is occurring on or alongside roads, any vehicle associated with the spraying must display a sign on the front and rear of the vehicle advising that spraying is occurring.

Explanation

This rule requires compliance with the mandatory requirements of NZS 8409:2004 as well as the conditions specified in the rules. The mandatory requirements of NZS 8409:2004 are those that include the word “shall”.

The approach of this rule is to control all aspects that might result in adverse effects occurring. NZS 8409:2004 contains informative guidance material which will greatly reduce the risk of any environmental or health and safety incidents when using agrichemicals including measures relating to spray drift. Operators are required to have a good knowledge of NZS 8409:2004.

Additional measures are included for the control of drift from aerial application of agrichemicals. These include pilot agrichemical qualifications, suitability of aircraft for agrichemical application and additional notification criteria for neighbouring properties. These additional measures are required

because aerial application poses a greater risk of drift if not carried out appropriately.

Discharges from the application of agrichemicals are not specifically managed in the Coastal Marine Area, although the Regional Coastal Plan for Southland does specify that minor discharges are permitted. Any discharges from industrial and trade premises in the Coastal Marine Area are a discretionary activity. The discharge of spray drift to waterways is dealt with under the Regional Water Plan for Southland and is not referred to in this plan.

Rule 6.3

Application of fertilisers

The discharge of fertiliser to air is a **permitted activity** provided the following conditions are met:

- (a) unless written approval has been obtained by the occupier, there shall be no fertiliser application within 30 metres of a residential unit not located on the property on which the fertiliser is being applied;
- (b) unless written approval has been obtained by the occupier, there shall be no deposition of fertiliser over any:
 - (i) property that is registered or certified by the Biological Producers' and Consumer's Council or the Biodynamic Farming and Garden Association as an organically farmed property, provided that this registration or certification was established before any discharge activity is commenced; or
 - (ii) orchard where there is fruit on the trees or vines;
- (c) at or beyond the boundary of the subject property, or on any public land, the discharge shall not result in adverse effects from any:
 - (i) objectionable deposition of particulate matter on any land or structure;
 - (ii) noxious or dangerous levels of airborne contaminants;
 - (iii) offensive or objectionable particulate or odour;
 - (iv) reduction of visibility on any road or in any navigable airspace arising from the discharge; or
 - (v) corrosion of any structure.

Explanation

The application of fertilisers including aerial application is a common land management practice. The rule requires that application of fertiliser shall not result in objectionable deposition of particulate matter on any land or structure. This is essentially a “no discharge beyond the boundary” rule unless the discharge is not found to be objectionable. The latter will largely depend on the occupier.

In some cases aerial application is the only practical means of distributing fertilisers effectively. Provided that certain criteria are met, this practice will have minimal environmental effects.

The conditions seek to limit adverse cross-property effects that may arise from the discharge of fertiliser to air. Adherence to the Code of Practice for Nutrient Management (www.fertiliser.org.nz) is also encouraged.

Note: Freshwater rules in the Regional Water Plan for Southland must be consulted if it is likely that fertiliser may enter any waterway or lake.

Rule 6.4 Biosecurity incursions

Notwithstanding Rules 6.1-6.3, the discharge of agrichemicals to air to manage a declared biosecurity incursion under the Biosecurity Act 1993 is permitted subject to the following conditions:

- (a) the responsible authority shall notify the Council and make a public notice 48 hours prior to spraying occurring. The public notice shall advise of the following conditions:
 - (i) the organism to be eradicated;
 - (ii) the principal actions that are to be taken in the attempt to eradicate the organism;
 - (iii) the geographical area of the intended spraying;
 - (iv) the duration of the discharge, the name of the agrichemical to be used, the rate and method of application, and the name and contact details of the applicator.

Rule 6.5 Application of agrichemicals and fertilisers

Except as provided for in Rules 6.1–6.4, the discharge of agrichemicals and fertilisers to air is a **discretionary activity**.

Chapter 7: Fire Training Rules

Rule 7.1 Fire Training

The discharge of contaminants to air from fire training activities is a **permitted activity** provided the following conditions are met:

- (a) the discharge takes place under the control of a Fire Authority in terms of the Forest and Rural Fires Act 1977, a Fire Brigade established under the Fire Service Act 1975, or an Airport Authority fire service, or a nationally recognised training provider;
- (b) the Southland Regional Council is notified at least two working days prior to the activity commencing;
- (c) there is no burning of materials prohibited by Rule 5.8 except if the discharge takes place under the control of a fire brigade established under the Fire Service Act 1975;
- (d) the discharge does not occur in the Invercargill and Gore airsheds between 1 May to 31 August inclusive;
- (e) in the case that the burn is likely to result in smoke or odour beyond the property boundary neighbouring property owners within a 200 metre radius of the burn site are informed at least two working days prior to the activity commencing; and
- (f) the discharge does not reduce visibility in navigable airspace.

Rule 7.2 Fire Training

Any discharge that contravenes the permitted activity conditions in Rule 7.1 is a **restricted-discretionary activity**.

The Council will restrict its discretion to the following matters:

- (a) the material burnt or used in the fire training activity;
- (b) the location of the activity;
- (c) the time and duration of the activity, including the time of the year;
- (d) the meteorological conditions under which the activity may occur;
- (e) control of smoke, odour and other contaminants; and
- (f) the discharge does not reduce visibility in navigable airspace.

The application need not be notified, the written approval of affected persons will not be necessary and notice of applications need not be served on any person.

Explanation

This rule allows for legitimate fire training activities to occur throughout the Region as a permitted activity except in areas where PM₁₀ concentrations exceed the NESAQ during the winter months. However certain conditions must be met including a requirement for the fire to be carried out by a recognised fire authority or a recognised training provider. A “nationally

recognised training provider” is considered to be an organisation that undertakes training for the purposes of meeting the legislative requirements of maritime safety, health and safety, or as a part of a New Zealand Qualifications Authority course. The rule recognises that it is occasionally necessary for fire-fighting organisations to undertake training including burning buildings in realistic settings. Although significant smoke may be produced during a house burn, the activity is infrequent and typically occurs in different locations minimising the potential effects. In these circumstances smoke and odour beyond the property boundary is unavoidable but is allowed because the effective training of fire-fighters is considered a public good that likely outweighs the negative effects of particulate exposure that may occur. Notification of neighbouring properties is required in these situations so that sensitive individuals are informed and can relocate for the duration of the burn if need be.

Clause (c) of Rule 7.1 restricts the type of materials that can be burnt during the training exercises. The fire service may burn prohibited materials, as it is sometimes necessary for fire training to be undertaken in a range of realistic situations. This may involve burning materials that are normally prohibited (such as the burning of a house). It is not considered appropriate to extend this exemption to other training providers as less toxic fuels such as untreated wood may be burnt during normal training exercises.

Chapter 8: Definitions

Agrichemical

Any substance, whether inorganic or organic, man-made or naturally occurring, modified or in its original state, that is used in any agriculture, horticulture or related activity to eradicate, modify or control flora and fauna. For the purposes of this Plan it includes agricultural compounds and animal remedies, but excludes fertilisers, vertebrate toxic agents and oral nutrition compounds.

Agrichemical contractor

Means a person who holds a GROWSAFE® Registered Chemical Applicators Certificate, or an equivalent nationally-recognised qualification.

Airshed

An area designated by the Southland Regional Council for the purpose of managing air quality and gazetted by the Minister for the Environment.

Ambient air quality

The quality of air outside of buildings or structures. It does not refer to indoor air, to air in the workplace, contaminated air being discharged from a source, or air that is enclosed or sheltered in a way which makes it untypical of the air in the surrounding area. Ambient conditions are those not modified by specific/ individual sources.

Back country hut

means a building that:

- (a) is located on land that is administered by the Department of Conservation for conservation, recreational, scientific, or other related purposes, including any land administered under any of the following:
 - (i) the Conservation Act 1987;
 - (ii) the National Parks Act 1980;
 - (iii) the Reserves Act 1977; and
- (b) is intended to provide overnight shelter to any person who may visit and who carries his or her own food, bedding, clothing, and outdoor equipment; and
- (c) contains only basic facilities, which may include (but are not limited to) any or all of the following:
 - (i) sleeping platforms or bunks;
 - (ii) mattresses;
 - (iii) food preparation surfaces;
 - (iv) appliances for heating;
 - (v) appliances for cooking;
 - (vi) toilets; and
- (d) has been certified by the Director-General as being in a location that wheelchair users are unlikely to be able to visit; and
- (e) is intended to be able to sleep:
 - (i) no more than 20 people in its backcountry hut sleeping area; and
 - (ii) no more than 40 people in total; and
- (f) does not contain any connection, except by radiocommunications, to a network utility operator.

Barbecue

The cooking of food outdoors using solid fuel, charcoal or gas in an appliance designed and used exclusively for that purpose. A brazier, open fire, outdoor burning (including an incinerator) or other combustion device if occasionally used for cooking is not deemed to be a barbecue. A barbecue device used for purposes other than cooking food outdoors is not deemed to be a barbecue for the purposes of this Plan.

Brazier

A portable device constructed of metal or clay, used outdoors to provide heat and light for outdoor entertainment through the combustion of gaseous, liquid or solid fuel. A brazier excludes any drum or incinerator, or other device designed or used for the burning of garden or household waste.

Breach

The first exceedance of an ambient air quality standard above the number of permissible exceedances in any 12 month period.

Chimney

Any structure designed for venting the airborne products of combustion upwards into the outside atmosphere, and stack and flue have a similar meaning.

Cold start

The initiation of combustion in any small scale fuel burning equipment following a period of at least three hours of no combustion or a flue temperature of less than 50 degrees Celsius.

Dry weight

In the context of measurement of moisture content of fuel wood refers to the moisture content reading obtained through use of a moisture meter such as that referred to in Electrical Resistance Method AS/NZS 1080.1:1997 Section 5. The moisture content of wood calculated on a dry weight basis equals the moisture removed from wood by completely drying it. This is expressed as a percentage of the dry weight of the wood. An equivalent method of measurement is obtained by the use of an electrical resistance meter designed for this purpose.

Dust

All solid particulate matter of greater than 20 microns individual particle diameter or with a settling velocity of greater than 3 centimetres per second. Dust includes but is not limited to sand, cement, fertiliser, coal, soil, paint, ash, animal products or wood particles.

Enclosed burner

A small-scale solid fuel burning appliance, where combustion of the solid fuel occurs within a firebox enclosed by a door, and where there is generally a regulated supply of air to the fire. It includes (but is not limited to) free-standing or built-in woodburners, pellet burners, potbelly stoves, and coal ranges, but excludes any open fire.

Fertiliser

Any substance which is held out by its manufacturer, distributor, or vendor to be, or is in fact suitable for, sustaining or increasing the growth, productivity, or quality of plants by its application to those plants or the soil in which they grow or will grow; and

includes a substance imported, manufactured, or being manufactured, with the intention that it be so held out, but it does not include materials discharged or applied as part of a waste treatment or disposal process.

Gore Airshed

That part of the Southland region (Gore SO 355699) specified in Gazette Notice [2005-go5543, "Southland Regional Airshed Notice 2005].

Hand-held application methods

In relation to agrichemical use means using a total agrichemical spray unit carried and operated on foot by the applicator on a site involving less than 800 grams of agrichemical when applied in solid form, or less than 25 litres of agrichemical mixture applied in liquid form, over any 24-hour period. When the total agrichemical spray unit is motorised, the application technique shall result in the spray only being applied directly to the target species.

Hazardous air pollutants

Any substance known or suspected to cause a significant adverse effect on human health or the environment due to its toxicity, persistence in the environment, tendency to bio-accumulate, or any combination of these things.

Invercargill Airshed

That part of the Southland region (Invercargill SO 355700) specified in Gazette Notice [2005-go5543, "Southland Regional Airshed Notice 2005],

Localised air quality

The air quality that is localised to specific areas where emissions from single sources significantly influence maximal air contaminant concentrations.

Landfill

A site where waste is disposed of by burying it, or placing it upon land or other waste.

Multi fuel burner

Any small-scale solid fuel burning appliance that is designed to burn both wood and/or coal and has over fuel and under fuel combustion air supply with separate controls, a grate in the base of the firebox and an ash pan.

National Environmental Standards for Air Quality (NESAQ)

The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 and all amendments and any Regulations in substitution therefore.

Navigable Airspace

Means airspace at or above the minimum flight altitudes prescribed by or under the Civil Aviation Rules, including all legitimate low level operations but not including restricted, danger, and military operations areas activated for use by the New Zealand Defence Force.

New Zealand Gazette

An announcement in the *New Zealand Gazette*, the official newspaper of the Government of New Zealand, produced by the Department of Internal Affairs.

New Zealand Standard (NZS)

A standard published by Standards New Zealand³. Reference to a specific New Zealand Standard also includes any future published revisions of that standard.

Odour

The human perception of one or more chemical compounds in the air we breathe and for the purposes of this Plan includes the contaminants that create an odour.

Open fire

Includes any small-scale fuel burning device or construction installed in or attached to any building that is capable of burning solid fuel, but cannot effectively control the rate of air supply to the combustion zone, but excludes: a) any small scale solid fuel burning appliance, and b) any equipment capable of burning solid fuel with a net heat output of more than 40 kilowatts (kW). Examples of open fires include (but are not limited to) fireplaces, open hearths, visors, 'Jetmaster' fireplaces, and similar devices.

Outdoor open fire

- (a) An appliance or structure outside a building that can burn solid fuel but cannot effectively control the rate of air supply to the combustion zone; and
- (b) To avoid doubt, includes a fireplace to which paragraph (a) applies that has a cover or doors that cannot effectively control the rate of air supply to the combustion zone.

Outdoor burning

The combustion of any material in the open air, other than in purpose-built fuel burning equipment designed to control the combustion process. Outdoor burning includes the use of any fire, or bonfire or burning in drums and backyard rubbish incinerators, but does not include the burning of fuels in hangi, barbecues for food cooking purposes, braziers, fireworks, candles, lamps, outdoor patio gas heaters, smokers or similar small-scale burners or tools.

Particulate matter

Solid and aerosol matter that exists in the atmosphere. For the purposes of this Plan, it includes smoke, deposited particulates, suspended particulates, respirable particulates and visibility-reducing particulates. Particles range in size from 100 microns down to aggregation of molecules. Particulate matter that is less than 10 microns in aerodynamic diameter is referred to as PM₁₀.

Pellet burner

Any small-scale solid fuel burning appliance that burns pellets of compressed wood sawdust. Pellets and air are mechanically delivered to an enclosed combustion chamber at a controlled rate. "Pellet burner" and "pellet fire" have the same meaning.

Place of assembly

Means any building or land used for public and/or private assembly or meeting of people and includes education facilities, libraries, churches, halls, marae, clubrooms, community centres, conference centres, recreational facilities, chartered clubs, premises with a club license, and other similar establishments.

³New Zealand Standards include joint New Zealand Australian Standards which have the prefix AS/NZS.

PM₁₀

Particulate matter that is less than 10 microns in aerodynamic diameter (i.e. less than 0.01mm diameter) when measured in accordance with United States Code of Federal Regulations, Title 40—Protection of Environment, Volume 2, Part 50, Appendix J — Reference method for the determination of particulate matter as PM₁₀ in the atmosphere.

Recorded heritage buildings

Buildings recorded on Rarangi Taonga: the Register of Historic Places, Historic Areas, Wahi Tapu and Wahi Tapu Areas, on the New Zealand Archaeological Association (NZAA) Site Recording Scheme, or listed in any District Plan or Regional Plan.

Residential unit

A single self-contained household unit, used principally for residential activities, whether by one or more persons, including accessory buildings. Where more than one kitchen facility is provided on the site, there shall be deemed to be more than one residential unit.

Sensitive areas

Include:

- (a) dwelling houses;
- (b) educational facilities;
- (c) amenity areas and public places;
- (d) domestic and community water supplies;
- (e) water bodies and associated riparian vegetation;
- (f) non-target plants and/or crops which are sensitive to agrichemicals;
- (g) organically certified properties e.g. Bio-Gro;
- (h) wetlands, indigenous flora and fauna habitat areas and reserves;
- (i) places of assembly.

Small scale fuel burning appliance

Any appliance that burns gas, solid fuel, diesel, oil or other liquids for cooking, space or water heating or other purposes, regardless of the nature of the premises where the appliance is installed where the net heat output from the combustion is not greater than 70 kW for a gaseous or liquefied gaseous fuel, or not greater than 40 kW for any other fuel. It excludes portable unflued heaters fuelled by gas, alcohol or other liquid fuels, and gas hobs or gas ranges used for cooking, and any fuel burning appliance installed on a boat, caravan or motor home. It also excludes stationary internal combustion engines.

Small scale solid fuel boiler

A fuel burning device that:

- (a) is designed to burn coal, wood, biomass fuel products or other approved solid fuels;
- (b) that is designed to provide a source of heat by continuous burning;
- (c) heats building space or water, or both, through the distribution, typically through pipes for a fluid or ducts for air, of a fluid or air heated in the device; and
- (d) has a net heat output from combustion of not greater than 60 kW.

Small scale solid fuel burning appliance

A small scale fuel burning appliance which is capable of burning solid fuel, at a rate of up to 40 kW, or up to a rate of 60 kW for boilers. It includes (but is not limited to) appliances for interior space heating in buildings, such as wood burners, pellet burners,

pot belly and domestic ranges and stoves, water heaters or central heating units, boilers, multi-fuel (coal/wood and waste burning systems), and similar appliances, but excludes open fires and small-scale domestic devices for smoking food.

Smoke

Any product of combustion, complete or incomplete, other than water vapour, which is, or could be, visible in daylight or artificial light.

Solid fuel

Includes wood (not including treated or manufactured wood products containing chemical adhesives), coal and its derivatives, and manufactured fuel pellets,

Solid fuel cooking stove

A solid fuelled cooking appliance containing an oven of not less than 20 litre capacity and a hot plate. A solid fuel cooking stove does not include a pot belly, chip heater or a wood burner.

Thermal efficiency

The ratio of useable heat energy output to energy input.

Used oil

Oil that has been used for a process (typically lubrication, either in internal combustion engines or moving parts to minimise component wear) that results in contaminants building up in the oil. Contaminants may include heavy metal particles, combustion by-products, fuel and used additives. Note: While some “purification” processes may result in the removal of a number of these contaminants, the oil even though described as “processed oil” is still defined to be oil because the removal is often only partial.

ULEB

A ULEB or Ultra Low Emission Burner is a burner that can meet an emission standard of 0.5 grams of particulate per kilogram of fuel burned, with at least 65% efficiency rating.

Unwanted organisms

As defined in the Biosecurity Act 1993.

Urban area

A built-up area of higher population density in which commercial, industrial and residential activities predominate.

Vegetative matter

Any tree branches, roots, leaves, grass cuttings, seed pods, stalks and stubble (stems), crop residue, prunings, wood and similar organic plant material.

Wood burner

A small-scale solid fuel burner that burns wood, but does not include:

- (a) an open fire;
- (b) a multi-fuel burner, a pellet burner, or a coal burner; or
- (c) wood fired cooking stove.

Wood pellets

Individual pellets of between 6 mm and 8 mm in diameter and a maximum length of 38 mm made from wood shavings or sawdust bonded together by the woods natural resins through the process of pelletisation. Wood pellets made using wood, wood shavings or sawdust that has been treated with preservatives or impregnated with chemicals are excluded from this definition, except for negligible amounts of antisapstain where, in the pellets, the concentration of copper does not exceed ≤ 10 mg/kg dry and the concentration of chlorine does not exceed ≤ 0.02 w-% dry.

Chapter 9: Appendices

Appendix A: Emission requirements small scale solid fuel burning appliances

Small-scale solid fuel burning appliances must:

- (a) emit no more than 1.5 grams of total suspended particulate per kilogram of fuel burned, calculated by averaging the total suspended particulate emissions for high, medium and low burn rates, when tested in accordance with AS/NZS4012:2014 and AS/NZS4013:2014 or the functional equivalent for non-batch fed appliances and appliances excluded from AS/NZS4013:2014, or AS/NZS 5078 2007 and AS/NZS 4886 2007 for pellet burners, or be authorised by Environment Canterbury as an ULEB or Ultra Low Emission Burner. Where the nominated test fuel is wood then the test shall be carried out using softwood in accordance with the requirements of AS/NZS 4014.2:2014. Where the test fuel is wood pellets the test shall be carried out using pellets which meet the specifications of AS/NZS 4014.6 2007;
- (b) have a thermal efficiency, for space heating only, as described in AS/NZS 4013:2014, of 65% or greater;
- (c) have an authorisation or approval number assigned by Nelson City Council, Canterbury Regional Council, operating as Environment Canterbury, Environment Southland or the Ministry for the Environment;
- (d) contain the following information on a label permanently attached to the device and placed in a position which is clearly visible after installation of the device:
 - (i) the authorisation or approval number assigned by Nelson City Council, Canterbury Regional Council, operating as Environment Canterbury, or the Ministry for the Environment;
 - (ii) the statement “Performance may vary from test values depending on actual operating conditions”;
 - (iii) the approved fuel for use in the device;
 - (iv) the measured particulate emission rate in grams per kilogram (g/kg);
 - (v) the percentage measure of thermal efficiency (for appliances used for space heating only);
 - (vi) the range of heat output tested (e.g. low, medium and high burn rates), and;
 - (vii) a space to allow the installer to place the date of installation of the device.
- (e) not be modified in any way so as to alter the specifications of the heating device from those tested and stated in a) and b);
- (f) be maintained in good operational order and operated in accordance with the manufacturer’s instructions (so long as those do not mandate operation that would lead to output that does not comply with (a) or (b)), and be operated with the door shut in the case of enclosed appliances; and
- (g) be capable of being operated on a high, medium and low burn rate.

Any appliance that appears on the list of ‘Authorised Solid Fuel Burning Equipment’ maintained by Nelson City Council, Canterbury Regional Council operating as Environment Canterbury, or any such list maintained by the Ministry for the Environment, is deemed to meet the requirements of this Plan, provided the particulate emission rate and the space heating efficiency listed comply with conditions (a) and (b) above.

Appendix B: Stack requirements small-scale solid fuel burning appliances and open fires

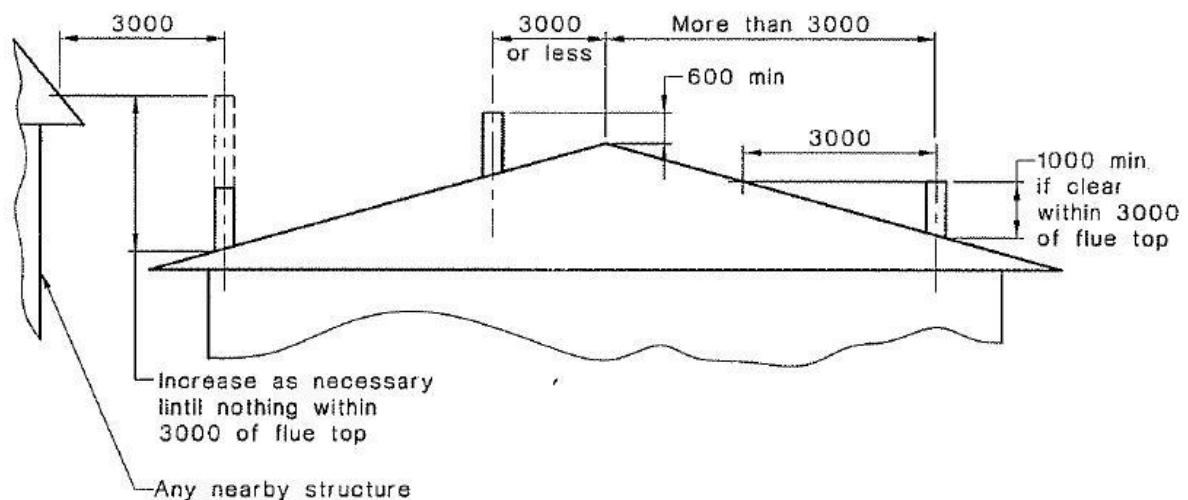
The discharge into air from any device installed after the date of notification of this plan under Chapter 4 must be to the atmosphere via an emission stack which in all cases extends vertically not less than 4.6 metres above the floor protector under the appliance, and:

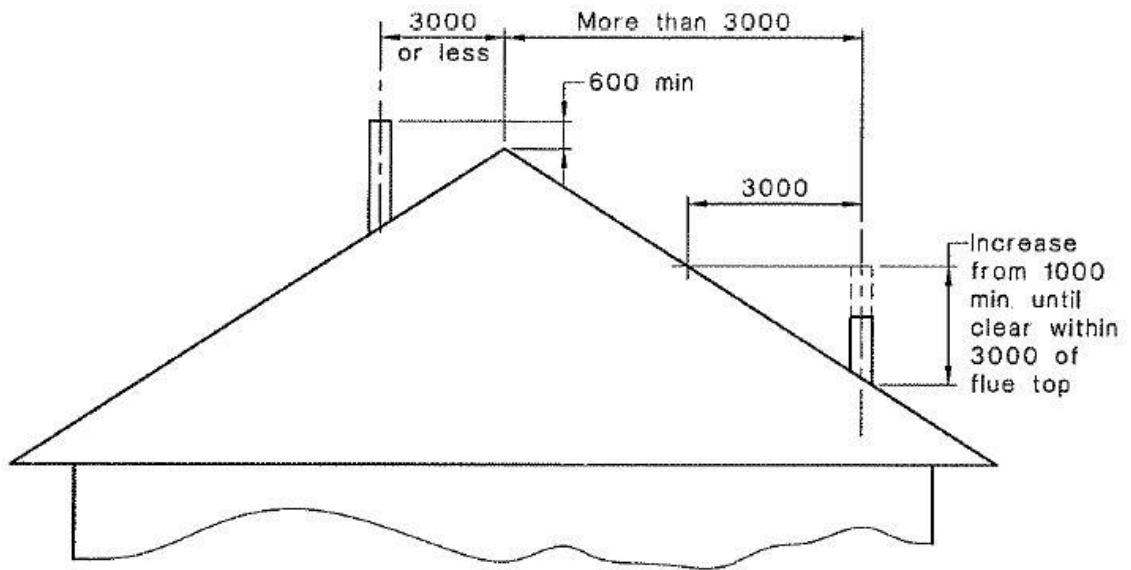
- (a) where the stack is within 3 metres horizontally, or closer, to the highest point of the roof of the building, the stack must protrude at least 600 mm above the high point of the roof, or
- (b) where the stack is further than 3 metres horizontally from the highest point of the roof of the building, the stack must protrude at least 1,000 mm above the point of roof penetration, and
- (c) the stack must be sufficiently high so that no building (including the building into which the appliance is being installed), substantial structure or any land, lies in or above a horizontal plane with a radius of 3 metres drawn around the top of the stack, and
- (d) the discharge must be directed vertically into air (although cowls or weather protectors are permitted).

Explanatory Notes

Discharge from a chimney at a height above the roof of the dwelling minimises down-wash of the contaminant plume in the building wake, thereby preventing high ground level concentrations of contaminants (including high levels of carcinogens such as polycyclic aromatic hydrocarbons) close to the source. It is important that combustion products are discharged vertically into the air without obstruction by rain hats or similar fixtures in or above the stack. This ensures that the dispersion of contaminants is maximised. The flue exit and the end of the flue-pipe casing can be designed in a way that prevents significant ingress of water or other debris, and still be fitted so that it does not obstruct the flue discharge.

Under condition (d), weather protectors (“rain hats”) are permitted. Designs that have least impact on the vertical efflux velocity of emitted gases are encouraged.





DIMENSIONS IN MILLIMETRES

The following standards **AS/NZS 2918:2001** (Domestic solid fuel burning appliances Installation) has been provided by Standards New Zealand under licence 001056.

Appendix C: Stack requirements: small scale fuel burning appliances (gas, oil and other liquid fuels)

The discharge into air from any device installed after the date of notification of this plan must be via an emission stack to the outside atmosphere such that the discharge point at the end of the stack is above the roof of the building, and:

- (a) be at least 500 mm from the nearest part of the roof, and
- (b) in the case of a trafficable roof designed for personal or public use, be at least 2 metres above roof level and 500 mm above any surrounding parapet, and
- (c) in the case of a chimney, be at least 200 mm above the top of the chimney, be at least 1 metre horizontally from a neighbouring structure, or if less than 1 metre from that structure, at least 500 mm above it, and
- (d) be at least 1.5 metres for any opening into a buildings, and
- (e) be at least 200 mm from another stack.

For gas appliances, compliance with the “flue terminals” provisions of NZS 5261:2003 **Gas installations** will be deemed to be compliant with the stack requirements of Rule 4.3.

Stage 2:
**Review of existing Air Plan Rules that are
still in operation**

Regional Air Quality Plan

**Prepared by
the Southland Regional Council**

March 1999

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1 Introduction

1.1 Regional Background

Managing air quality is a complex process which involves several inter-related components. Each region needs to customise air quality management to meet its specific needs and the expectations of its people.

The Southland region covers an area of approximately 2,030,000 hectares and has a population of around 100,000 people. Half of the region's population lives in the Invercargill area which is also the home to the majority of the industrial processes which have discharges of contaminants into air in the region. The main issues of concern with regard to air quality in the region are:

1. the effect of discharges of contaminants into air on the air's quality, the health of people and communities, and the environment;
2. the release of greenhouse gases or ozone depleting substances into air;
3. the effect of discharges of contaminants into air which are or can be noxious, dangerous, offensive, or objectionable (such as odour, smoke or dust) on the environment or amenity values.

In Southland the Regional Council is responsible for the control of discharges of contaminants to the air environment and for managing any environmental effects of these discharges of contaminants into air. The three territorial authorities have a role to play in controlling localised nuisance discharges from dust, smoke and odour into air under the nuisance section of the Health Act 1956. In total, under the former Clean Air Act 1972, there were 55 processes licensed in the Southland Region. When the Resource Management Act 1991 came into effect the Clean Air licenses became air discharge permits under the transitional provisions of the Act. A list of the types of industrial processes that discharge to air located in the Southland Region during the formation of this Plan is given in Appendix A.

Currently in Southland the information that is held with regard to ambient air quality¹ pertains to smoke monitoring which is carried out in Invercargill City. This monitoring has been carried out during the winter period, 1 June to 31 August, intermittently for 15 years. Information also exists on winter sulphur dioxide and smoke discharges in Bluff during 1986; on carbon monoxide, sulphur dioxide, nitrogen oxides, and smoke levels in Invercargill City during the winters of 1972 and 1974; and sulphur dioxide levels in Invercargill City during the winters of 1983 and 1992.

While this information is not comprehensive, it does give a historical background in specific areas of the Region and the results of this monitoring are given below. The Regional Council also holds information on the monitoring results of specific consented discharges of contaminants into air.

Invercargill City

(a) Winter Smoke

This has been measured for most years from 1972 to the present time. The months involved have usually been June, July and August. Smoke levels for the 3 months have typically averaged 20 micrograms per cubic metre or less. The World Health Organisation guideline for 3 months is 40 to 60 micrograms per cubic metre. Some typical results are shown in Appendix I.

(b) Winter Sulphur Dioxide

This was measured in 1972, 1974, 1983 and 1992. Levels on the last 2 occasions were low, typically less than 10 micrograms per cubic metre compared with the World Health Organisation guideline of 40 to 60 micrograms per cubic metre. As a result of these low levels, it has not been considered necessary to measure SO₂ every year.

(c) Carbon Monoxide

This was measured in Dee Street (near Spey Street) in May 1972 and again in July 1974. However, site selection criteria and standard testing methods have changed since these tests were carried out, so new tests will need to be conducted for this contaminant.

(d) Nitrogen Dioxide

This was measured in Dee Street (near Spey Street) in July 1974. The results were typically less than 100 micrograms per cubic metre. The guideline for nitrogen dioxide is 100 micrograms per cubic metre, 24 hour average.

(e) Total Suspended Particulate

This was measured in the winter of 1972 using a high volume sampler. Averages for the 3 months were:

June	- 38 micrograms per cubic metre
July	- 62 micrograms per cubic metre
August	- 54 micrograms per cubic metre

and individual daily results ranged up to 180 micrograms per cubic metre. The guideline for total suspended particulate is 60 micrograms per cubic meter as a 7 day average.

Bluff

(a) Winter Smoke

This was measured for the period 1 June 1985 to 31 August 1985. The 3 month average was 6 micrograms per cubic metre compared with the World Health Organisation guideline of 40 to 60 micrograms per cubic metre.

(b) Winter Sulphur Dioxide

This was measured during the same period as the smoke. The 3 month average was 8 micrograms per cubic metre compared with the World Health Organisation guideline of 40 to 60 micrograms per cubic metre.

Winton

Winter smoke was measured in June and July 1974 at the former Borough Council office. The average for the 44 days during which monitoring occurred was 55 micrograms per cubic metre compared with the World Health Organisation guideline of 40 to 60 micrograms per cubic metre.

Wyndham

Winter smoke was measured in August 1974 at Balaclava Street. Results for the 16 days during which monitoring occurred were low and cannot be considered indicative of winter smoke levels in Wyndham.

1.2 Issues

During the public consultation phase of the Southland Regional Policy Statement several issues with regard to air quality were raised. These issues fall into three general categories:

1. effect of discharges of contaminants into air , including the production of greenhouse gases and ozone depleting substances;
2. lack of information on air quality in the Region;
3. Maori cultural and traditional values.

Most issues highlighted referred to the effect of discharges of contaminants into air the atmosphere. The main issues were:

1. discharges of contaminants into air, such as dust, smoke and odours, adversely affect some amenities;
2. discharges of contaminants into air can have an adverse effect on the health of people and communities;
3. discharges of greenhouse gases and ozone depleting substances into air can adversely affect the global air environment; and
4. the standards and/or consent conditions which various discharges of contaminants into air should be required to meet.

Some issues regarding discharges of contaminants into air are complaint driven, in that people are aware of a discharge either due to visual or odour reasons and they complain about the

discharge. Some of these complaints are dealt with by territorial authorities under the nuisance section of the Health Act - for example smoke from domestic backyard fires and chimneys; others are handled mainly by the Southland Regional Council - for example odour and smoke from open burning at refuse disposal facilities. Other issues may not be the cause of public complaint, but may potentially have an adverse impact on the air environment. Examples of these include the discharge of greenhouse gases into air and discharges of contaminants into air from motor vehicles.

The main issue highlighted in terms of the lack of information on air quality was that there does not exist a sufficient scientific baseline of data on air quality in the Region against which changes in air quality can be compared. With regard to Maori cultural and traditional values, the issue highlighted was that current discharges of contaminants into air are at times insensitive to, and conflict with, these values.

Many naturally occurring and anthropogenic substances are suspected of playing a part in the destruction of stratospheric ozone. The anthropogenic substances include chlorofluorocarbons, halons (or bromofluorocarbons), carbon tetrachloride, methyl chloroform and methyl bromide. Chlorine is also dangerous because it can remain in the stratosphere for approximately 100 years, destroying ozone the entire time. Thirty-one grams of chlorine can destroy 1 tonne of ozone, and halons are even more destructive.

Under the Copenhagen adjustments to the Montreal Protocol, now incorporated into the Ozone Layer Protection Act 1996, New Zealand had to cease all imports of CFCs, carbon tetrachloride and methyl chloroform by 1 January 1996. Halon importation has been banned since 3 October 1990.

The principal greenhouse gases are water vapour (H₂O) which comprises up to 40,000 parts per million of the atmosphere; carbon dioxide (CO₂) 350 parts per million; methane (CH₄) 1.7 parts per million; nitrous oxide (N₂O) 0.3 parts per million; ozone (O₃) 0.03 parts per million; and a few others including chlorofluorocarbons and perfluorocarbons.

The global warming potential of a greenhouse gas does not depend solely upon the amount of the gas in the atmosphere. Different gases have different heat absorption characteristics and different lifespans. It is the combination of these two properties which determines the global warming potential of any gas.

In ratifying the UN Framework Convention on Climate Change, New Zealand accepted a commitment to enhance greenhouse gas sinks as well as, reduce greenhouse gas emissions and to promote other greenhouse gas reductions.

1.2.1 Iwi Issues

Iwi believe in the holistic concept of the ecosystem, and therefore view any degradation in air quality as a degradation to the ecosystem as an entity. To iwi the quality of the air they breathe is as important as the quality of the water they drink or the food they eat. Historically, the main discharges of contaminants into air by Maori would have been smoke from fires, either small scale, such as cooking, or large scale, such as bush fires to assist in food gathering. That the air breathed was of a high quality was taken for granted, and it is not until recent times that the adverse impact of some activities on air quality has been identified, monitored, and managed.

Population growth and advances in modern technology have led to increased discharges to air of potentially harmful substances such as carbon monoxide, sulphur dioxide hydrocarbons, chlorofluorocarbons and halons to name a few. However, these same advances now enable discharges of contaminants into air to be identified, monitored, and in many cases reduced or changed in order to be less harmful to the environment. In the past the discharge of contaminants into air occurred with little, or no consultation, with iwi, or the public in general. The Southland Regional Policy Statement notes the importance of resources, such as air, to iwi, and the management of this resource should incorporate the environmental and cultural sensitivities of iwi. Section 8 of the Resource Management Act 1991 specifies that the principles of the Treaty of Waitangi are to be taken into account when managing the use, development, and protection of natural and physical resources, and therefore iwi are more involved than ever before with issues such as air quality management.

Consultation with the takata whenua of Southland has highlighted three main issues of concern to takata whenua with regard to air quality. These are:

1. the need to maintain a high quality of ambient air in the Southland region; and
2. the need to ensure that discharges of contaminants into air such as dust, smoke and odour do not affect the amenity values of areas which are of cultural or historical significance to iwi; and
3. the need to protect the health of the ecosystem.

These concerns are addressed throughout this Plan in order to recognise and provide for the Maori cultural relationship to air quality management.

1.2.2 General Issues

In addition to iwi concerns, this Plan also covers the following issues:

- (1) the effects of discharges of contaminants into air, including the discharge into air of greenhouse gases or ozone depleting substances on the air's quality, the health of people and communities, and the environment;**
- (2) the lack of information on the air quality in the Southland region.**

This Plan also identifies some functions, powers or duties regarding discharge of contaminants into air issues which may be transferred to Southland's territorial local authorities as set out in section 33 of the Resource Management Act 1991, such as control of;

- discharges of dust into air from gravel roads;
- discharges of contaminants into air from yard fires;
- discharges of contaminants into air from fires on beaches;
- discharges of dust into air from stockpiles;
- nuisance discharges of contaminants into air from domestic home fires.

1.3 Purpose of this Plan

The purpose of this Plan is to control the discharge of contaminants into air as set out in Section 68 of the Resource Management Act 1991 and the topics which it is to cover are set out in the Southland Regional Policy Statement and are reproduced below:

- 1. to protect the region's air quality, and to enhance air quality in areas where it has been degraded;**
- 2. to protect the life-supporting capacity of the global atmosphere;**
- 3. to provide for the co-ordinated and integrated management of air quality within the region;**
- 4. to recognise and provide for Maori culture and traditions in relation to air.**

However, this Plan is not the only mechanism for the management of air quality in the region, as there is other legislation which also places controls on discharges of contaminants into air. For information purposes, these are outlined in Legislation (Other Relevant Legislation).

Southland Regional Policy Statement

Section 5.12 of the Southland Regional Policy Statement sets out the Resource Management Issues, Objectives, Policies, Methods of Implementation, Outcomes, Roles and Monitoring with respect to air quality.

The four Objectives for air quality management stated in Section 5.12.3 of the Southland Regional Policy Statement have already been listed in Section 1.3 of this Plan.

Policy 12.1 of Section 5.12.4 of the Southland Regional Policy Statement states that a Proposed Regional Air Quality Plan will be prepared which specifies:

- (a) minor discharges to air, which meet specified standards or criteria, will be permitted without the need for resource consents;**
- (b) discharges will be classified according to their effects;**
- (c) specific activities will be given time, where appropriate, to meet air quality standards;**
- (d) exemptions to air quality standards will be permitted in some circumstances, where previous resource consents or previous Regional Plans have allowed the installation of machinery that no longer complies with adopted standards;**
- (e) an assessment of the effects of activities on air quality matters be undertaken in preparation and consideration of resource management documents and resource consents.**

Within that Plan the following priorities will be adopted:

- Priority 1: adoption of action to protect the health of people and communities and safety
- Priority 2: protection of local air quality.
- Priority 3: support of Government policies which seek to reduce “greenhouse gases” and eliminate ozone depleting substances.

Method 12.8 is the Method of Implementation given for addressing the policy and objectives outlined above. This deals with the preparation, implementation and administration of a Regional Air Quality Plan as a formal Regional Plan. Topics which this Plan will set out have been identified as following:

- (a) minimum standards for ambient air quality;**
- (b) source emission limits and performance criteria for specified activities;**
- (c) action to be taken in the event of discharges to air which could affect people, and/or natural or physical resources;**
- (d) enforcement action which may be taken in cases where illegal discharges take place, or where conditions relating to discharges are not being met;**
- (e) appropriate economic incentives to encourage the minimising of adverse air quality effects;**
- (f) the collection and dissemination of information on, and adoption of, technology advances in air quality management;**
- (g) cross-boundary effects;**
- (h) cross-media effects.**

A Regional or District Plan must not be inconsistent with the Southland Regional Policy Statement.

1.4 Plan Application

This Plan provides and promotes the framework for the sustainable management of air quality in the Southland Region. While some of the processes described in this Plan may have impacts on (for example) water or land environments, this Plan only covers discharges of contaminants into air. It applies to all existing processes which currently have resource consents for discharges to air under the Resource Management Act 1991 (RMA), or which will require a resource consent for discharges of contaminants into air under the provisions set out in this Plan, or which will be prohibited or permitted under the provisions set out in this Plan and any future processes as identified by this Plan which have discharges of contaminants into air.

This Plan applies to the incineration² of either solid waste or offal, in conjunction with the Regional Solid Waste Management Plan. For activities within the Coastal Marine Area, reference should be paid to the Regional Coastal Plan. . Section 15(1) of the Resource Management Act 1991 requires that discharges of contaminants into air from any industrial or trade premises are restricted unless the discharge is expressly allowed by a rule in a regional plan and any relevant proposed regional plan, a resource consent, or regulations. Section 15(2) of the Resource Management Act 1991 states that no person may discharge any contaminant into the air from any place or any other source, whether moveable or not, in a manner that contravenes a rule in a regional plan or proposed regional plan unless the discharge is expressly allowed by a resource consent or section 20. This Plan has also been developed in accordance with Sections 30 and 67 of the RMA which govern the functions of regional councils and the contents of regional plans.

For assistance to applicants, information regarding the preparation of resource consent applications is available from the Regional Council.

² Incineration – Process which partially or completely reduces materials to ash and combustion gases through combustion, usually in a purpose built appliance.

2 Legislation

2.1 Statutory Framework

As an RMA Regional Plan, this Plan can only deal with functions under the RMA. However, air quality management in New Zealand is governed by several pieces of legislation. While this Plan is not implementing these other pieces of legislation, for information purposes, the most relevant statutes related to air quality management, and their respective administration authorities, are given below:

2.1.1 Resource Management Act 1991

Under the Resource Management Act 1991 every regional council is required to prepare a Regional Policy Statement which gives an overview of the main resource management issues in the region and how they are to be dealt with. Section 15(1) of the RMA prohibits the discharge of contaminants into air from any industrial or trade premises unless the discharge of contaminants into air is expressly allowed by a rule in a regional plan or in any relevant proposed regional plan, a resource consent, or regulations; while section 15(2) states that discharges of contaminants into air from any place or any other source whether moveable or not may also be restricted by rules in a regional plan or proposed regional plan. In the Southland Regional Policy Statement Section 6.11 deals with air quality and Method 11.8 outlines the preparation, implementation and administration of a Regional Air Quality Plan as a formal Regional Plan.

The main function identified in the RMA of particular concern to regional councils with regard to air quality management is the discharge of contaminants³ into the environment (sections 15 & 30). There is also provision in the RMA for Regional Plans to contain rules to govern activities and require consents for specified activities. This Regional Air Quality Plan has been prepared under this Act.

2.1.2 Other Relevant Legislation

As at March 1997, other legislation which relates to discharges of contaminants into air and air quality is listed below for information purposes.

Health Act 1956

This Act gives the Territorial Local Authorities or the Medical Officer of Health on behalf of the local authority the power to abate any statutory nuisance and in Section 29 defines a statutory nuisance. Section 23 of the Act allows every territorial local authority to make bylaws for the protection of the health of people and communities. This Act is administered by the Ministry of Health and implemented by territorial local authorities and the public health provider.

³ Contaminant – includes any substance (including gases, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy or heat –

- a) When discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or
- b) When discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.

Ozone Layer Protection Act 1990

Established to phase out by the year 2000 all but essential uses of controlled ozone depleting substances, and for the restriction of other ozone depleting substances. Administration and implementation of this Act is carried out by the Ministry for the Environment.

Local Government Act 1974

Gives territorial authorities the power to make such bylaws as they see fit to conserve the health of people and communities, wellbeing, safety and convenience (among other things). Administration of this Act is carried out by the Department of Internal Affairs. Implementation of this Act is carried out by territorial and regional local authorities.

Building Act 1991

The Building Code which is enforced through the Building Act 1991, has as one of its objectives to “safeguard people from illness or loss of amenity due to lack of fresh air”. It sets out the functional requirement and performance standards which must be met by buildings for the provision of ventilation and the collection and/or removal of contaminated air. It also states that any contaminated air must be disposed of in a way that avoids creating a nuisance or hazard to people and other property. Administration of this Act is carried out by the Department of Internal Affairs. Implementation of this Act is carried out by territorial local authorities.

Hazardous Substances and New Organisms Act 1996

The Hazardous Substances and New Organisms Act 1996 replaces and repeals the Explosives Act 1957, the Dangerous Goods Act 1974, the Toxic Substances Act 1979, the Pesticides Act 1979, the provisions of the Animals Act 1967 and the Plants Act 1970 remaining after the passage of the Biosecurity Act 1993, and parts of the Animal Remedies Act 1967. The Hazardous Substances and New Organisms Act 1996 provides a legislative framework for the management of hazardous substances and new organisms and related decision making. The actual controls placed on hazardous substances throughout their lifecycle will be provided in regulations made under the Act. This Act is administered by the Environmental Risk Management Authority (ERMA) which is a statutory body established under Part III of the Act.

Health and Safety and Employment Act

All employers must comply with this Act in terms of the working environment provided for employees. This may include provisions for clean air. Administration and enforcement of this Act is carried out by the Department of Labour.

Forest and Rural Fires Protection Act

Permits subject to conditions which may require giving notice to neighbours of a controlled burn. Administration and enforcement of this Act is carried out by the Rural Division of the New Zealand Fire Service, territorial local authorities, Department of Conservation, Ministry of Defence, and some forestry companies.

Historic Places Act 1993

This Act has a specific relationship with the Resource Management Act 1991 and in particular requires regional councils to have regard to any relevant entry in the Historic Places Register when preparing or changing a regional policy statement or regional plan (Sections 61(2)(a)(iia) and 66(2)(c)(iia)) and territorial authorities to also have regard to any relevant entry when preparing or changing a district plan (Section 74(2)(b)(iia)). Any consent authority receiving an application for a resource consent must notify the Historic Places Trust if the application affects any place or area on the Register (Section 93(1)(c)). Administration of this Act is carried out by the Department of Conservation. Implementation of this Act is carried out by the Historic Places Trust.

2.2 Responsibilities

For information purposes, the roles which territorial authorities, and the Public Health Service, have under other legislation in the area of air quality management are given below, together with the roles which individuals and industry can play with regard to air quality management.

Some organisations have a statutory function, either under the Resource Management Act 1991 or other legislation, with regard to air quality management. Other organisations, and private individuals, also have a role to play in the management of air quality. The following is an outline of the statutory functions under the Resource Management Act 1991 of Central Government, the Southland Regional Council and Territorial Authorities, as well as the statutory functions of Territorial Authorities and the Public Health Service under the legislation in the specific area of air quality management. These responsibilities are included for information purposes only. In addition, the role that all individuals and industries can play in air quality management is also outlined. For further general roles of these organisations under the Resource Management Act 1991, refer to the Southland Regional Policy Statement, Part 3.

2.2.1 Central Government

The Ministry for the Environment is the lead agency for air quality policy at Central Government level. The Ministry provides information on national air quality issues and monitors compliance with national policies and any accords to which New Zealand is a signatory. It is expected that the Ministry will take a proactive role in preparing environmental standards and guidelines, promoting clean air practices, and public education.

2.2.2 Southland Regional Council

The Southland Regional Council, under the Resource Management Act 1991, has a statutory function to develop a Regional Policy Statement in consultation with other groups and individuals. This Statement sets out the resource management issues and goals for the Southland region and the Regional Council may, in accordance with the Policy Statement, develop any plans necessary to ensure that these issues are addressed and goals achieved. This Plan has been developed to address those issues from the Southland Regional Policy Statement which pertain to air quality management.

The Southland Regional Council will prepare a protocol with the Southland Territorial Authorities to facilitate the processing of any joint resource consents that may be required as a consequence of the provisions of this Regional Plan and the District Plans prepared by those Authorities. The Regional Council may, in accordance with the Resource Management Act 1991, delegate some of its powers to other local authorities. In recognition of the important contribution territorial authorities have with regard to air quality management, this Plan incorporates transfers of powers from the Regional Council to Territorial Authorities as a method of achieving integrated management of air quality.

2.2.3 Southland Territorial Authorities

Southland's three territorial authorities have a role, within their districts, to provide for the health and wellbeing of their population; promote the sustainable management of their resources; ensure that any public health nuisance effects relating to the discharge of contaminants into air are avoided, remedied or mitigated; and enforce various applicable legislation, such as the Health Act 1956 and the Dangerous Goods Act 1974.

2.2.4 Ministry of Health

Under the Health Act 1956, the Ministry of Health designated officers have a role to provide public health regulatory services. Designated officers who are employed by the public health service provider are directed by the Director General of Health to discharge the Ministry of Health's regulatory services. These include the monitoring of air quality and its impact on the health of people and communities.

2.2.5 Individuals, Industrial or Trade Premises and Production Land

All individuals play an important role with regard to air quality through their personal choices in both product purchases and in undertaking activities such as home heating installation and operation, and the burning of organic matter or domestic waste. Education is necessary to enable private individuals to make informed choices and assist them in avoiding or reducing any adverse environmental impacts associated with their actions. Industry also plays an important role in air quality management, particularly through the management of any point source discharges of contaminants into air. Industry must responsibly manage their discharges in order to meet economic and environmental goals.

3 Framework

3.1 Introduction

The issues from the Southland Regional Policy Statement in Section 1.3 above can be addressed in a variety of ways, including education, advocacy, and rules, keeping in mind the objectives for air quality in the Southland region as given in the Southland Regional Policy Statement.

In this Plan, the management of discharges of contaminants into air has been split into the following categories:

- Ambient air quality;
- Discharges of contaminants into air from industrial or trade premises⁴;
- Odour;
- Motor vehicle emissions;

This Plan also sets the ambient air quality guidelines and the information required to be collected in order to deal with the issues raised. Consultation with iwi has led to their issues being incorporated throughout the Plan, rather than separated into a specific section. This approach is felt to be more consistent with the holistic approach iwi take to resource management issues such as air quality.

In addressing the issues recognised in the Southland Regional Policy Statement regarding air quality and management, this Plan has adopted a framework of using the above categories to identify specific issues and the objectives to be achieved with the policies, methods, and where appropriate, rules which pertain to the issues and achieve the objectives.

⁴ Industrial or Trade Premises –

- (a) Any premises used for any industrial or trade purposes; or
- (b) Any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste management purposes, or used for composting organic materials; or
- (c) Any other premises from which a contaminant is discharged in connection with any industrial or trade process

–
and includes any factory farm; but does not include any production land.

4 Ambient Air Quality

4.1 Introduction

Ambient air is a general term for the air which surrounds us. The quality of the ambient air is a reflection of the cumulative effects of discharges of contaminants into air from anthropogenic⁶ activities and from natural activities (such as volcanoes, fires or pollens) on the air environment as a whole. The RMA provides for the promotion of sustainable management of natural and physical resources, based on the management of effects⁷ on the environment (including ecosystems and their constituent parts including people and communities).

The Ministry for the Environment has produced a document “Ambient Air Quality Guidelines” (July 1994) which sets out the benefits of clean air as being:

- avoiding costs in the health, recreation, built environment, commerce, and natural environment areas;
- aesthetic value;
- tourism (through the perception of this country as a clean environment);

That document also sets out the known levels of air pollutants that will provide for the sustainable management of resources to enable the protection of the health of the general population. It is not feasible to measure all of the contaminants in the atmosphere. Therefore measurement of ambient air quality is normally restricted to indicator contaminants⁸. The Council will have regard to elements of the Ministry’s Guidelines for ambient air quality in the Plan. These guidelines will be used to promote and maintain good quality ambient air for the region through the methods described in Section 4.4.

For the Southland region, the resource management issues with regard to ambient air quality are:

1. **lack of information about ambient air quality in Southland;**
2. **poor ambient air quality can adversely affect the health of people and communities and environmental health.**

Anthropogenic – Made by people.

- Any potential effect of low probability which has a high potential impact.
- It is practicable and feasible to measure.

4.2 Objective

In addition to the objectives for air quality management which are stated in the Southland Regional Policy Statement and given in Section 1.4 above, the objective which relates to the management of ambient air quality is:

Objective 4.2.1 Ambient Air Quality

To maintain good ambient air quality for Southland.

Explanation

This objective is in line with the objectives of the Southland Regional Policy Statement, and will assist in protecting the health of the environment (including the health of people and communities) health) from the adverse effects of poor quality ambient air.

4.3 Policies

Policy 4.3.1 Ambient Air Quality Guidelines

Have regard to ambient air quality guidelines (Ministry for the Environment 1994).

Explanation

The Council will have regard to elements of the Ministry's Guidelines for ambient air quality in this Plan. These guidelines will be used to promote or maintain good quality ambient air for the Region through the Methods described in Section 4.4. While it is acknowledged that industrial development may lead to degradation of ambient air quality in some areas of the Region, the provisions of the Resource Management Act 1991 require consideration of means to avoid, remedy or mitigate any adverse effects of discharges of contaminants into air. It is desirable to ensure that any degradation is minimised wherever practical. The Southland Regional Council will also use the guideline levels when monitoring the ambient air quality in the region.

Indicator	Guideline
Particulates (PM ₁₀) ⁹	120 micrograms/m ³ on a 24 hr basis and 40 micrograms/m ³ on a quarterly basis.
Sulphur dioxide	500 micrograms/m ³ on a 10 min basis; and 350 micrograms/m ³ on a 1 hr basis; and 125 micrograms/m ³ on a 24 hr basis; and 50 micrograms/m ³ on an annual basis.
Carbon monoxide	30 milligrams/m ³ on a 1 hr basis; and 10 milligrams/m ³ on an 8 hr basis.
Nitrogen dioxide	300 micrograms/m ³ on a 1 hr basis; and 100 micrograms/m ³ on a 24 hr basis.
Lead	0.5-1.0 micrograms/m ³ on a three monthly basis.
Gaseous fluoride	3.0 micrograms/m ³ on a 12 hr basis; and 2.0 micrograms/m ³ on a 24 hr basis; and 1.0 micrograms/m ³ on a 7 day basis; and 5 micrograms/m ³ on a 30 day basis. ¹⁰
Hydrogen sulphide	7 micrograms/m ³ on a 30 min basis.
Ozone	150 micrograms/m ³ on a 1 hr basis; and 100 micrograms/m ³ on an 8 hr basis.

These guidelines have been adapted (with respect of fluoride levels) from the Ministry for the Environment's "Ambient Air Quality Guidelines" July 1994.

Policy 4.3.2 Measurement

Measure ambient air quality.

Explanation

Knowledge about the ambient air quality in the Region is necessary in order to determine what areas, if any, are experiencing degradation; and what

fluoride levels and the advice of the Southland Regional Council should be sought prior to the selection of a site for the establishment of these crops.

measures, if any, are required to protect or upgrade ambient air quality. The Southland Regional Council will ensure the necessary ambient air quality sampling is undertaken and maintain a database as part of its state of the environment monitoring under the RMA. It will also collate meteorological data to assist in the interpretation of the results of these ambient air quality measurements

Policy 4.3.3 Protection of Significant Areas

Protect ambient air quality in National Parks as established under the National Parks Act 1980, lands on Stewart Island that are reserves under the Reserves Act 1977 and stewardship lands pursuant to the Conservation Act 1987, Takitimu and Longwoods stewardship areas, Waituna Wetlands Scientific Reserve and parts Dean and Rowallan Forest Conservation Areas (refer Appendix G).

Explanation

Air is a key natural resource of the Southland Region and its protection is necessary to ensure the retention of its life supporting capacity. Some areas of the Region, as listed in Appendix G, are also highly valued for their pristine ambient air quality or for features which could be adversely affected by some discharges of contaminants into air. In order to protect these areas it is necessary to protect the ambient air quality from deterioration. This protection may not require preservation of the existing air quality, but provides for its sustainable use and management so that its life-supporting capacity is not compromised and amenity values are retained.

Policy 4.3.4 Enhancement

Promote the enhancement of ambient air quality in areas where it has been degraded.

Explanation

Where ambient air quality has been degraded, then the Council will promote measures to enhance the air quality of that area.

Policy 4.3.5 Protection

Protect ambient air quality throughout the Southland region.

Explanation

Air is a key natural resource of the Southland region and its protection is necessary to ensure the retention of its life-supporting capacity. It is necessary to protect the ambient air quality from deterioration. This protection may not require preservation of the existing air quality but provides for its sustainable use and management so that its life-supporting capacity is not compromised and amenity values are retained.

4.4 Methods

Method 4.4.1 Monitoring Programme

The Southland Regional Council will establish a monitoring programme to measure current and future ambient air quality.

Explanation

The monitoring programme to be developed will set out the timeframe and methodology for any ambient air quality measurements and the procedures for interpreting the results and review. The following ambient air indicators will be used by the Southland Regional Council when measuring ambient air quality:

Particulates (PM ₁₀)	Sulphur dioxide	Carbon monoxide
Nitrogen dioxide	Lead	Fluoride
Hydrogen sulphide	Ozone	

These indicators have been chosen because they were selected by the Ministry for the Environment in its “Ambient Air Quality Guidelines” July 1994 as being of importance due to their presence in the ambient air and ability to be widely dispersed as a result of both naturally occurring processes and human activity. They are also known to place the health of people and communities and environmental health at risk when their concentration exceeds certain levels.

Method 4.4.2 Use of Guidelines

Ambient air quality measurements in the Southland region will be compared with available guidelines in order to give an indication of the ambient air quality in the region.

Explanation

Guidelines are used to compare against data collected during monitoring to assess whether or not any action is necessary to improve the ambient air quality. The Southland Regional Council will have regard to guidelines in assessing ambient air quality.

Method 4.4.3 Database

The Southland Regional Council will set up and maintain a comprehensive air quality database.

Explanation

Measuring ambient air quality will not in itself address all ambient air quality concerns. It is also necessary to collect and maintain information regarding discharges of contaminants into air, the results of measurements and an emissions inventory in order to be able to assess ambient air quality. It will also collate meteorological data to assist in the interpretation of the results of any ambient air quality measurements taken.

Method 4.4.4 Education

Production, distribution and evaluation of educational materials, particularly targeted to the users of solid fuel domestic heaters and open fires.

Explanation

Education is an important tool to change public perception and attitude where desirable by explaining why certain activities are regulated or restricted, and giving possible alternatives which may be more environmentally sensitive. The targeting of users of solid fuel domestic heaters and open fires may assist in reducing the smoke levels of urban areas. Educational materials may take the form of (for example) guidelines, newsletters, or the provision of information about clean burning solid fuel burners and fuels, and education on home insulation which can reduce the heating requirements of a dwelling.

Method 4.4.5 Advocacy

Where monitoring has shown that ambient air quality degradation exceeds guideline levels appropriate solutions will be advocated.

Explanation

Monitoring may show for example that, traffic densities in certain areas, or at certain times, are degrading the ambient air quality of an area. In these instances the relevant authority(ies) (for example Invercargill City, Southland or Gore District Councils, or Transit) will be approached and requested to put in place traffic engineering solutions (for example altering traffic light delays or redirecting traffic) until the ambient air quality is restored. Ambient air quality monitoring will also provide knowledge about the region. The ambient air in areas which are shown to have poor dispersal characteristics may require some form of protection from, for example discharges of contaminants into air.

Method 4.4.6 Consent Monitoring

Discharges of contaminants into air from consented activities will be monitored and, where relevant, the monitoring information compared to ambient air quality monitoring data.

Explanation

One way to avoid significant adverse effects on ambient air quality from activities with resource consents for the discharge of contaminants into air is through the monitoring of discharges. Monitoring information, collected by qualitative or quantitative assessments, may then be used to review the consent conditions, as specified on the resource consent, in order to remedy or mitigate the adverse effect.

Method 4.4.7 Information

The Regional Council will make information regarding the effects of discharges of contaminants into air on horticultural species available to interested persons/organisations upon request.

Explanation

The Regional Council holds information regarding the effects of certain discharges of contaminants into air. For example, some horticultural crops, in particular vineyards, stone fruit and gladioli are more sensitive to fluoride levels and the advice of the Regional Council should be sought prior to the selection of a site for the establishment of these crops.

4.5 Principal Reasons

Since ambient air is the air which surrounds us, if its quality becomes degraded there can be a direct adverse effect upon people, plants, animals and ecosystems as a whole. Therefore it is essential that a good ambient air quality is maintained for the Southland region. The ambient air quality guidelines developed by the Ministry for the Environment have been promoted as a baseline for regions developing air quality objectives regarding discharges of contaminants into ambient air, and it is appropriate for the Southland Regional Council to adapt and use them in its region. However, they are not to be regarded as a level to which the ambient air quality should be allowed to deteriorate.

In order to know whether or not ambient air quality is becoming degraded, it is important that measurements be carried out. These measurements must not only include the state of the ambient air, but also meteorological conditions, as these conditions can play a very important role in ambient air quality. Also, where these measurements exhibit a degradation of ambient air quality, then it may be necessary for steps to be taken to enhance that air quality. The ambient air quality of some specific areas of the Region requires protection due to either the amenity; scientific or ecological value placed upon the area, and for certainty, these areas must be set out in this Plan.

Education is seen as an important tool in promoting the importance of good ambient air quality, and ways of protecting it. Monitoring programmes, the maintenance of a database, and comparison of measurements with established guidelines will assist the Council in establishing the information base necessary in order to ensure that the ambient air quality within the region is of the high standard expected by its population. These programmes and measurements will also highlight when ambient air quality is becoming degraded, in order for the Council to take appropriate actions, whether (for example) through advocacy to other agencies, or through the review of consent conditions.

4.6 Outcomes

The main outcomes expected through the adoption of the above policies and methods are:

1. **increased knowledge about Southland's ambient air quality, in particular, identification of any areas where ambient air quality may be degrading; and**
2. **good ambient air quality which provides the community with all of the benefits of clean air.**

5 Discharges of Contaminants into Air from Industrial or Trade Premises

5.1 Introduction

Discharges of contaminants into air from industrial or trade premises have the potential to cause adverse environmental impacts, whether due to their nature or amount (or both). In some instances these impacts can be severe, while others may not have the same severity, but are nevertheless cause for concern. As at 1 February 1995 in the Southland region there were 55 processes which had resource consents under the RMA (see Appendix A). Impacts can be significant in the vicinity of individual discharges of contaminants into air and groups of discharges of contaminants into air can have significant cumulative effects.

The resource management issues in the Southland region relating to the discharges of contaminants into air from industrial or trade premises are:

- 1. some discharges of contaminants into air, such as odour, dust and smoke, can adversely impact on the amenity values of a location or area;**
- 2. discharges of contaminants into air from industrial or trade premises have the potential to adversely affect the health of people and communities and environmental health;**
- 3. discharges of contaminants into air from industrial or trade premises have the potential to adversely impact upon Maori cultural or traditional beliefs, due to either the siting of the discharge of contaminants or the contaminants discharged into air;**
- 4. the discharge of greenhouse gases into air may be contributing to a global warming effect;**
- 5. there are still ozone depleting substances used in the Southland region and these, if released to the atmosphere, could further damage the protective ozone layer.**

5.2 Objectives

In addition to the objectives for air quality management which are stated in the Southland Regional Policy Statement and given in section 1.4 above, the objectives which relate to the management of discharges of contaminants into air from industrial or trade premises are:

Objective 5.2.1 Adverse Effects upon the Environment

To avoid, remedy or mitigate any adverse effects upon the environment (including the health of people and communities and amenity values) from the discharges of contaminants into air from industrial or trade premises.

Objective 5.2.2 Maori Culture and Traditions

To ensure that Maori cultural and traditional beliefs are recognised and provided for when dealing with discharges of contaminants into air from industrial or trade premises.

Objective 5.2.3 Ozone depleting substances

To protect the environment from the discharge of ozone depleting substances into air.

Objective 5.2.4 Greenhouse gases

Avoid, remedy or mitigate adverse effects from the discharge of greenhouse gases into air.

Explanation

Discharges of contaminants into air from industrial or trade premises may have an adverse effect upon the environment (including the health of people and communities, amenity values, etc). It is necessary to avoid, remedy or mitigate these effects. Central government has embarked on a programme to completely phase out the use of ozone depleting substances due to the adverse effect of their release into the atmosphere on the protective ozone layer. Central government is also developing policies to meet reduction targets of discharges of greenhouse gases into air due to the possibility of their contributing to global warming. The adverse effects of the discharge of either ozone depleting substances or greenhouse gases into air must be acknowledged and avoided if possible.

5.3 Policies

Policy 5.3.1 Protection of the Environment

Protect the environment from adverse effects from the discharge of contaminants into air from industrial or trade premises.

Explanation

The assessment of consent applications for the effects of discharges of contaminants into air and the imposition of any subsequent consent conditions is one example of how the environment can be protected from these effects. The Regional Council must ensure that conditions on consents for discharges of contaminants into air allow time for upgrades where necessary, but do not put the health of the public or environment at risk. That does not require preservation of the existing air quality, but provides for its sustainable use and management so that its life-supporting capacity is not compromised and amenity values are retained. Another example of how the environment will be protected is through methods and rules contained in regional and district plans.

Policy 5.3.2 Upgrading or Change in Process of Existing Facilities

Require the upgrading or change in process of existing industrial and trade processes where they are having significant adverse effects on ambient air quality.

Explanation

Air quality is a vital component of the health of people and communities and environmental health and well-being. If an industrial or trade premise cannot upgrade or change its process to ensure that the ambient air quality of the area is not degraded then the adverse impacts of its continued operation may necessitate an abatement notice being served. However, it is also recognised that it may take time to set in place the most appropriate means of upgrading existing facilities, and upgrading may be allowed for in a consent condition.

Policy 5.3.3 Reduction of Greenhouse Gases and Ozone Depleting Substances

Promote the reduction of discharges into air of greenhouse gases and ozone depleting substances.

Explanation

Greenhouse gases and ozone depleting substances can arise from industrial processes, as well as, incineration. As it is widely accepted that these substances are detrimental to the environment, it is desirable to minimise them wherever possible. Currently, central government uses a per unit of production model for the reduction of carbon dioxide, and Regional Plans must not be inconsistent with any National Policy Statement which the Government may develop.

Policy 5.3.3A Cumulative effects (inserted as required by Clause 3.2 of the National Policy Statement for Greenhouse Gas Emissions from Industrial Process Heat 2023)

1. Before granting a resource consent for the discharge of greenhouse gases to air from heat devices on a site, the regional council will:
 - (a) consider the total discharges of greenhouse gases from all heat devices on the site that the application relates to; and
 - (b) recognise that, cumulatively, all discharges of greenhouse gases resulting from the production of industrial process heat, regardless of volume, contribute to climate change, and any reduction in greenhouse gas emissions contributes to mitigating climate change.
2. Terms used in the policy in clause (1) and defined in the Resource Management (National Environmental Standards for Greenhouse Gas Emissions from Industrial Process Heat) Regulations 2023 have the meaning in those regulations.

Policy 5.3.3B Updating emissions plans (inserted as required by Clause 3.3 of the National Policy Statement for Greenhouse Gas Emissions from Industrial Process Heat 2023)

1. When considering an emissions plan as part of an application for a resource consent for a restricted discretionary activity relating to discharges to air of greenhouse gases from heat devices, the consent authority will consider:
 - (a) the timing and content of updates of the emissions plan to be made by the holder of the consent; and
 - (b) how those updates will reflect changes in technology and best practices.
2. Terms used in the policy in clause (1) and defined in the Resource Management (National Environmental Standards for Greenhouse Gas Emissions from Industrial Process Heat) Regulations 2023 have the meaning in those regulations.

Policy 5.3.4 Localised Adverse Effects

Avoid localised adverse effects from discharges of contaminants into air which do not require a resource consent.

Explanation

Some discharges of contaminants into air, such as the smoke from a “yard” fire, or dust from a stockpile, may not pose significant adverse impacts to the air environment as a whole, but may cause a nuisance to those in the vicinity of the discharge. Where a localised discharge of contaminants into air is causing an adverse effect as set out in Section 17 of the RMA, an abatement

notice may be issued by an enforcement officer since it is desirable to avoid any nuisance discharges of contaminants into air, and if such discharges occur, they must be mitigated as soon as possible. In addition to the cessation of the nuisance discharge of contaminants into air, mitigation could also include measures such as the removal of deposited particulate matter from affected premises.

Policy 5.3.5 Maori Culture and Traditions

Recognise Maori cultural and traditional values with regard to the air environment and ensure that these are taken into account with regard to discharges to air from industrial or trade premises.

Explanation

The protection of air quality is an issue with the takata whenua of the Southland region, especially in terms of the inter-relationship of resources and the holistic view of the ecosystem. In managing discharges of contaminants into air from industrial or trade premises, it is necessary to have regard to Maori cultural and traditional values.

5.4 Methods

Method 5.4.1 Codes of Practice

Encourage industry groups to prepare guidelines and/or codes of practice which will minimise any adverse effects from discharges of contaminants into air.

Explanation

The use of codes of practice encourages industry to take a responsible and proactive approach to minimising adverse effects from discharges of contaminants into air. Codes of practice also gives members of an industry an idea of the industry's standards expected (as these evolve from codes of practice) and allows for a consistent approach to be maintained nationally, which contributes to certainty and consistency. Where appropriate, matters within codes of practice can be included as conditions on resource consents.

Method 5.4.2 Enforcement

Use of enforcement procedures to deter unauthorised activities.

Explanation

Where rules set out in this Plan, or consent conditions, are breached, the Council must use the opportunity open to it to take such enforcement procedures as necessary to prevent a recurrence of the breach. Where an illegal activity has already adversely impacted upon the environment, then Council has the option to use enforcement procedures as required in order to mitigate any such impact.

Method 5.4.3 Complaint Resolution

A procedure will be developed and implemented by the Southland Regional Council, together with territorial authorities and the Public Health Service, to investigate and resolve complaints regarding discharges of contaminants into air which are causing a public health nuisance.

Explanation

Complaint will be the most common means of becoming aware of discharges of contaminants into air which are causing a public health nuisance. These complaints may be handled, or transferred to, authorities depending upon delegated authority agreement.

Method 5.4.4 Education

Production, distribution and evaluation of educational materials.

Explanation

Education is an important tool to change public perception and attitude where desirable by explaining why certain activities or processes are regulated

or restricted. These materials could include information on energy efficiency and conservation.

Method 5.4.5 Transfer of Powers

Transfer of powers.

Explanation

Where discharges of contaminants into air have only a limited or localised environmental or public health nuisance impact, it is appropriate for territorial authorities to maintain the management of these discharges within their own boundaries. These discharges include:

- discharges of contaminants into air from yard fires;
- discharges of dust into air from yards; and
- discharges of dust into air from stockpiles;

Any transfer of powers will be done in accordance with Section 33 of the RMA.

Method 5.4.6 Database

Collate and maintain a database of information regarding discharges of hazardous air pollutants listed in Appendix D.

Explanation

The Southland Regional Council shall initiate and maintain liaison with the organisations which are investigating concentration levels for discharges of hazardous air pollutants in Appendix D and the information held by the Council will be made available to the public upon request.

Method 5.4.7 Rules

Application of rules.

Explanation

The potential for adverse effects from discharges of contaminants into air can be of such a scale that it is necessary to ensure that the environment is protected from them. Conversely, other discharges of contaminants into air may be allowed as of right, due to their minimal impact. The use of rules which can allow for specific discharges of contaminants into air to be either prohibited, controlled, discretionary, or permitted is an appropriate method of dealing with effects depending upon their specific characteristics.

Method 5.4.8 Resource Consents

Consent conditions on resource consents.

Explanation

In the considering of consents and setting conditions on consents, the Southland Regional Council will take into account discharges into air of greenhouse gases and ozone depleting substances. Central government

currently uses a “no regrets” policy and per unit production reduction for carbon dioxide discharges.

5.5 Rules

The following rules apply to discharges of contaminants into air from industrial or trade premises.

Advice Note: *The Resource Management (National Environmental Standards for Greenhouse Gas Emissions from Industrial Process Heat) Regulations 2023 (NES) came into force on 27 July 2023, and the regulations in the NES will apply in accordance with Part 1 of Schedule 1 of those regulations. Part 1 of Schedule 1 states: if, immediately before 27 July 2023, a discharge to which these regulations apply is a permitted activity under a regional rule that has legal effect, the discharge remains a permitted activity under the rule until the end of 26 January 2025, or until the rule ends if that happens sooner, despite the rule being more lenient than these regulations.*

Rule 5.5.1 **The discharge of contaminants into air from nuclear power stations is a prohibited activity¹¹**

Explanation

The production of power by nuclear means is a prohibited activity in the Southland Regional Policy Statement. This Plan must be consistent with the Regional Policy Statement; therefore any discharges of contaminants into air from nuclear power stations are prohibited.

Rule 5.5.2 **Discharges of contaminants into air from the following activities are discretionary activities:¹²**

1. **the burning of:**
 - (a) **scrap automobile components containing plastic; or**
 - (b) **tyres;**

2. **any combustion processes, not otherwise specified or described in this Plan which singly or together can be used to burn combustible matter:**
 - (a) **for any purpose at a rate of heat release exceeding 5 MW, where fuels other than refuse or trade wastes are burned;**
or
 - (b) **for the purpose of—**
 - (i) **the recovery of metals from insulated cable, motor vehicles or any other mixture or combinations of metals and combustibles; or**
 - (ii) **the cleaning of drums or containers; or**
 - (iii) **stoving of enamel; or**
 - (iv) **baking or drying of any substance that on heating releases dust or other air pollutants; or**

¹¹ Prohibited Activity – Means an activity which a plan expressly prohibits and describes an activity for which no resource consent shall be granted; and includes any activity prohibited by section 105(2)(b) of the Historic Places Act 1993.

¹² Discretionary Activity – Means an activity –

- (a) which is provided for, as a discretionary activity, by a rule in a plan or proposed plan; and
- (b) which is allowed only if a resource consent is obtained in respect of that activity; and
- (c) which may have standards and terms specified in a plan or proposed plan; and
- (d) in respect of which the consent authority may restrict the exercise of its discretion to those matters specified in a plan or proposed plan for that activity.

- (v) maintaining reducing conditions in any manufacturing process.
 - (c) where pathological material, human remains, refuse or trade wastes are incinerated or flared; or
 - (d) where oils containing more than 250 parts per million by weight of lead are burned; or
 - (e) at a rate where the combustible matter is a combination of combustible materials which contains sulphur or arsenically treated wood or rubber or oil sludge or pitch or paint residues that will incinerate in excess of 25 kg in any hour of —
 - (i) sulphur; or
 - (ii) arsenically treated wood; or
 - (iii) rubber; or
 - (iv) oil sludge; or
 - (v) pitch; or
 - (vi) paint residues; or
 - (f) at a rate where the combustible matter is a combination of combustible materials which contains chemicals, plastics, or fibre in which fluorine, chlorine, phosphorous, or nitrogen has been chemically combined that will incinerate in excess of 5 kg in any hour, of such chemicals, plastics or fibre;
3. any chemical processes (excluding electroplating processes) which discharge contaminants into air, including processes used in:
- (a) bodying¹³ of natural oils or manufacture or reaction of monomers for production of synthetic resins, varnishes and plastics; or
 - (b) production of soap, grease, detergents, and surface active agents; or
 - (c) synthesis or extraction of organic chemicals, including formulation of insecticides, weedicides, plant hormones, and like toxic or offensive organic compounds; or
 - (d) production of inorganic chemicals, including concentration of acids and anhydrides, ammonia, and alkalis; or
 - (e) production of phosphatic or nitrogenous synthetic fertilisers, including granulation of single or mixed fertilisers; or
 - (f) any chemical manufacturing processes using or producing gaseous chlorine and any industrial processes using chlorine but only for other than water sterilisation and at rates exceeding 5 kg in any an hour; or
 - (g) separation or concentration for manufacture or disposal of any uranium metal or compound or any radioactive substance;
4. any animal or plant matter processes:

¹³ Bodying – The increasing of viscosity through the use of chemical additives.

- (a) for rendering or reduction or drying through application of heat to animal matter (including feathers, blood, bone, hoof, skin, offal¹⁴, whole fish and fish heads and guts and like parts, and organic manures); or
 - (b) having singly or together a raw material capacity in excess of 250 kg in any hour, and being processes for deep fat frying, oil frying, curing by smoking, roasting of berries or grains or where organic matter including wood is subject to such temperatures or conditions that there is partial distillation or pyrolysis; or
 - (c) for the drying of milk and milk products;
 - (d) for the disposal of more than 500 kg of offal at one time by incineration;
5. any mineral processes involving the extraction from the surface of the ground or an open pit of minerals (including coal, coke and carbon) or the size reduction and screening of such minerals or the storage outside and above ground of such minerals, or the drying or heating of minerals that on heating release dust or any other contaminant to air being processes which, singly or together:
- (a) have or require —
 - (i) an opencast extraction capacity exceeding 100 tonnes in any hour; or
 - (ii) a size reduction and screening capacity in excess of 100 tonnes in any hour; or
 - (iii) a storage capacity in excess of 5,000 cubic metres for material smaller than 5 mm diameter and in excess of 10,000 cubic metres for material 5 mm diameter and larger ; or
 - (iv) a rate of heat release exceeding 100 kW; or
 - (b) are part of a manufacturing process for portland or similar cements and pozzolanic materials¹⁵; or
 - (c) are part of a manufacturing process for the sintering¹⁶, calcining¹⁷, or roasting of metal ores in preparation for smelting or for burning of calcium or calcium-magnesium carbonates to produce calcium or magnesium oxides or hydroxides, or the expansion or exfoliation¹⁸ of minerals, or the dehydration of gypsum; or
 - (d) are part of a manufacturing process (whether fixed or translocatable) for making hot-mix asphalt paving mixes or for burning of road surfaces; or
 - (e) are part of a manufacturing process for making glass or frit¹⁹ from raw materials or making mineral wool or glass

¹⁴ Offal – Dead animals/stock (either entire or parts thereof).

¹⁵ Pozzolanic Material – Volcanic ash used for hydraulic cement.

¹⁶ Sintering – Coalescing into a single mass under the influence of heat without actually liquefying.

¹⁷ Calcining – The heating of ores to drive off water and carbon dioxide.

¹⁸ Exfoliation – The splitting off of thin folia or sheets of rock.

¹⁹ Frit – Calcined mixture of sand and additives for glass-making.

- fibre, including application of any surface coating to the fibres;
6. any metallurgical processes, including associated foundry practices, which involve:
 - (a) the extraction, including electro-chemical methods of reduction, of any metal or metal alloy from its ore, oxide, or other compound; or
 - (b) the making of steel or the refining of any metal or modification of any alloy in the molten state by blowing with air, oxygen, or oxygen enriched air, or chlorine or other gases, or by addition of reactive chemicals or volatile fluxes and the use of oxygen lancing²⁰ in scarfing²¹ and similar operations; or
 - (c) the manufacture of silicon or ferrosilicon or of metal powders or of alloys rich in any metals specified or described in clauses 1 to 3 of the schedule of classes of specified air contaminants, as set out in Appendix B of this Plan; or
 - (d) the melting of any metal or metal alloy, including secondary melting, and the sweating of scrap metal, where the aggregated melting capacity exceeds 0.5 tonnes in any hour; or
 - (e) hot dip galvanising or other processes for the protection of surfaces by metal coating using fluxes.

 7. Any industrial carbonising or gasification processes in which natural gas, petroleum oil, shale, coal, wood, or other carbonaceous material is subject to:
 - (a) pyrolysis²², carbonisation²³, or destructive distillation²⁴, the solid liquid or gaseous products being recovered; or
 - (b) gasification by partial combustion with air or oxygen or reaction with steam.

 8. any process (not being the purification by distillation of drycleaning solvents at retail outlets) for the refining, purification, or reforming of hydrocarbons in or derived from natural gas, petroleum, shale, coal, wood, or other organic substances, and including:
 - (a) hydrocarbon separation or recovery by distillation or absorption and desorption or removal of carbon dioxide or condensable hydrocarbons from natural or manufactured gas; or
 - (b) reforming including viscosity breaking by thermal and catalytic cracking and hydrogenation and alkylation and

²⁰ Oxygen Lancing – A process used principally for cutting heavy sections of steel or cast iron, in which oxygen is fed to the cutting zone through a length of steel tubing.

²¹ Scarfing – Preparing metal edges for forge welding.

²² Pyrolysis – The decomposition of a substance by heat.

²³ Carbonisation – The destructive distillation of organic substances out of contact with air.

²⁴ Destructive Distillation – The distillation of solid substances accompanied by their decomposition.

- like processes, including preparation of ethylene or acetylene or other feed stock for chemical synthesis; or
- (c) refining to reduce sulphur or to improve other qualities with the aid of any substances specified in the schedule of classes of specified air contaminants, as set out in Appendix B of this Plan, or by air blowing.
9. any industrial wood pulp, fibreboard, or particle board processes in which:
 - (a) wood or other cellulose material is cooked with chemical solutions to dissolve lignin and the associated processes of bleaching and chemical and by-product recovery; or
 - (b) hardboard, fibre board, particle board or wood pulp are made by processes involving discharges of contaminants into air;
 10. any processes involving the use of —
 - (a) di-isocyanates²⁵ at a rate exceeding 10 kg in any hour; or
 - (b) organic plasticisers²⁶ at a rate exceeding 10 kg in any hour;
 11. any process of wool scouring.
 12. any process which involves the production of compost from raw materials that contain trade, industrial, municipal or domestic refuse;
 13. any fellmongery processes involving —
 - (a) the use of sulphides; or
 - (b) the treatment of fellmongery liquid wastes containing sulphides;
 14. Any processes for manufacture of flock or for the teasing of textiles or shredding of paper or for cleaning sacks or crushing or separating dags from wool.
 15. Any processes (including translocatable processes) which are not otherwise specified or described in this Plan and which involve dry abrasive blasting.
 16. Foulwater²⁷ treatment processes with a design capacity population equivalent for BOD₅ of 10,000 people or more.
 17. Any processes for the blending, packaging or handling of air contaminating substances which are not permitted activities²⁸ listed under Rule 5.5.3(1).

²⁵ Di-isocyanates – Used in the manufacture of flexible polyurethane foams, rigid foam, surface coatings and paints, adhesives and urethane rubbers. Examples are toluene di-isocyanate (TDI), hexamethylene di-isocyanate (HDI) and diphenylmethane di-isocyanate (MDI).

²⁶ Organic Plasticisers – High boiling liquids used as ingredients in lacquers, plastics and rubber compounds (e.g. high boiling glycol esters).

²⁷ Foulwater – is liquid effluent from any industrial or trade process or municipal source.

18. Refuse disposal facilities receiving greater than or equal to 100,000 cu metres/year of uncompacted solid waste.

²⁸ Permitted Activity – Means an activity that is allowed by a plan without a resource consent if it complies in all respects with any conditions (including any conditions in relation to any matter described in section 108 or section 220) specified in the plan.

Information Required

In addition to the information requirements stated in section 88 and the Fourth Schedule of the Resource Management Act 1991, the Southland Regional Council shall require the following information to be submitted with any application for a resource consent for any of the above processes:

- (a) the chimney height above ground level, where applicable (refer Appendix E of this Plan for further information).
- (b) the chimney exit velocity, where applicable.
- (c) a calculation of concentrations of contaminants at ground level, where applicable. (Appendix C of this Plan gives an example of one method of doing this)
- (d) a description of how any source discharges of contaminants into air and environmental effects will be monitored and by whom.
- (e) results of any monitoring for background levels of contaminants in the environment prior to the establishment of the process.
- (f) the location of the activity relative to sites protected under the Historic Places Act 1993.
- (g) for dry abrasive blasting no sand containing free silica may be used indoors and no sand containing more than 3% free silica may be used outdoors.
- (h) degree of compliance with a relevant effects based code of practice.

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of contaminants into air from industrial or trade premises may be subject to the following type of subject matter for conditions, as well as any other such conditions deemed necessary due to site specific factors where applicable:

- (a) source and environmental monitoring may be required and any results of any monitoring would then be forwarded to the Regional Council as soon as available, but not more than 30 working days after the completion of testing.
- (b) site inspection monitoring may be carried out by, or on behalf of, the Southland Regional Council.
- (c) there will be no alteration to the plant or process which will adversely change the quantity of contaminants discharged into air or their nature to the detriment of the environment.
- (d) for discretionary activities the measures to be put in place to mitigate the risk of any offensive or objectionable odours arising from the activity shall form part of the consent application.

- (e) standards for discharges of smoke into air, which will need to be met by industrial or trade processes are:
 - (i) for processes fitted, or required to be fitted, with photoelectric measuring devices – 40% opacity; and
 - (ii) for processes not fitted with photoelectric measuring devices – Ringelmann 1 (refer Appendix H).
- (f) new, or expanding, meat or fish rendering activities may be required to be able to be totally enclosed if either their proximity to residential areas, or concentration of discharges of odour into air so require.
- (g) the Southland Regional Council may annually, on or about the anniversary of the consent, serve notice of its intention to review the conditions of the consent for the purposes of:
 - (i) dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - (ii) complying with the requirements of a regional plan.
- (h) charges, may be made in accordance with section 36(1) of the Resource Management Act 1991, for the carrying out of the Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for the carrying out of its functions under section 35 of the Resource Management Act 1991.

Explanation

The 18 types of processes identified in this rule have the potential to adversely impact upon the life supporting capacity of air within the region. In order to assess the effects of these proposals a resource consent will be required. The conditions listed will be applied where appropriate. With regard to the location of any new processes, as identified in this rule, the Regional Council can ensure, as far as possible, that an adverse impact is not caused on either the regional environment or amenity values. These steps will reduce any adverse effects and assist in the protection of public health and amenity values.

Rule 5.5.3 Any discharges of contaminants into air from the following industrial or trade premises are permitted activities, provided that the criteria which follow the list are met:

1. any industrial or trade premise which deals with the blending, packaging or handling of air contaminating substances for the sole purpose of retail distribution;
2. any industrial or trade premise used solely for retail purposes;
3. any industrial or trade premises which deal with the bulk storage of fuel either above or below ground;
4. any industrial or trade premises which transmit, receive or emit radiocommunication or telecommunication signals;

5. any industrial or trade process which is not described in Rule 5.5.2 above and which involves wet abrasive blasting, fibreglassing, or spray painting solely;
6. any industrial or trade process which involves the production of compost from raw materials that do not contain municipal or domestic refuse and which has on the premises at any time a volume of compost and raw materials not exceeding 100 m³;
7. any combustion processes involving fuel burning equipment, excluding flaring or incineration of trade wastes or refuse, which singly or in combination in any one unit, can burn combustible material having a rate of heat release not exceeding 5 MW;
8. any industrial or trade processes not specified in Rule 5.5.2 above and which involves the pneumatic conveying of any air polluting substance;
9. foulwater treatment processes with a design capacity population equivalent for BOD₅ of less than 10,000 people;
10. any gravel extraction processes operating at 100 tonnes or less in any hour;
11. refuse disposal facilities receiving less than 100,000 cubic metres/year of uncompacted solid waste;
12. any industrial or trade premise which disposes by burning of not more than 500 kg of offal at one time.

Criteria

- (a) Heights for any chimneys for processes for combustion purposes shall comply with Appendix E, Memorandum on Chimney Heights.
- (b) Where induced and/or forced draft fans are used the exit velocity from chimneys shall be not less than 10 metres per second to prevent downwash.
- (c) There shall be no obstruction to the upwards flow of gases at the outlet from the chimney, where applicable.
- (d) Steel chimneys for the discharge of products of oil combustion into air shall be insulated to avoid the discharge of contaminants into air of acid smuts²⁹ beyond the boundary of the premises.

²⁹ Acid Smuts – Aggregates of carbon and ash particles bonded together by sulphuric acid containing iron sulphate.

- (e) Standards for discharges of smoke into air which will need to be met by industrial or trade processes are:
 - (i) for processes fitted, or required to be fitted, with photoelectric measuring devices - 40% opacity; and
 - (ii) for processes not fitted with photoelectric measuring devices - Ringelmann 1 (refer Appendix H);
- (f) Monthly deposition of nuisance particulates³⁰ at or beyond the boundary of the premises shall not exceed 4 grams per square metre above background levels.
- (g) Any oils burned have a lead content less than 250 parts per million.
- (h) Free silica content of dust does not exceed 3% by weight and there are no contaminants, including asbestos, quartz, or other of the pneumoconioses inducing or asthmagenic substances, associated with the dust from any gravel extraction activities.
- (i) There shall be no visible discharges other than smoke and water vapour from chimneys or other outlets.

Explanation

The discharges of contaminants into air from the industrial or trade premises and processes listed above are of a minor nature and do not cause, either singly or cumulatively, major adverse impacts upon the environment or the health of people and communities. Section 17 of the Resource Management Act 1991 provides for the Environment Court or an enforcement officer to require a person to cease, or prohibit a person from commencing anything that is likely to be noxious, dangerous, offensive, or objectionable to the extent that It may have an adverse effect on the environment. Therefore these processes should be allowed as permitted activities.

Rule 5.5.4 Industrial or trade processes which are not permitted activities in Rule 5.5.3 above, and which are smaller in size or output than those in Rule 5.5.2 above are permitted activities, provided that the following criteria are met:

- (a) heights for any chimneys for processes for combustion purposes shall comply with Appendix E, Memorandum on Chimney Heights, where applicable;
- (b) heights for any chimneys for processes other than combustion shall comply with Appendix C, Three Minute Design Ground Level Concentrations, where applicable;
- (c) where induced and/or forced draft fans are used the exit velocity from chimneys shall be not less than 10 metres per second to prevent downwash, where applicable;

³⁰ Nuisance Particulates – Those which do not impose a human or environmental health hazard, but whose accumulation can give rise to complaint.

- (d) there shall be no obstruction to the upwards flow of gases at the outlet from the chimney, where applicable;
- (e) steel chimneys for the discharge of products of oil combustion into air shall be insulated to avoid the discharge of acid smuts into air beyond the boundary of the premises, where applicable;
- (f) standards for discharges of smoke into air which will need to be met by industrial or trade processes are:
 - (i) for processes fitted, or required to be fitted, with photoelectric measuring devices - 40% opacity; and
 - (ii) for processes not fitted with photoelectric measuring devices - Ringelmann 1 (refer Appendix H);
- (g) monthly deposition of nuisance particulates at or beyond the boundary of the premises shall not exceed 4 grams per square metre above background levels;
- (h) any oils burned have a lead content less than 250 parts per million;
- (i) boilers (other than power stations) burning solid fuels will have an emission limit on solid particles of 250 mg/m^3 . Power station boilers³¹ burning solid fuels will have an emission limit on solid particles of 80 mg/m^3 ; ³²
- (j) incinerators burning less than 300 kg in any hour will have a limit on non-toxic solid particle emissions of 500 mg/m^3 . Incinerators burning 300 kg or more in any hour will have a limit on non-toxic solid particle emissions of 250 mg/m^3 .
- (k) There shall be no visible discharges other than smoke and/or condensed water vapour from chimneys or other outlets.

Explanation

Provided that a process meets certain criteria and is not causing, nor has the potential to cause, either an adverse environmental impact or public health nuisance, and complies with any district plan, it will have minimal overall environmental impacts and as such should be allowed as a permitted activity. Section 17 of the Resource Management Act 1991 provides for the Environment Court or an enforcement officer to require a person to cease, or prohibit a person from commencing anything that is likely to be noxious, dangerous, offensive, or objectionable to the extent that it may have an adverse effect on the environment. Changes to the processes of a permitted activity which increases the output of that activity's discharge of contaminants to air, may alter its status to a discretionary activity under Rule 5.5.2.

³¹ Power Station Boilers – Boilers which are used either singly or in combination for electricity generation purposes where the output from the generators exceeds 20 MW electrical.

³² all boilers and incinerators have a 12% CO₂ reference level

Rule 5.5.5 Any industrial or trade processes which are not covered in Rules 5.5.2 or 5.5.3, or do not meet the criteria specified in Rules 5.5.3 or 5.5.4 above are discretionary activities.

Information Required

In addition to the information requirements stated in section 88 and the Fourth Schedule of the Resource Management Act 1991, the Southland Regional Council shall require the following information to be submitted with any application for a resource consent for a discretionary activity:

Specific aspects of the activity which do not comply with Rules 5.5.2, 5.5.3 or 5.5.4.

Explanation

Activities which are not covered in Rules 5.5.2 or 5.5.3 or cannot meet the standards set for a permitted activity in Rule 5.5.4 are discretionary and as such must apply for a resource consent. In considering such an application, it is necessary for the Regional Council to know the reason for the activity being classified as discretionary. Conditions for consent of such activities will be dependent upon the nature and type of adverse effects and will be on a case-by-case, site specific basis.

Rule 5.5.6 The use of masking agents³³ to disguise odour is a discretionary activity.

Information Required

In addition to the requirements in Section 88 and the Fourth Schedule of the Resource Management Act 1991, the Southland Regional Council shall require the following information to be submitted with any application for a resource consent:

- (a) type of masking agent proposed to be used;
- (b) reason for proposing to use a masking agent;
- (c) duration masking agent is proposed to be used.

Information for Consent Applicants

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of contaminants into air from industrial or trade premises may be subject to the following type of subject matter for conditions, as well as any other such conditions deemed necessary due to site specific factors:

- (a) the Southland Regional Council may annually, on or about the anniversary of the consent serve notice of its intention to review the conditions of the consent for the purposes of:
 - (i) dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - (ii) complying with the requirements of a regional plan.

³³ Masking agents are chemical compounds used to disguise odour.

- (b) charges, may be made in accordance with Section 36(1) of the Resource Management Act 1991, for carrying out the Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for carrying out its functions under Section 35 of the Resource Management Act 1991.

Explanation

Masking agents are air contaminants and it is far better to control the original contaminant than to disguise it with another contaminant. Processes which wish to use masking agents will require the consent of the Regional Council to do so, stating the extraordinary circumstances surrounding the need for the masking agent.

Rule 5.5.7 The discharge of contaminants into air from the burning of dry vegetative material at refuse disposal facilities and/or landfills is a discretionary activity.

An application in respect of this activity will be non-notified unless the Regional Council considers special circumstances exist to require notification.

Information Required

In addition to the requirements in section 88 and the Fourth Schedule of the Resource Management Act 1991, the Southland Regional Council shall require the following information, where applicable, to be submitted with any application for a resource consent:

- (a) the written approvals from any landowner/occupier in the vicinity who may be adversely affected as a result of the burning on the site of the activity;
- (b) distances from the location of the activity to the nearest residence(s), where applicable;
- (c) description of the climatic conditions under which fires will be lit;
- (d) description of the methods to be used for:
- sorting, storing and drying of vegetative materials prior to burning;
 - determining whether vegetation is sufficiently dry to be burnt;
 - recording drying times, age of stockpiles and volumes of material burnt;
 - ensuring efficient combustion;
 - on-site supervision of the site while the fire is burning; and
 - ensuring that the vegetative material being burnt does not spread to inorganic or mixed refuse.
- (e) description of how monitoring of the discharges to air is to be undertaken;

- (f) a site management Air Plan, including contingency measures, relating to burning of vegetative material on the site. This management Air Plan can be included in or be part of a combined site management Air Plan developed to incorporate the requirements of this rule and the Regional Solid Waste Management Plan for Southland.

Explanation

The discharge of contaminants to air from the above activity has the potential to cause significant adverse effects which may impact on public health. Suitable site control options and management practices can be implemented to prevent or minimise such adverse effects.

The use of recycling, composting and bio-remediation as waste management measures are encouraged as alternatives to burning.

Information and Practice Guide for Consent Applicants

Consent Information

Consent conditions are dependent upon the scale and potential for adverse effects. Consents issued for the discharge of contaminants into air from industrial or trade premises may be subject to the following type of matter for conditions, as well as any other such conditions deemed necessary due to site specific factors or general public health:

- (a) source and environmental monitoring may be required and any results of any monitoring would then be forwarded to the Regional Council as soon as available, but not more than 30 working days after the completion of testing;
- (b) any discharge of smoke or particulate matter is not offensive or objectionable at or beyond the boundary of the site of the activity;
- (c) assessment of public health factors;
- (d) the Southland Regional council may annually, on or about the anniversary of the consent, serve notice of its intention to review the conditions of consent for the purpose of:
 - (i) dealing with any adverse effect on the environment which may arise from the exercise of the consent; or
 - (ii) complying with the requirements of a regional Air Plan;
- (e) charges may be made in accordance with Section 36(1) of the Resource Management Act 1991, for carrying out the Regional Council's functions in relation to the administration, monitoring and supervision of resource consents and for carrying out its functions under Section 35 of the Resource Management Act 1991.

Good Management Practices to Prevent or Minimise the Discharge of Smoke from Burning Dry Vegetative Material

- Vegetation that is burned (such as trimmings, prunings, or fellings cut from active growth) should, as a general guide, be allowed to dry for at least four weeks in summer or six weeks in winter, prior to burning.
- The place for burning should be at least 50 metres from any road other than a highway, and 100 metres from any highway, dwelling on a neighbouring property, reserve or conservation area or a national park boundary.
- When starting to burn, the direction and strength of wind should be such that smoke is carried away from the areas most likely to be adversely affected. Also the quantity and state of vegetation to be burnt should not be such that smoke is discharged for a prolonged period.
- Vegetation should be stacked loosely rather than compacted.
- A small fire, started with the driest material, with further material continually fed on to it is blazing, is preferable to burning all of the material in one large pile. Once started, the fire should not be left unattended.
- The information requirements set the basis for consent conditions that will ensure minimal smoke discharges and adverse effects on the environment. All burning is to be undertaken in accordance with the Forest and Rural Fires Act 1997 and the Forest and Rural Regulations 1979, if applicable.
- The discharge of solid waste, including residues of incineration, into any water body is a prohibited activity under the Regional solid Waste Management Plan for Southland.

5.6 Principal Reasons

During the development of this Plan consultation with industry and regulatory groups noted that Rules were seen as an important means of ensuring that any adverse effects from the discharge of contaminants into air from industrial or trade premises were avoided, remedied or mitigated. However, it was also noted that while rules are necessary to ensure that certain standards are met, the use of educational materials and encouraging the development and use of codes of practice are also important tools to help ensure that the high air quality of the Region is maintained. Transfers of powers are seen as an efficient method of ensuring that the current effective management of localised nuisance discharges of contaminants into air is maintained. This method will be used in consultation with the territorial local authorities, as per the statutory requirements under section 33 of the RMA and section 716A of the Local Government Act 1974.

5.7 Outcomes

The main outcomes expected through the adoption of the above policies and methods are:

- 1. protection of the health of people and communities and environmental health from the effects of discharges of contaminants into air from industrial or trade premises; and**
- 2. protection of amenity values from discharges of contaminants into air such as odour, dust and smoke, from industrial or trade premises; and**
- 3. recognition and provision for Maori cultural and traditional beliefs with regard to discharges of contaminants into air from industrial or trade premises.**
- 4. reduction in the discharge greenhouse gases.**
- 5. reduction in the use and discharge of ozone depleting substances into air in the region.**

6 Discharges Into Air From Any Place (other than Industrial or Trade Premises) or Any Other Source (whether moveable or not)

Stage 1 of the Regional Air Plan for Southland 2016 replaced Section 6 of the Regional Air Quality Plan for Southland (1999).

7 Odour

7.1 Introduction

Odour is not a discharge in itself, it is an effect which is derived from the gaseous components of some discharges. The effects from an odour can be either positive or adverse, and these effects can be sporadic as they are often affected by local weather and terrain. Odours can be considered contaminants as all odours are due to the presence of chemicals or mixtures of chemicals in the air and when an odour is perceived, the chemical composition of the air has been altered.

Previous to the RMA odours were for the most part managed on a “nuisance” or complaint basis. Currently over 70% of all air discharge complaints received by the Southland Regional Council are related to odours. This figure is in line with the remainder of New Zealand and overseas, and highlights the importance of odour as an adverse effect on the social well-being of people, and potentially the health of people as well.

Although the importance of odour control and mitigation is known, the physical or empirical measurement of odour, especially odour limits, is a difficult and costly exercise. There is also a subjective component to odour in that what one person considers an offensive odour, another may not. This phenomenon can be seen, for example in the rural situation where the feeding out of silage may be considered to have a “sweet” or “nice” odour by some, and an offensive odour by others.

Given the inherent difficulties in empirically measuring, or setting limits, for odour, there is still a need to control offensive odours in order to protect the social wellbeing and health of communities and the environment. When an odour is being assessed the following factors are taken into consideration:

- frequency of the odour;
- intensity of the odour;
- duration of the odour; and
- offensiveness of the odour.

These four factors are known collectively as the FIDO factors. It must be noted that offensiveness in particular can be a subjective measurement and there are a number of problems in classifying the offensiveness of odours, however it is reasonable to incorporate offensiveness in any regulatory control framework.

Odours need to be managed on an intra, as well as, inter-boundary basis, with people in residential areas or dwellings being the people most protected from any adverse effects caused by odours. People working in an industrial area can expect greater exposure to odours than they would when at home in a residential area. Similarly, people living in a rural area can expect to be subjected to a reasonable amount of rural odour, such as that from cutting hay, feeding out of silage, or, within reasonable limits, from barns and stock enclosures.

The main resource management issue in the Southland Region with regard to odour is:

The discharge of odorous compounds to air has the potential to adversely impact upon the health of people and communities and cultural and amenity values.

7.2 Objectives

In addition to the objectives for air quality management which are stated in the Southland Regional Policy Statement and given in section 1.4 above, the objectives which relate to the management of odour are:

Objective 7.2.1 Protection of the health of people and communities

To protect the health of people and communities from any adverse effects from odour discharges.

Objective 7.2.2 Protection of cultural and amenity values

To protect areas of cultural and amenity value from any adverse effects from odour discharges.

Explanation

Discharges to air of odorous contaminants can have an adverse impact upon the health of people and communities, as well as cultural and amenity values. It is necessary to avoid, remedy or mitigate these adverse effects.

7.3 Policies

Policy 7.3.1 The health of people and communities

Avoid, remedy or mitigate the impact on the health of people and communities from offensive or objectionable odours.

Explanation

In order to protect the health of people and communities it is necessary to have regard to any offensive or objectionable odours which may travel beyond the boundary of their source.

Policy 7.3.2 Areas of Cultural or Amenity Value

Avoid, remedy or mitigate the impact of offensive or objectionable odours on areas of cultural or amenity value.

Explanation

Odour discharges have the potential to adversely impact upon cultural or amenity values (including land value) of an area. It is necessary therefore to have regard to any offensive or objectionable odours which may travel beyond the boundary of their source.

7.4 Methods

Method 7.4.1 Codes of Practice

Encourage the formation and adoption of industry Codes of Practice which pertain to the reduction, control or mitigation of odour effects.

Explanation

The Pork Industry Board's Code of Practice is an example of how to minimise odour generation at source and how to use buffer distances when establishing a factory farming activity. The use of codes of practice encourages industry to take a responsible and proactive approach to minimising adverse effects from air discharges, including odour. It also gives industry some idea of the standards expected and allows for a consistent approach to be maintained nationally, which contributes to certainty and consistency. Where appropriate, matters within codes of practice can be included as conditions on resource consents.

Method 7.4.2 Complaints

A procedure will be developed and implemented by the Southland Regional Council, together with territorial authorities and the Public Health Service, to investigate and resolve complaints regarding discharges of contaminants to air which are causing a public health nuisance.

Explanation

Complaint will be the most common means of becoming aware of air discharges which are causing a public health nuisance. These complaints may be handled, by local authorities in an integrated manner, following consultation amongst themselves with the Public Health Service and the producer of the odour. Each investigation of a complaint concerning offensive or objectionable discharges will depend upon the specific circumstances. However, for odour, the following approach may be appropriate:

- (a) an assessment of the situation will be made by a Council Enforcement Officer who has experience in odour complaints. This assessment will take into account the FIDOL factors – frequency, intensity, duration, offensiveness and location;
- (b) if the discharge is deemed to be offensive or objectionable by the Council Enforcement Officer the discharger will be asked to take whatever action is necessary to avoid, remedy or mitigate the effects of the discharge;
- (c) if the discharge continues to be offensive or objectionable, then enforcement action may be taken. This could be in the form of an abatement notice, enforcement order or prosecution, pursuant to the Act.

Method 7.4.3 Resource Consents

Consider odour effects in all air discharge resource consents.

Explanation

The potential of an air discharge to cause an offensive or objectionable odour should be considered in all air discharge resource consents in order that any steps or conditions necessary to avoid, remedy or mitigate any such odour can be put in place. These are matters considered in Rule 5.5.2.

Method 7.4.4 Transfer of powers

Transfer of powers.

Explanation

Where discharges have only a limited or localised environmental or public health nuisance impact, it is appropriate for territorial authorities to maintain the management of these discharges within their own boundaries. These discharges include odour from:

- yard fires;
- fires on beaches, above mean high water spring;³⁵
- stockpiles; and
- domestic home fires.

Any transfer of powers will be done in accordance with section 33 of the RMA.

Method 7.4.5 Buffer Zones

Advocate buffer zones around odorous, and potentially odorous, activities.

Explanation

The use of buffer zones, such as those examples suggested in Appendix F, will be advocated to territorial authorities and in the consent process to assist in mitigating any effects from odour discharges into air. The Pork Industry Board's Code of Practice includes the use of buffer distances and is an example of how to minimise odour impact. The use of buffer zones gives some idea of the standards expected and allows for a consistent approach to be maintained nationally, which contributes to certainty and consistency. Where appropriate, buffer zones can be included as conditions on resource consents.

Fires on beaches below mean high water spring tide level are included in the Regional Coastal Plan.

Method 7.4.6 Education

Production, distribution and evaluation of educational materials.

Explanation

Education is an important tool to change perception and attitude where desirable by explaining why certain activities are regulated or restricted. In the case of odour discharges, educational materials may be more specifically targeted to industry, rather than the general public.

7.5 Principal Reasons

Discharges of odours have the potential to adversely impact upon both the health of people and communities and amenity values. Therefore the main focus of this section is to avoid where possible any such adverse impacts, and to remedy or mitigate the adverse effects of odour discharges where necessary.

Rules pertaining to odour discharges from both discretionary and permitted activities are covered in Section 5 of this Plan, however other methods such as encouragement of codes of practice and buffer zones and the provision of information will also assist in ensuring that odours do not cause any adverse effects. Where odour discharges are of a limited nature and only have the potential to cause a localised adverse effect, the management of these discharges may be transferred over to the territorial authorities of the Southland Region.

7.6 Outcomes

The main outcomes expected through the adoption of the above policies and methods are:

- 1. protection of the health of people and communities from any adverse effects of odour discharges;**
- 2. protection of cultural and amenity values from any adverse effects of odour discharges.**

8 Motor Vehicle Emissions

8.1 Introduction

There are a number of discharges of contaminants into air from motor vehicles which are of significance from the perspective of the health of people and communities. Because of its relatively sparse population, only very few parts of the Southland region are likely to experience build-ups of contaminants from motor vehicle emissions to the point where they are of significance to the health of people and communities. Areas where monitoring may be required are busy city intersections at times of peak traffic flow.

Monitoring for carbon monoxide and oxides of nitrogen was carried out at one location in Invercargill City in 1972 and 1974, and in another location for carbon monoxide in 1996. Lead has been monitored for elsewhere in New Zealand at a number of urban sites (Graham and Narsey, 1994). Prior to 1986 lead levels in most urban areas were typically in the range of 0.5 to 1.0 micrograms per cubic metre (one month averages). In areas of high traffic densities or significant congestion, levels were generally higher than this with values at times in excess of 2 to 3 micrograms per cubic metre. Since that time, however, the levels have dropped significantly as the results of changes in the lead content of petrol. The air quality guideline for lead is 0.5-1.0 microgram per cubic metre (3 monthly average). Lead deposited on roads finds its way into stormwater and eventually into estuaries.

In New Zealand, discharges of carbon dioxide into air from motor vehicles have been estimated at 40% of total carbon dioxide discharges from anthropogenic sources. It will become increasingly important for these discharges to be addressed, possibly in regional transport planning.

Discharges of contaminants into air can be reduced by reducing the quantity of motor vehicle fuel consumed in the region, for example by encouraging people to walk, cycle or use public transport. Carbon taxes and lower speed limits are options for reducing fuel consumption, but the initiatives would need to come from central government. Emission testing to coincide with warrant of fitness testing is being promoted in other regions in New Zealand as a method for controlling vehicle emissions, and such tests may become mandatory in the longer term. Carbon monoxide can be controlled with catalytic converters which reduce hydrocarbon emissions by 87%, carbon monoxide emissions by 85% and oxides of nitrogen by 62% over the life of a vehicle.

Photochemical smog is unlikely to become a problem in the Southland region in the foreseeable future. Precursors of photochemical smog are emissions of hydrocarbons and oxides of nitrogen into air from motor vehicles and these can be controlled by the use of catalytic converters. Ozone depleting chlorofluorocarbons are used in motor vehicle air conditioning systems and it is important that these should not be discharged to the atmosphere. Particulate discharges from diesel engines can also be of health significance in congested urban areas.

The main resource management issue in the Southland region related to emissions to air from motor vehicles is:

1. discharges of contaminants into air from motor vehicles have the potential to adversely impact upon the health of people and communities and environmental health and cultural and amenity values.
2. the discharge of greenhouse gases into air may be contributing to a global warming effect.
3. there are still ozone depleting substances used in the Southland Region and these, if released to the atmosphere, could further damage the protective ozone layer.

8.2 Objectives

In addition to the objectives for air quality management which are stated in the Southland Regional Policy Statement and are given in Section 1.4 above, the objectives which relate to the management of discharges of contaminants into air from motor vehicles are:

Objective 8.2.1 The health of people and communities and Environmental Health

To protect the health of people and communities and environmental health from any adverse effects of discharges of contaminants into air from motor vehicles.

Objective 8.2.2 Cultural and Amenity Values

To protect cultural and amenity values from any adverse effects of discharges of contaminants into air from motor vehicles.

Objective 8.2.3 Greenhouse gases

Avoid, remedy or mitigate adverse effects from the discharge of greenhouse gases into air.

Explanation

Other regions in New Zealand are already experiencing adverse effects due to discharges of contaminants into air from motor vehicles. Information gathered to measure ambient air quality will assist in determining what level of adverse effect may be occurring in Southland. It is necessary to protect the health of people and communities and environmental health, and cultural and amenity values from any adverse effects due to discharges of contaminants into air from motor vehicles. Central government is developing policies to meet reduction targets of discharges of greenhouse gases into air due to the possibility of their contributing to global warming. The adverse effects of the discharge of greenhouse gases into air must be acknowledged and avoided if possible.

8.3 Policies

Policy 8.3.1 Adverse effects

Avoid, remedy or mitigate adverse effects from the discharges of contaminants into air from motor vehicles.

Explanation

The protection of the health of people and communities must be a first priority in managing air resources. Liaison with public health authorities in relation to air quality management will assist in this regard.

Policy 8.3.2 Reduction of greenhouse gases

Promote the reduction of discharges of greenhouse gases into air.

Explanation

As it is widely accepted that greenhouse gases are detrimental to the environment, it is desirable to reduce their discharge into air wherever possible. This would include promotion to help reduce greenhouse gas discharges into air from motor vehicles.

8.4 Methods

Method 8.4.1 Land Transport Safety Authority

The Southland Regional Council will request the Land Transport Safety Authority set a date for the implementation of an amendment regulation controlling discharges of smoke into air from motor vehicles.

Explanation

The application of this amendment will protect the air environment from smoke discharges from inefficient fuel burning motor vehicles, but will not prohibit motor vehicles of historic importance, or those used in the interests of public safety, from operating. A date for the implementation of this amendment has yet to be gazetted (although the regulations themselves were gazetted in 1976), and the Land Transport Safety Authority should be encouraged to set an implementation date.

Method 8.4.2 Monitoring

Monitor to determine concentrations of pollutants at selected intersections at times of peak traffic flow.

Explanation

Results of monitoring will be compared with guidelines. In cases where levels exceed guidelines, the Regional Council will advocate corrective action to reduce levels, such as redirecting traffic in order to reduce congestion.

Method 8.4.3 Industry group initiatives

Support industry group initiatives to prevent the discharge to the atmosphere of ozone depleting substances from motor vehicle air conditioning systems.

Explanation

Initiatives, such as the Motor Trades Association's code of practice for the handling of ozone depleting substances, should be supported in the region. This support could be by assisting in the promotion of initiatives.

Method 8.4.4 Education

Production, distribution and evaluation of educational materials.

Explanation

Education is an important tool to change perception and attitude where desirable by explaining why certain activities are regulated or restricted. In the case of discharges of contaminants into air from motor vehicles, educational materials may be more specifically targeted to the general public, rather than industry, particularly with regard to the promotion of public transport and the use of alternative fuels.

Method 8.4.5 Advocacy to Central Government

The Southland Regional Council will advocate that central government investigate vehicle emissions, the use of alternative fuels, and the retention of public transport subsidies.

Explanation

Further investigation on the volume and type of discharges into air from vehicles is necessary in order to assess the impact vehicle emissions have in New Zealand. This type of research is most appropriately done on a national scale with the results available to regions for their use. The use of alternative fuels and public transport are two methods of reducing greenhouse gas discharges into air from motor vehicles and central government should be actively involved in their promotion. The Southland Regional Council will also support compulsory motor vehicle emission testing through advocacy to central government.

Method 8.4.6 Advocacy to road controlling authorities

The Southland Regional Council will advocate that road controlling authorities develop strategies, as part of their transport planning function, to avoid or mitigate adverse effects from vehicle discharges into air.

Explanation

If monitoring carried out by the Regional Council shows that carbon monoxide discharges into air are increasing and have the potential to exceed guideline levels, due to motor vehicle emissions; then the Region's road controlling authorities will be requested to determine strategies for avoiding or mitigating future effects in their transport planning documents.

8.5 Principal Reasons

Discharges of contaminants into air from motor vehicles have the potential to cause an adverse effect upon the air environment. However, motor vehicles are also an integral part of modern day life. Therefore the Regional Council shall monitor ambient air to determine if air quality is being degraded, and will act as an advocate for solutions to avoid, remedy or mitigate any adverse effects on air quality as a result of discharges of contaminants into air from motor vehicles. Advocating appropriate legislation, supporting industry initiatives and providing educational information will also assist in reducing any adverse effects upon Southland's air environment due to discharges of contaminants into air from motor vehicles.

8.6 Outcomes

The main outcomes expected through the adoption of the above policies and methods are:

- 1. protection of the health of people and communities from any adverse effects of discharges of contaminants into air from motor vehicles;**
- 2. protection of cultural and amenity values from any adverse effects of discharges of contaminants into air from motor vehicles;**
- 3. consistency in transport planning documents in the region with respect to their consideration of the effects of discharges of contaminants into air from motor vehicles.**

9 Cross Boundary Issues

Cross boundary issues with regard to air quality in the Southland region exist on four levels:

1. between districts within the Southland region;
2. between the land and coastal interface within the Southland region;
3. between the Southland region and its neighbouring Otago and West Coast regions; and
4. between the Southland region and the remainder of New Zealand

The main issues for each level are outlined below:

1. between districts within the Southland region:
 - discharges of contaminants into air from an industry in one district adversely effecting the air quality of an adjoining district;
 - vegetation burn offs in one district adversely effecting ambient air amenity values of another district;
 - reduction in ambient air quality in one district having an adverse effect on the ambient air quality in adjoining districts;
 - consistency in the use of transferred powers;
 - consistency in the manner in which air quality concerns are addressed in transport planning documents;
 - provision of educational material, particularly with regard to localised adverse effects and their avoidance.
2. between the land and coastal interface within the Southland region:
 - cumulative discharges to air from ships adversely effecting ambient air quality;
 - point source discharges to air from ships adversely effecting the air quality of nearby land areas;
 - discharges to air from dry abrasive blasting, usually for maintenance purposes, in the coastal marine area adversely affecting the health of people and communities or amenity values;
 - discharges to air of dust from the loading or unloading of ships adversely effecting amenity values or causing a localised nuisance.
3. between the Southland and neighbouring regions:
 - discharges of contaminants into air from an industry in the Southland region adversely affecting the air quality of an adjoining region;
 - discharges of contaminants into air from an industry in an adjoining region adversely effecting the air quality of the Southland region;
 - consistency in the setting of consent conditions for discharges to air;
 - provision of educational material;
 - vegetation burn offs;
 - motor vehicle policies;
 - consistency of regulation of the railway network.

4. between the Southland region and the remainder of New Zealand:

- compliance with any National Policy Statements or international conventions of which New Zealand is a signatory;
- provision of educational material;
- consistency in the setting of consent conditions for discharges to air;
- sharing of monitoring information collected;
- motor vehicles policies (with respect to motor vehicle emission limits);
- consistency of regulation of the railway network.

The Southland Regional Council will consider these issues in order to ensure a fair, equitable and consistent management of air quality issues within the Southland region, between the Southland region and adjoining regions, and nationally. This will be undertaken by:

1. communication and consultation at both the staff and political levels between the various organisations;
2. submissions on District, Regional, or National Policies or Plans.

The communication and consultation undertaken at both staff and political levels between the various organisations will be monitored together with any submissions made by the Regional Council to determine if it is successful in ensuring fair, equitable and consistent management of air quality in the Southland region. In particular, communication and consultation will aim for consistency between this Plan and the Regional Coastal Plan.

10 Monitoring and Review

It is anticipated that this plan will be reviewed after 10 years. However, any of the following factors could act as a trigger for starting the review process earlier:

- (a) rules in other Southland regional plans which require an alteration to any part of this Plan;
- (b) results of ambient air quality monitoring which require an alteration to any part of this Plan;
- (c) major advances in air discharge management technology which should be incorporated in this Plan;
- (d) a change in the region's socio-economic base which results in a major change in either the volume, type or toxicity of air discharges being produced by any sector (e.g. industrial, commercial, domestic, rural, etc).

In addition, the following will be monitored to measure the effectiveness of this Plan and to assist in determining whether any part of it should be reviewed:

- (a) the amount and type of educational materials produced and/or distributed by the Southland Regional Council, and any advocacy or encouragement by the Regional Council to other organisations with regard to educational materials;
- (b) the advocacy and encouragement measures the Regional Council undertakes with respect to transport planning and engineering, codes of practice, buffer zones, and obtaining information;
- (c) the database system set up by the Regional Council to collate the information required by rules (such as consent conditions), or from ambient air quality monitoring, and the use of this information.
- (d) in conjunction with the Regional Solid Waste Management Plan, the database identifying the known discharges of greenhouse gases into air and any management practices put in place to reduce these emissions;
- (e) complaints, including their resolution, regarding unauthorised or non-complying activities, location of air discharges with regard to sites protected under the Historic Places Act, performance of territorial authorities carrying out duties under a transfer of power, and any nuisance complaints regarding discharges to air;
- (f) the occasions when enforcement procedures are used and any outcome;
- (g) the management of incinerators and the health concerns taken into consideration during the application/consent process for solid waste and/or offal incinerators;
- (h) monitor design ground level concentration (refer Appendix C) and ambient air quality guideline (refer Policy 4.3.1) changes.

Prior to the review process being instigated, the Southland Regional Council will consult with any sector(s) concerned.

11 Definition Of Terms

Anthropogenic

Made by people.

Any place (other than industrial or trade premises) and any other sources (whether moveable or not)

Includes, but is not limited to, discharges from hospitals (including hospital incinerators), crematoria, schools, commercial office buildings, local authority facilities, motor vehicles, aeroplanes, ships, mobile abrasive blasting facilities, and mobile asphalt plants and does not include industrial or trade premises, as defined in the Resource Management Act 1991 and this Plan.

Acid Smuts

Aggregates of carbon and ash particles bonded together by sulphuric acid containing iron sulphate.

Agrichemical

For the purposes of Rules 6.5.6 and 6.5.8 of this Plan, agrichemical means any algicides, aphicides, bactericides, fungicides, herbicides, insecticides, miticides, molluscicides, nematocides, pesticides.

Amenity Values

Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.

Ambient Air Quality

The general quality of the air that surrounds us.

Atmospheric Inversion

Climatic conditions where a warm layer of air traps a colder layer of air close to the land, so that the temperature of air increases with altitude, rather than decreasing, and prevents the dispersion of smoke. This is exacerbated during times of cold weather in the early mornings and evenings, especially during calm conditions.

Bodying

The increasing of viscosity through the use of chemical additives.

Calcining

The heating of ores to drive off water and carbon dioxide.

Carbonisation

The destructive distillation of organic substances out of contact with air.

hours of no combustion or a flue temperature of less than 50 degrees Celsius.

Contaminant

Includes any substance (including gases, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy or heat:

- (a) when discharged into water, changes or is likely to change the physical, chemical, or biological condition of water; or
- (b) when discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged.³⁶

Controlled Activity:

An activity which:

- (a) is provided for, as a controlled activity, by a rule in a plan or proposed plan; and
- (b) complies with standards and terms specified in a plan or proposed plan for such activities; and
- (c) is assessed according to matters the consent authority has reserved control over in the plan or proposed plan; and

is allowed only if a resource consent is obtained in respect of that activity.³⁷

Destructive Distillation

The distillation of solid substances accompanied by their decomposition.

Discretionary Activity

An activity which:

- (a) is provided for, as a discretionary activity, by a rule in a plan or proposed plan; and
- (b) is allowed only if a resource consent is obtained in respect of that activity; and
- (c) may have standards and terms specified in a plan or proposed plan; and
- (d) in respect of which the consent authority may restrict the exercise of its discretion to those matters specified in a plan or proposed plan for that activity.³⁷

Di-isocyanates

Used in the manufacture of flexible polyurethane foams, rigid foams, surface coatings and paints, adhesives and urethane rubbers. Examples are toluene di-isocyanate (TDI), hexamethylene di-isocyanate (HDI) and diphenylmethane di-isocyanate (MDI).

Dwelling

Has the same meaning as dwellinghouse in the Resource Management Act 1991, which is any building, whether permanent or temporary, that is occupied, in whole or in part, as a residence; and includes any structure or outdoor living area that is accessory to, and used wholly or principally for the purposes of, the residence, but does not include the land upon which the residence is sited.

Effect

Any positive or adverse effect; and

- any temporary or permanent effect; and
- any past, present, or future effect; and
- any cumulative effect which arises over time or in combination with other effects regardless of the scale, intensity, duration, or frequency of the effect; and
- any potential effect of high probability; and

³⁶ Resource Management Act 1991 Definition

- any potential effect of low probability which has a high potential impact..³⁷

Environment

Includes:

- (a) ecosystems and their constituent parts, including people and communities; and
- (b) all natural and physical resources; and
- (c) amenity values; and
- (d) the social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters.³⁷

Exfoliation

The splitting off of thin folia or sheets of rock.

Fertiliser

For the purposes of Rule 6.5.7 of this Plan, fertiliser means any compound used for the enhancement of plant growth.

Foul Water

Liquid effluent from any industrial or trade process or municipal source.

Frit

Calcined mixture of sand and additives for glass-making.

Incineration

Process which partially or completely reduces materials to ash and combustion gases through combustion, usually in a purpose built appliance.

Indicator Contaminant

A contaminant selected for measurement because:

- it occurs throughout the air environment; and
- it is known to have the potential to cause adverse human and environmental health effects in concentrations greater than set standards; and
- cumulatively, with other chosen contaminants, it gives an overview of the state of health of the general air environment; and
- it is practical and feasible to measure.

Industrial or Trade Premises

- (a) Any premises used for any industrial or trade purposes; or
- (b) Any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste management purposes, or used for composting organic materials; or
- (c) Any other premises from which a contaminant is discharged in connection with any industrial or trade process --
and includes any factory farm; but does not include any production land.³⁷

³⁷ Resource Management Act 1991 Definition

Industrial or Trade Process

Includes every part of a process from the receipt of raw material to the dispatch or use in another process or disposal of any product or waste material, and any intervening storage of the raw material, partly processed matter, or product.³⁷

Landfill

A site used for the deposition of solid waste onto or into land (a generic term which, depending upon the circumstances, can include industrial or trade premises and production land).

Masking Agent

Chemical compound used to disguise odour.

Motor Vehicle

A vehicle drawn or propelled by mechanical power; and includes a trailer, but does not include vehicle running on rails, or aircraft.

Movable Sources

Any form of transport used in the moving of people or goods, including conveyors.

Non-Complying Activity

An activity (no being a prohibited activity) which contravenes a rule in a plan or proposed plan; and is allowed only if a resource consent is obtained in respect of that activity.³⁷

Notification

Means either direct individual contact or formal public notification in a Public Notices column.

Nuisance Particulates

Those which do not impose a human or environmental health hazard, but whose accumulation can give rise to complaint.

Odour Units

The amount of odorous material contained in one cubic metre of air, as measured by olfactometry.

Offal

Dead animals/stock (either entire or parts thereof), including residues from incineration.

Organic Plasticisers

High boiling liquids used as ingredients in lacquers, plastics and rubber compounds (e.g. high boiling glycol esters).

Oxygen Lancing

A process used principally for cutting heavy sections of steel or cast iron, in which oxygen is fed to the cutting zone through a length of steel tubing.

Particulates PM₁₀

The portion of particulate matter which is smaller than 10 microns in diameter and which is associated with adverse effects on human health, namely those which are able to penetrate the upper respiratory tract.

Permitted Activity

An activity that is allowed by a plan without a resource consent if it complies in all respects with any conditions (including any conditions in relation to any matter described in Section 108 or Section 220 of the RMA) specified in the plan.³⁷

Power Station Boilers

For the purposes of this Plan, boilers which are used either singly or in combination for electricity generation purposes where the output from the generators exceeds 20 MW electrical.

Pozzolanic Materials

Volcanic ash used for hydraulic cement.

Prohibited Activity

Means an activity which a plan expressly prohibits and describes as an activity for which no resource consent shall be granted; and includes any activity prohibited by Section 105(2)(b) of the Historic Places Act 1993.³⁸

Pyrolysis

The decomposition of a substance by heat.

Radiocommunication

Any transmission, emission, or reception of signs, signals, writing, images, sounds or intelligence of any nature by electromagnetic waves of frequencies between 9 kilohertz and 3000 gigahertz, propagated in space without artificial guide.³⁹

Refuse Disposal Facility

An industrial or trade premise that deals with solid waste.

Scarfig

Preparing metal edges for forge welding.

Sintering

Coalescing into a single mass under the influence of heat without actually liquefying.

Solid Waste

Any solid material regardless of form, including containers and their contents which are considered to be of no further economic use, and require permanent disposal, or storage until such time that they can be reused or recycled, and includes residues from incineration.

³⁸ Resource Management Act 1991 Definition

³⁹ Section 2(1) of the Telecommunications Act 1987 Definition

Telecommunication

The conveyance from one device to another of any sign, signal, impulse, writing, image, sound, instruction, information, or intelligence of any nature, whether for the information of any person using the device or not.³⁹

Appendix A: Types of Industrial Processes Located in the Southland Region as at 1 October 1996

- Processes for rendering;
- Animal or Plant Matter Processes with Application of Heat;
- Mineral Extraction and Refinement Processes;
- Fertiliser Production Processes;
- Tanning Processes;
- Construction and Roadworks Processes;
- Smelting Processes;
- Grain and Flour Processes;
- Dry Abrasive Blasting Processes;
- Incineration Processes and Boilers,
- Wool Scour Process,
- Dag Crushing Processes,
- Processes for Blending, Packaging or Handling of Air Contaminating Substances.

Appendix B: Classes of Specified Air Contaminants

1. Radioactive, carcinogenic, teratogenic, or mutagenic substances.
2. Antimony, arsenic, beryllium, cadmium, lead, mercury, thallium, selenium, uranium and their compounds.
3. Boron, chromium, cobalt, copper, magnesium, manganese, nickel, potassium, sodium, tellurium, tin, vanadium, zinc, and their compounds.
4. Dust containing asbestos, quartz, or other of the pneumoconioses inducing or asthmagenic substances.
5. Dusts and fumes containing metallic elements; and dusts and fumes containing organic and inorganic materials including fertilisers, cement, coal, coke, soot, carbon, tars, wood fibres, and pathogenic substances.
6. Sulphur, sulphur oxides, sulphur oxy acids, carbon di-sulphide, hydrogen sulphide, di-sulphides, poly-sulphides, mercaptans, and other acidic, toxic, or odorous sulphur compounds.
7. Nitrogen oxides, nitric acid, ammonia, and hydrazine, and their compounds, volatile amines, cyanides, cyanates, di-isocyanates or other toxic or odorous compounds of nitrogen.
8. Fluorine, chlorine, bromine, iodine, and their compounds.
9. Phosphorus and its oxides, acids, and organic compounds.
10. Alkyl, carbonyl, and other toxic organo-metal compounds.
11. Hydrocarbons and their partially oxidised or halogenated derivatives, particularly acrolein, esters of acrylic acid, formaldehyde, and volatile carboxylic acids, and anhydrides and industrial solvents.
12. Ozone and carbon monoxide.
13. Chlorofluorocarbons and other ozone depleting substances.14.

Appendix C: Three Minute Design Ground Level Concentrations

Where 3 minute design ground level concentrations are proposed to be used (for example for odour calculation purposes) the recommended computer model used is a Gaussian dispersion model. (Rule 5.2.2, Information Required (c)).

The prediction of maximum (“worst case”) 3 minute ground level concentrations for an individual source subject to a resource consent should be followed at 2 levels of complexity:

1. a relatively simple analysis should be used for small to moderate sized sources; and
2. an extensive analysis should be used for large sources and discharges of significant quantities of contaminants.

The calculation shall include some or all of the following steps, depending on the complexity of analysis required:

1. develop emission, meteorological and other data required;
2. check chimney design in relation to minimum discharge velocity, insulation, height of source in relation to adjacent buildings and neighbourhood topography;
3. determine any allowances for adjacent discharges;
4. estimate background concentrations of the contaminants of interest based on available monitoring data;
5. predict plume rise and dispersion under neutral, stable and unstable conditions using the Briggs equation and modified Pasquill dispersion curves or other appropriate equations or methods;
6. make any necessary allowances or corrections for plant start-up and upset conditions;
7. make any necessary corrections for the influence of terrain;
8. make any necessary corrections for chemical transformations of contaminants in the plume;
9. estimate maximum (“worst case”) 3 minute ground level concentrations.

Appendix D: List of Hazardous Air Pollutants

The Chemical Abstracts service number merely provides a source of additional information on the substance. It does not specify emission recommendations, as such. The Chemical Abstracts Services Registry Number (CAS) is unique to the product to which it is allocated and is quoted in chemical handbooks for quick reference and identification purposes.

Chemical Abstracts Service Number	Pollutant
75-07-0	Acetaldehyde
60-35-5	Acetamide
75-05-8	Acetonitrile
98-86-2	Acetophenone
53-96-3	2-Acetylaminofluorene
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
107-05-1	Allyl chloride
92-67-1	4-Aminobiphenyl
62-53-3	Aniline
90-04-0	o-Anisidine
1332-21-4	Asbestos
71-43-2	Benzene
92-87-5	Benzidine
98-07-7	Benzotrichloride
100-44-7	Benzyl chloride
92-52-4	Biphenyl
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
542-88-1	Bis(chloromethyl) ether
75-25-2	Bromoform
106-99-0	1,3-Butadiene
156-62-7	Calcium cyanamide
105-60-2	Caprolactam
133-06-2	Captam
63-25-2	Carbaryl
75-15-0	Carbon disulfide
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
120-80-9	Catechol
133-90-4	Chloramben
57-74-9	Chloradane
7782-50-5	Chlorine
79-11-8	Chloroacetic acid
532-27-4	2-Chloroacetophenone
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate

67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether
126-99-8	Chloroprene
1319-77-3	Cresol/cresylic acid (mixed isomers)
95-48-7	o-Cresol
108-39-4	m-Cresol
106-44-5	p_Cresol
98-82-8	Cumene
	2,4-D (2,4-Dichlorophenoxyacetic acid) (including salts and esters)
72-55-9	DDE (1,1-dichloro-2,2-bis(p-chlorophenyl) ethylene)
334-88-3	Diazomethane
132-64-9	Dibenzofuran
96-12-8	1,2-Dibromo-3-chloropropane
84-74-2	Dibutyl phthalate
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3 ¹ -Dichlorobenzidine
111-44-4	Dichloroethyl ether (bix[2-chloroethyl]ether)
542-75-6	1,3-Dichloropropene
62-73-7	Dichlorvos
111-42-2	Diethanolamine
64-67-5	Diethyl sulfate
119-90-4	3,3 ¹ -Dimethoxybenzidine
60-11-7	4-Dimethylaminoazobenzene
121-69-7	N,N-Dimethylaniline
119-93-7	3,3 ¹ -Dimethylbenzidine
79-44-7	Dimethylcarbonyl chloride
68-12-2	N,N-Dimethylformamide
57-14-7	1,1-Dimethylhydrazine
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulfate
	4,6-Dinitro-o-cresol (including salts)
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
122-66-7	1,2-Diphenylhydrazine
106-89-8	Epichlorohydrin (1-Chloro-2,3-epoxypropane)
106-88-7	1,2-Epoxybutane
140-88-5	Ethyl acrylate
100-41-4	Ethylbenzene
51-79-6	Ethyl carbamate (Urethane)
75-00-3	Ethyl chloride (Chloroethane)
106-93-4	Ethylene dibromide (Dibromoethane)
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-21-1	Ethylene glycol
151-56-4	Ethyleneimine (Aziridine)

75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
75-34-3	Ethylodene dichloride (1,1-Dichloroethane)
50-00-0	Formaldehyde
76-44-8	Heptachlor
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
	1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including lindane)
77-47-4	Hexachlorocyclopentadiene
110-54-3	Hexachloroethane
822-06-0	Hexamethylene diisocyanate
680-31-9	Hexamethylphosphoramide
110-54-3	Hexane
7647-01-0	Hydrochloric acid (Hydrogen chloride [gas only])
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
123-31-9	Hydroquinone
78-59-1	Isophorone
108-31-6	Maleic anhydride
67-56-1	Methanol
72-43-5	Methoxychlor
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
78-93-3	Methyl ethyl ketone (2-Butanone)
60-34-4	Methylhydrazine
74-88-4	Methyl iodide (Iodomethane)
108-10-1	Methyl isobutyl ketone (Hexone)
624-83-9	Methyl isocyanate
80-62-6	Methyl methacrylate
1634-04-4	Methyl tert-butyl ether
101-14-4	4,4 ¹ -Methylenebis (2-chloroaniline)
75-09-2	Methylene chloride (Dichloromethane)
101-68-8	4,4 ¹ -Methylenediphenyl diisocyanate (MDI)
101-77-9	4,4 ¹ -Methylenedianiline
91-20-3	Napthalene
98-95-3	Nitrobenzene
92-9393	4-Nitrobiphenyl
100-02-7	4-Nitrophenol
79-46-9	2-Nitropropane
684-93-5	N-Nitroso-N-methylurea
62-75-9	N-Nitrosodimethylamine
59-89-2	N-Nitrosomorpholine
56-38-2	Parathion
82-68-8	Pentachloronitrobenzene (Quintobenzene)

87-86-5	Pentachlorophenol
108-95-2	Phenol
106-50-3	p-Phenylenediamine
75-44-5	Phosgene
7803-51-2	Phosphine
7723-14-0	Phosphorus
85-44-9	Phthalic anhydride
1336-36-3	Polychlorinated biphenyls (Aroclors)
1120-71-4	1,3-Propane sultone
57-57-8	beta-Propiolactone
123-38-6	Propionaldehyde
114-26-1	Propoxue (Baygon)
78-87-5	Propylene dichloride (1,2-Dichloropropane)
75-56-9	Propylene oxide
75-55-8	1,2-Propylenimine (2-Methylaziridine)
91-22-5	Quinoline
106-51-4	Quinone (p-Benzoquinone)
100-42-5	Styrene
96-09-3	Styrene oxide
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
7550-45-0	Titanium tetrachloride
108-88-3	Toluene
95-80-7	Toluene-2,4-diamine
584-84-9	2,4-Toluene diisocyanate
95-53-4	o-Toluidine
8001-35-2	Toxaphene (chlorinated camphene)
120-82-1	1,2,4-Trichlorobenzene
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
121-44-8	Triethylamine
1582-09-8	Trifluralin
540-84-1	2,2,4-Trimethylpentane
108-05-4	Vinyl acetate
593-60-2	Vinyl bromide
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
1330-20-7	Xylene (mixed isomers)
95-47-6	o-Xylene
108-38-3	m-Xylene
106-42-3	p-Xylene

Antimony Compounds
 Arsenic Compounds (inorganic including arsine)
 Beryllium Compounds
 Cadmium Compounds
 Chromium Compounds
 Cobalt Compounds
 Coke Oven Emissions
 Cyanide Compounds¹
 Glycol ethers²
 Lead Compounds
 Manganese Compounds
 Mercury Compounds
 Fine mineral fibres³
 Nickel Compounds
 Polycyclic Organic Matter⁴
 Radionuclides (including radon)⁵
 Selenium Compounds

Note: For all listings above which contain the word "Compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique substance that contains the named chemical (i.e. antimony, arsenic etc) as part of that chemical's infrastructure.

Footnotes:

1. X'CN where X = H' or any other group where a formal dissociation may occur. For example, KCN or Ca (CN)₂.
2. R-(OCH₂CH₂)_n-OR' where:
 - n = 1, 2 or 3
 - R = alkyl C7 or less
 - or R = phenyl or alkyl substituted phenyl
 - R' = H, or alkyl C7 or less or ester, sulphate, nitrate, sulphonate
3. Includes mineral fibre emissions from facilities manufacturing or processing glass, rock or slag fibres (or other mineral derived fibres) of average diameter 1 micrometre or less.
4. Includes substituted and/or unsubstituted polycyclic aromatic hydrocarbons and aromatic heterocyclic compounds, with two or more fused rings, at least one of which is benzenoid (ie containing six carbon atoms and is aromatic) in structure. Polycyclic Organic Matter is a mixture of organic compounds containing one or more of these polycyclic aromatic chemicals. Polycyclic Organic Matter is generally formed or emitted during thermal processes, including:
 1. incomplete combustion
 2. pyrolysis
 3. the volatilization, distillation or processing of fossil fuels or bitumens or
 4. the distillation or thermal processing of non-fossil fuels.
5. A type of atom which spontaneously undergoes radioactive decay.

Reference: Ministry for the Environment's Ambient Air Guidelines, July 199

Appendix E: Memorandum on Chimney Heights

This memorandum is intended to provide, for the use of local authorities and others who may need to determine the height appropriate for certain new chimneys, a relatively simple method of calculating the approximate height commonly desirable in normal circumstances.

This method is to be regarded as a guide rather than a mathematically precise way of reaching a final decision on chimney height. It should be modified as seems necessary in the light of particular local circumstances. For example, a chimney in a narrow valley or near tall buildings may need to be higher than would otherwise be necessary.

The memorandum is not applicable to all chimneys. It is applicable only to:

- (a) chimneys of industrial boiler plant of maximum continuous rating greater than approximately 295 kg steam/hr (or 0.19 MW) and not exceeding 204,000 kg steam/hr (or 132 MW); or to
- (b) chimneys serving furnaces burning fuel at a maximum rate greater than approximately 45 kg/hr of coal or 23 kg/hr of oil and not exceeding 23,000 kg/hr of coal or 14,000 kg/hr of oil.

The method of calculation is based on the amount of flue gases which the chimney is expected to emit as a function of the maximum rate of emission of sulphur dioxide. Modification of the result obtained may be necessary where there is a danger of pollution by gaseous efflux other than normal products of combustion.

Prejudice to health or nuisance from smoke, grit and dust should not occur where chimney heights are so calculated and where appropriate use is made of the other relevant provisions of this Plan. It should be noted that difficulty with grit and dust cannot be avoided solely by increasing the height of a chimney. Dust arrestment plant is also necessary

Amount of sulphur dioxide emissions

For the purpose of the memorandum, the amount of sulphur dioxide likely to be emitted may be calculated as follows. If the maximum rate at which coal or other solid fuel is burnt is W thousand kg/hr and the sulphur content of the fuel is S per cent, the weight of sulphur dioxide emitted in the flue gas should be taken as $18 WS$ kg/hr since about 10% of the sulphur is retained in the ash. The average sulphur content of coal is 1.6 per cent. As an example, a plant burning coal of sulphur content 1.6% at a maximum rate of 4,000 kg/hr, emits 115 kg/hr of sulphur dioxide. If the maximum rate at which oil is burnt is W thousand kg/hr and its sulphur content is S per cent, the weight of sulphur dioxide emitted in the flue gas should be taken as $20 WS$ kg/hr. The average sulphur content of residual fuel oil used in boiler plant is about 3%. One tonne of oil may be taken to contain 1050 litres.

Efflux velocity

The diameter of a chimney top should be as small as possible in order to increase the efflux velocity of the flue gases. If the efflux velocity is insufficient, the plume of gas tends to flow

down the outside of the stack on the lee side and the effective chimney height is thus reduced. Efflux velocities of about 15 m/sec will avoid this downwash.

Such a velocity is impracticable for small boilers, but boilers equipped with forced draft fans only should have a chimney efflux velocity of not less than 6 m/sec at full load. Boilers equipped with induced draft fans should have a chimney efflux velocity of not less than 8 m/sec at full load for boilers rated up to 13,600 kg/hr increasing to a maximum of 15 m/sec at full load for boilers rated at 204,000 kg/hr.

The method of calculation assumes that the appropriate efflux velocity will be achieved.

Combining of emissions

Where there are several adjacent furnaces in the same works, there are advantages in combining the waste gases if possible, and discharging them through a common chimney. The larger volume from the combined emissions has a higher thermal rise than the discharges from separate chimneys and the concentration of the flue gases reaching the ground is smaller.

Method of Calculating Chimney Heights

“Uncorrected chimney height” and “final chimney height”

The first stage is the calculation of the “uncorrected chimney height”. This is the height appropriate for the relevant maximum rate of sulphur dioxide emission when account has been taken of neighbouring sources of pollution, the local background level of pollution and the general character of the district. In the category E areas, the uncorrected chimney height is never less than 13 m.

The second stage is the calculation of the “final chimney height”. This is the uncorrected chimney height amended if necessary to allow for the dispersal from the chimney being affected by the building to which the chimney is attached and by neighbouring buildings.

Calculation of uncorrected chimney height

The initial step is to consider the character of the surrounding district which for this purpose should be regarded as falling within one of the following categories:

- A. an undeveloped area where development is unlikely, where background pollution is low, and where there is no development within 800 m of the new chimney;
- B. a partially developed area with scattered houses, low background pollution, and no other comparable industrial emissions within 400 m of the new chimney;
- C. a built-up residential area with only moderate background pollution and without other comparable industrial emissions;
- D. an urban area of mixed industrial and residential development, with considerable background pollution and with other comparable industrial emissions within 400 m of the new chimney;
- E. a large city, or an urban area of mixed heavy industrial and dense residential development, with severe background pollution.

When it has been decided into which of these categories the surrounding district falls, reference is then made to the relevant chart on the following pages. A line starting from the relevant sulphur dioxide emission on the left-hand side of the appropriate chart and produced through the points A, B, C, D or E (representing the category into which the district falls) will indicate on the right-hand side of the chart the appropriate uncorrected chimney height. In the case of an oil-fired plant 10% should be added to the uncorrected chimney height so indicated in order to allow for the average reduction in thermal lift compared with that of a similar emission of sulphur dioxide from coal-firing.

Example

A new chimney is needed for a plant burning coal and emitting 127 kg sulphur dioxide per hour. What is the uncorrected chimney height in a district in Category C and a district in Category E? Reference to the diagram for medium installations shows that the respective uncorrected chimney heights are 33 m and 37.5 m.

Calculation of final chimney height

An uncorrected chimney height not less than $2\frac{1}{2}$ times the height of the building to which the chimney is attached or of any other building in the immediate vicinity does not need to be corrected to allow for the effect of the building. In that case the final chimney height is the same as the uncorrected chimney height, and to further calculation is necessary.

Corrections for the effects of buildings are, however, necessary when the uncorrected chimney height is less than $2\frac{1}{2}$ times the height of such buildings and these establish the final chimney height.

The correction is partly based on the ratio between the greatest length and height of the building (to the ridge), since the relationship between the greatest length and height influences the effect of downdrafts.

In a closely built-up area where the plant building is lower than adjacent buildings, the chimney should for this purpose be regarded as being attached to an infinitely long building whose height is the average level of the roof tops in the immediate vicinity.

Reference should then be made to the diagram for final chimney heights. A line starting from the relevant uncorrected chimney height on the left-hand side is produced through the point representing the building height to the reference line. From this point on the reference line another line produced through a point representing the height of the building or its greatest length, whichever is the lower, will indicate on the right-hand side of the chart the final chimney height, subject to any adjustment that may be necessary to ensure that this is never less than 3 m above the ridge of the building, nor less than the uncorrected chimney height.

Example I

A chimney whose uncorrected height is 37 m is attached to a building 31 m in height to the ridge of the roof; what will the final chimney height have to be if the maximum width of the building is (a) 31 m or more, (b) 15 m, and (c) 7 m? Reference to the diagram for final chimney heights shows that the three cases represented by dotted lines and the corresponding final heights are 51.5 m, 43 m and 38 m.

Example II

A chimney whose uncorrected height is 18 m is attached to a building 24 m in height to the ridge of the roof; what should the final chimney height be if the maximum width of the building is (a) more than 24 m, (b) 9 m? Reference to the diagram for final chimney heights shows the corresponding final heights to be 34 m and 25 m. The final heights are therefore 34 m and 27 m respectively, since they must be at least 3 m above the ridge of the roof.

Circular to:

All Smoke Inspectors for attachment to the Memorandum on Chimney Heights

The “Memorandum on Chimney Heights”, prepared by the British Ministry of Housing and Local Government has been circulated to all local authorities as guidance for interpretation of the “best practicable Means” clause of the Smoke Restriction Regulations for a number of years.

The Chief Chemical Inspector for the Department of Health continues to recommend the use of this document for determining chimney heights in New Zealand, but some enlargement on the introductory part of the Memorandum seemed necessary for application in New Zealand. Such an introduction was issued some years ago but changes in fuel usage have rendered it obsolete. These recommendations rescind and substitute for any suggestion then made.

For small and medium sized oil fired boilers experience has shown that an insulated stack is necessary to avoid smut problems.

In choosing the district Category A to E the main consideration should be what the area is likely to develop to, within the life of the installation, rather than what it is at the present time. There is probably little point in the fine distinction of the Memorandum and Category A might be regarded as applying to the totally rural, C to small urban communities where little growth is anticipated and no close housing, and E all areas of high density occupation, or where development is expected.

The earlier introduction suggested that no fuel should be regarded as having less than 1% sulphur. The advent of natural gas with effectively zero sulphur content and the increasing amounts of plastic going into incinerators requires more detailed recommendations.

- (a) For liquid or solid fuels, including untreated wood, the calculations should be based on the maximum content of sulphur of any fuel likely to be burned. For industrial installations it is recommended that the minimum sulphur content allowed should be 0.5%.
- (b) For natural gas and manufactured gas with zero or very low sulphur content it has to be recognised that the process of combustion does generate nitrogen oxides which have much the same degree of offensiveness as sulphur dioxide. Some tests made by the Department on industrial-size gas-fired boilers have agreed quite well with overseas data published by HEW in their Air Pollution Manual. It is recommended that in setting the height of chimneys for gas fired furnaces this data be applied and the estimated quantity of nitrogen oxides produced be substituted for sulphur dioxide in using the nomographs. The quantity of nitrogen oxides formed is small and for furnaces releasing heat and using gas fuel in the aggregate not exceeding a rate of 3 MW, the main consideration is to avoid local downdraft effects. It is recommended that the height of the building containing the furnace, or buildings immediately adjacent, be taken as the uncorrected stack height and the nomograph of final chimney heights for small furnaces or 3 m (whichever is the greater) added to each corrected height. Usually no correction will be required for taller buildings 30 m or more distant. For furnaces or aggregates of furnaces of larger size it is recommended that a Chemical Inspector be asked to make a

recommendation. Guidance as to the uncorrected heights in uncomplicated situations would be approximately as follows:

MW	Metres
6	9
9	12
12	14
15	15

- (c) For incinerators receiving mixed fuels, the height might continue to be based on 1% sulphur except where substantial quantities (say 5% or more of the charge weight) is likely to be rubber or plastic or treated wood waste. In these cases an estimate of the likely maximum quantity of offensive material to be burned at any one time should be sought and a Chemical Inspector consulted.

A special category of furnaces is those where the flue gases are used directly to dry or heat various materials. In these cases the height of the stack required may be better determined by the material exposed to the flue gases rather than the nature of the fuel. Such cases require individual assessment and if there is any element of doubt on the likely effects, consultation with the Chemical Inspector is desirable.

The stack height is also based on the assumption that little dust or grit is produced in combustion or that an effective grit arrestor is fitted. For small installations a performance better than 500 milligrams per cubic metre of flue gas reduced to NTP is usually acceptable but for pulverised fuel and very light material such as wood shavings, less than 250 milligrams per cubic metre is necessary, while for very large installations, less than 125 milligrams per cubic metre. When grit arrestors are fitted to incinerators or wood burning plants, performance is likely to be less effective than on solid fuels because of the lower density of the material to be collected. With wood waste, a specific density of 0.5 should be allowed rather than 2.0 assumed for minerals.

Note:

In the following nomograms, the chimney height is calculated to ensure dispersion of the gases to achieve a theoretical maximum ground-level concentration of 0.4 mg/m³ (about 0.16 ppm by volume) of sulphur dioxide. This is less than the generally accepted threshold of odour for this gas of 1.1 mg/m³ (about 0.5 ppm by volume).

Appendix F: Suggested Buffer Distances

The buffer distances given below should be used only as a guide and each resource consent application will take into account site specific parameters. The purpose of buffer distances in environmental management is to separate areas lived in or frequented by the public from a source of potential environmental nuisance or effect. The buffer distance examples suggested in this section are based on local and overseas experience and are intended to be used for the dispersion of residual air emissions arising from diffuse sources and adventitious losses. They assume that good control practice is employed in accordance with the requirements of this Plan. For sources not listed in this section the advice of the Southland Regional Council should be sought.

Process	Suggested Buffer Distance (m)
Plants for processing raw cattle hides, raw-hide dressing and tanning with facilities for processing wastes	300
Storehouses for wet-salted and unprocessed hides (storage capacity for over 200 hides)	300
Wool washing plants	300
Slaughterhouses for small animals and poultry	360
Flour mills, hulling mills, grain shelters and feed concentrate mills	100
Coffee roasting plants	100
Cheese making factories	100
Fish canneries and fish filleting plants with departments for processing wastes; fish packing plants	100
Vegetable processing (drying, salting or pickling) plants	100
Composting of refuse containing neither manure nor faecal matter	300
Beef feedlots (to residential areas)	5000
Beef feedlots (to any residential dwelling on adjacent property)	400
Poultry farms	360
Production of paper pulp and hemicellulose by the sulphite, bisulphite and monosulphite processes involving the combustion of sulphur or sulphur containing materials; also production of paper pulp by the sulphate process	5000
Oil refineries	2000
Production of sulphuric acid, fuming sulphuric acid and sulphur dioxide	1000
Manufacture of nitrogen compounds (ammonia, nitric acid and fertilisers)	1000
Production of calcium carbide, acetylene from calcium carbide and acetylene derivatives	1000
Natural gas processing plants	500
Production of acetic acid	500
Production of polyethylene and polypropylene from petroleum byproduct gas	500

Process	Suggested Buffer Distance (m)
Blending of fertiliser mixtures	300
Production of tyres, industrial rubber goods, ebonite and bonded footwear and the rubberstock used in their manufacture	300
Production of laquer, spirit varnishes, printers' varnish, varnishes for the rubber industry, insulating varnishes etc	300
Soap production	100
Production of goods from synthetic resins, polymers and plastics by various methods (moulding, extrusion, injection moulding, vacuum forming etc)	100
Production of aluminium by electrolysis of fused alumina	2000
Plant for secondary processing of non-ferrous metals (copper, lead, zinc) at a rate over 3000 tonnes per year	2000
Plants for the extraction of natural gas	1000
Mining of hard coal, brown coal and other coals	500
Production of portland, portland slag and other cements in amounts up to 150,000 tonnes per year	500
Production of asphalt in permanent plants	300
Production of red brick and silica brick	100
Glass manufacture	100
Printing works	50
Iron smelting where the total volume of the blast furnace is less than 500m ³	300
Production of lead accumulators	500
Manufacture of boilers	100
Production of articles from wood fibre using artificial resins as binders (chipboard, fibreboard)	300
Sawmills and factories producing plywood and wood parts for buildings of standard design	100
Production of wallpaper	100
Plants for the primary processing of vegetable fibres (flax, hemp, cotton etc)	300
Bleaching, dyeing and finishing plants	300
Manufacture of hemp, cordage, rope and twine	100
Factories manufacturing glue from hide remnants, bone refuse and other animal wastes and refuse	1000
Plants for processing animal or fish wastes and residues into fats, animal feed, fertilisers etc	1000
Roasting and grinding bones	500

Source: Environment Protection Authority of Victoria, Publication No AQZ-86

Appendix G: Areas Where Existing Air Quality is to be Protected

- National Parks established under the National Parks Act 1980
- Lands on Stewart Island that are reserves under the Reserves Act 1977 and stewardship lands pursuant to the Conservation Act 1987
- Takitimu stewardship land area (Sections 1 and 2 on SO 12055)
- Longwoods stewardship land area (Sections 1 to 6 on SO 12055)
- Waituna Wetlands Scientific Reserve made up of:
 - Lot 1 DP 11242 Block X Campbelltown Hundred
 - Sections 9, 11 to 25, SO 2066 Block XV Campbelltown Hundred
 - Sections 29 SO 10326 Block XIII Oteramika Hundred
 - Sections 23, 27 SO 7651 Block XIV Oteramika Hundred
- Part Dean Forest Conservation Area consisting of:
 - Diggers Ridge Ecological Area SO 10044 Blocks I, III, V, VI, VIII, IX, X, XI Monowai Survey District
 - Lillburn Ecological Area SO 10045 Blocks III, VIII, XI, XII, Hauroko Survey District
- Part Rowallan Forest Conservation Area consisting of:
 - Waikoau Ecological Area SO 10045 Blocks X, XI, XIV, XV, XVI, Hauroko Survey District
- Lindsay Ecological Area, Part Sections 5, 6, 8 Block IV Lillburn Survey District

Appendix H: Ringelmann Smoke Charts

Taken from
**British Standard Notes on the
Use of the Ringelmann and Miniature Smoke Charts
NZ Standard 5201 1973**

Foreword

The method of visual assessment of smoke by comparison of the darkness of the smoke with standard shades of grey on a chart placed in a suitable position was devised by Professor Ringelmann of Paris towards the end of the last century. Professor Ringelmann obtained the shades of grey by cross-hatching in black on a white background so that a known percentage of the white was obscured. In use the charts were placed at such a distance from the observer that the black lines merged into the white background and produced for each shade, apparently, a uniform grey. The numbers of the shades - the Ringelmann numbers - ranged from 0-white to 5-black, the stages being by changes of 20% in obscuration of the background. The original charts were of large size so that the accuracy of reproduction could be obtained in a drawing office; since that time various other methods of reproduction have been tried and the size and details of the chart have been modified by various authorities from time to time.

Actually, Professor Ringelmann's original chart cannot have been drawn with 100% black ink on 100% white paper, since neither was available. The commercially print-ed charts in use for many years, including those issued by the US Bureau of Mines, are printed on paper with a luminance factor of about 80% with ink of luminance factor about 5%.

Measurements on smoke which are accepted are derived from the use of commercially-printed Ringelmann charts¹, and therefore the British Standard Ringelmann chart, BS 2742C, has been so printed as to reproduce with consistency shades of grey which are near the average of those to which users are accustomed. For convenience in size, the British Standard charts comprise the five shades corresponding to Nos. 0-4 Ringelmann: the black strip was included only for control during printing.

The chart will of necessity become soiled in use, when the observed Ringelmann number of the smoke will be less than the true value. It is essential, therefore, that a used chart should be discarded as soon as it becomes appreciably soiled or discoloured.

Preparation for Use

The chart should be mounted so as to be held firmly without creases or bending. The portion of any holder adjoining the "viewing edge" of the chart should be neutral in colour: aluminium is a suitable material. A suitable form of chart holder is shown in Figure 1 (p95). Protective coverings should not be applied to the chart in use. If the chart is attached to a board or other support, the fixing medium should not impair the luminance of the working surface of the chart.

Notes on Method of Use

The chart should be used under daylight conditions and held or fixed facing the observer in a vertical plane, as shown in Figure 2. Where possible, the chart should be in line with the top of the chimney and placed so that the chart and the smoke have a similar sky background. The chart should be at a sufficient distance from the observer for the lines to appear to merge until each square forms a uniform shade. For most observers, this distance is in excess of 15m.

Observations should be carried out as far as practicable under conditions of uniform general illumination from the sky ... with the sun shining, or with the sky bright on one side, the bright source of illumination should be approximately at right-angles to the line of vision, and not in front of or behind the observer. The white (No 0) square provides a useful indication of the illumination and will reveal any over-shadowing or uneven illumination of the chart. It also facilitates the detection of rain-spotting or other soiling of the chart. Under hazy conditions, readings should not be taken at extreme distances as there will be a tendency for the readings to be low.

It is desirable that the angle of view of the chart and smoke should be as low as possible: observations at a steep angle should be avoided.

The darkness of the smoke at the point where it leaves the chimney should be compared with the shades of the chart, the number of the shade which appears most closely to match the darkness of the smoke determined, and the time of duration of this darkness of smoke noted. The darkness of smoke which is intermediate between two shades may be estimated to the nearest quarter Ringelmann number in favourable conditions.

The BS Miniature Smoke Chart

Introduction. In practice it has been found that there are many situations where a BS Ringelmann chart cannot conveniently be used. Use of the standard chart may in many circumstances require the services of an assistant to hold the chart for the observer; for example, where it is not possible to fix the chart on a building to meet the above requirements. Accordingly the British Standard miniature smoke chart, BS 2742M, has been developed for use without assistance in such situations.

This chart has been prepared to the same precision as the BS Ringelmann chart. Although not intended for use as a substitute at this stage, results obtained are similar to those from the BS Ringelmann chart and the miniature chart may conveniently be used for readings of a preliminary nature.

The chart. The grey shades printed on this chart are arranged to correspond with the similar shades printed on the BS Ringelmann chart.

The chart is designed for use at a distance of less than 2m from the observer's eye. It is to be used under the conditions of illumination described in the notes on method of use. As the card on which the chart is printed is slightly translucent, the chart is to be backed when in use by a loose sheet of white opaque material or by insertion in a holder.

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No	Consent Holder	Consent No	Map Reference
4	Alliance Lorneville	0090	E46 494 187
2	Alliance Makarewa	0089	E46 522 108
3	Alliance Mataura	0030	F46 912 383
1	Allied Concrete Limited	93392	E46 525 147
5	Allied Materials	18/90	E46 516 109
6	Australasian Peat Hokonui	0038	E45 582 455
7	Australasian Peat Woodlands	B6/92	E46 675 181
8	Awarua Limeworks	94171	E45 527 430
9	Baker Hitchen Wools	93273	E45 493 408
10	Balfour Lime Co Ltd	0471	E44 688 714
11	Barns Sandblasting	16/10	E46 513 158
	Browns Lime	0472	E45 558 409
12	Bruce Smith Grain and Seed Cleaning	93738	E46 520 109
29	Carter Holt Harvey	94598	F46 912 383
13	Clifden Limeworks	0473	D45 023 517
14	Clifton Wool Scour	93224	E47 533 074
15	Coal Corp of NZ	92294	D45 178 629
16	Craigpine Timber Ltd	92016	E45 493 420
17	Eastern Processing Ltd	93791	E47 503 914
18	Fernhill Limeworks	0478	E45 497 552
19	Firth Industries Ltd	93413	E46 518 115
20	Fleming & Co Ltd Gore	0968	E45 964 485
21	Fulton Hogan Ltd	0003	E46 515 113
31	Goodwin Coal	93430	F45 822 417
23	ICC Airport Authority	0008	E46 505 111
22	Ian Hawthorne Wools and Dag Crushing	93512	E46 503 184
24	Kennington Industrial Park	92126	E46 603 144
25	Lake Wool and Skin Co Ltd	93198	E46 515 176
26	McKitterick Wools	93513	E46 524 144
27	Milburn NZ Ltd	93571	E46 517 116
39	NZ Biologicals Ltd	25/90	E46 558 119
28	NZAS	93566	Various
30	New Vale Coal Ltd	93429	F45 818 434
32	Otautau Wool and Skins	93277	D46 234 397
35	PPCS Ltd Waitane	94557	F45 945 451
33	Pneumatic Contractors	23/90	E46 517 112
34	Poultry Farmers Co-Op Ltd	93796	E46 522 108
37	Prime Range Meats Ltd	92239	E47 517 914
36	Prime Range Meats Waikiwi	0041	E46 509 161
38	Prodry Ltd	92127	E46 603 145
40	South Coal Ltd	93408	D45 248 600
43	South Flour	09/90	E46 527 113
44	South Port NZ Ltd	92329	E47 527 915
45	Southern Health	0045	E47 533 086
42	Southfert	0010	E47 557 029
41	Southfert Omaui	12/90	E47 467 959
46	Southland Brick & Pipe Ltd	92271	E46 517 175
47	Southland Dairy Co-Op	92410	F46 852 247
48	Southland Glass Service Mersey St	28/90	E46 545 278
49	Southland Peat	0039	E46 545 278
50	Southland Sand & Gravel	27/90	E46 518 109
51	Southland Sandblasting	93274	Mobile
52	Thermal Ceramics NZ Ltd	93333	E46 524 148
53	Tisbury Wool Processors	93511	E47 564 085
54	Waikiwi Wool Ltd	93726	E46 515 154

