



**Auckland  
Council**  
*Te Kaunihera o Tāmaki Makaurau*

## **Statement of Proposal**

# **Introduction of the Air Quality Bylaw 2015**

**October 2014**

**This Statement of Proposal includes:**

Summary of information

Statutory requirements to protect public health and improve air quality

Reasons for the proposal

Perceived problems and options recommended to achieve outcomes sought

Relevant bylaw determination

Appendix 1: Location of Auckland urban airshed

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## 1. Summary of Information

In comparison to other New Zealand cities and towns Auckland has relatively good air quality as its urban areas are located next to the Waitemata and Manukau harbours and benefit from the prevailing winds during the winter. However, there are urban areas during the winter months where air pollution is quite high. Air pollution usually occurs when there is not much wind, and where there is high traffic, or where homes are heated mainly by open fires or wood burners. As our population, standard of living, and size and density of the population of urban areas increase, air pollution is likely to get worse unless measures are taken to avoid this. The quality of the air we breathe, which we often take for granted, may be threatened. Unlike the food we eat or water we drink, we do not get to choose the air that we breathe. So we must look after our air carefully and protect one of the precious resources that contributes to the vision of making Auckland the world's most liveable city.

The air we breathe is a mixture of gases including nitrogen, oxygen, water, argon, carbon dioxide and trace gases. Each day we inhale around 14,000 litres (14 m<sup>3</sup>) of air as we take about 26,000 breaths (that's equivalent to about 150 full bathtubs). If this air contains pollutants, we inhale them into our bodies and they can affect our health. So to protect people's health and the environment, we need to keep the air clean and free from pollution.<sup>1</sup>

Many of our daily activities release chemicals and particles into the air we breathe. For example, motor vehicles release chemicals from their exhausts, and if we use fires and log burners to heat our homes, particles and other chemicals are released out of the chimney. Chemicals and particles that have the potential to affect our health and the environment are called contaminants or pollutants. When they build up in the air, they cause air pollution. The amount of pollution in the air depends on the amount of pollution produced (e.g. vehicles and heating) and the rate at which the pollutants disperse (environmental factors such as topography of the location, the wind, etc.).

Fine particulates (PM<sub>2.5</sub> and PM<sub>10</sub>) arising from combustion processes during the burning of fossil fuels can be inhaled easily and can lodge in the lungs and adversely affect human health. Indoor heating fires in Auckland are the second largest contributor overall to air pollution (motor vehicles are first) in summer but in winter months PM<sub>10</sub> (PM<sub>2.5</sub>) and emissions from these fires are the primary cause of air pollution in Auckland, exceeding emissions from vehicles and causing 72 per cent of all PM<sub>10</sub> emissions. This adversely affects the health and well-being of all Aucklanders but particularly the young, the elderly and those suffering from respiratory diseases and allergies.

A 2012 Health and Air Pollution in New Zealand (HAPINZ) study funded by the Health Research Council showed that each year in Auckland approximately 110 adults over 30 years old die prematurely because of fine particulate emissions from home heating fires. The study also estimates that each year there are about 26 cardiac hospital admissions, 50 respiratory hospital admissions and approximately 190,000 reduced activity days because of this source of air pollution. The health effects cost of air pollution from home heating fires is estimated to be approximately \$624 million<sup>2</sup> per

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<sup>1</sup> [Air quality: What is air pollution? Ministry for the Environment.](#)

<sup>2</sup> Air Quality Domestic Options Cost Benefit Analysis 2013, Auckland Council report TR 2013/029, Section 2.5.1 Benefit Assumptions, page 9.

year for Auckland. Work by Market Economics Ltd estimated that community health benefits of at least eight dollars would accrue for every one dollar spent to reduce indoor home heating fire emissions in Auckland.

The Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (AQNES) are regulations made in 2004 under the Resource Management Act 1991 which aim to set a guaranteed minimum level of health protection for all New Zealanders. Auckland Council, like other regional councils and unitary authorities is responsible for managing air quality under the Resource Management Act 1991.

The AQNES was amended in 2011 to include a definition of polluted airsheds, revised time frames to achieve compliance with the standard, and a requirement for offsets if a new air discharge consent application breached a PM<sub>10</sub> trigger level 2.5µg/m<sup>3</sup> in a polluted airshed. With the amendment local authorities are required to identify areas where air quality is likely, or known, to exceed the standards. These areas are known as airsheds, the Auckland urban airshed includes the main metropolitan urban areas on the isthmus but excludes the rural areas and the Hauraki Gulf Islands. The amendment also included an allowance for local authorities to use bylaws to set more stringent controls than the AQNES legislation.

The current Auckland urban airshed does not include the future urban areas proposed in the proposed Auckland Unitary Plan as these have yet to be confirmed by unitary plan process. While the initial airshed boundaries were set some time ago and have been adjusted as required and will continue to be adjusted in future.

Auckland Council is required to ensure that by 1 September 2016 Auckland has no more than one exceedance of the PM<sub>10</sub> standard set by the AQNES in any 12 month period in any of the airsheds in the Auckland area.<sup>3</sup> The average number of exceedances of PM<sub>10</sub> per year when calculated under the AQNES is used to determine whether an airshed is polluted that initiates mandatory offsets for any new industry that has substantial discharges of PM<sub>10</sub> into the airshed. The Auckland urban airshed became a polluted airshed in 2012 as it had an average of two exceedances of the PM<sub>10</sub> standard over the preceding five year period (see diagram 2 below).

The existence of a polluted airshed has significant consequences for growth and economic development within Auckland. Since 2012, all new air discharge consents have been assessed against the offsetting requirements in regulation 17 of AQNES. This inhibits potential growth of industry in Auckland due to significant consequential costs required to ensure the offset required by the AQNES. Any new applications that exceed the 2.5µg/m<sup>3</sup> trigger concentration must either remove an equivalent amount of PM<sub>10</sub> from airshed or upgrade its control equipment to reduce its offsite concentrations of PM<sub>10</sub>.

Auckland must have five clear years of compliance (i.e, one or less exceedances) to no longer be defined as polluted (and thus require mandatory offsets for new consents for large sources of PM<sub>10</sub>).

Since 1 September 2005 the AQNES has also set emission and efficiency standards for all wood burners installed on properties with an allotment size of less than two

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<sup>3</sup> Regulation 16B of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

hectares. The Auckland Regional Plan: Air Land Water, which was made operative in 2010, prohibits the use of indoor solid fuel burning open fires installed after 1 September 2005 unless they meet efficiency standards set out in the Plan. Existing indoor open fires and pre AQNES installed wood burners in Auckland that do not comply with the AQNES standards are not currently regulated by any legislation.

Indoor open fires and older solid fuel (wood) burners cause about 85 per cent of PM<sub>10</sub> emissions from home heating fires because of their inefficiencies and age. Data from the 2013 census and from the Auckland Council Home Heating Survey in 2012 estimated that of the around 100,000 home heating fires in use in Auckland:

- Approximately 17,000 of those in use are open fires which are the most polluting and least efficient
- 64,000 are old wood burners (pre 2005) that do not meet the requirements of the AQNES
- 17,000 are AQNES compliant wood burners and 1000 are AQNES compliant pellet burners.

The requirements of the AQNES for wood burners and the provisions of the Auckland Regional Plan: Air Land Water will not reduce PM<sub>10</sub> concentrations in the air sufficiently to ensure that Auckland Council meets the requirements of the AQNES by 2016. It is estimated that the total particulate emissions from home heating fires will need to be reduced by half if the AQNES were to be met by 2016.<sup>4</sup>

Failure to comply with the requirements of the AQNES may result in ministerial intervention under sections 24-27 of the Resource Management Act. Intervention can range from requiring the council to provide information regarding its compliance, to requiring the council to change or vary an existing or operative regional plan, to appointing commissioners if the council fails to take appropriate steps to remedy the identified failures.

### ***The proposal***

The council proposes to introduce a bylaw for the management of indoor fires to reduce the emissions of fine particles from indoor open fires and wood burners to attempt to meet the PM<sub>10</sub> standard in regulation 16B of the AQNES. The proposed bylaw would:

- largely continue existing -
  - rules in the Auckland Regional Plan: Air Land Water on what can and cannot be burnt in all indoor fires in Auckland to limit adverse health effects;
  - emission and efficiency standards for all new home heating fires except those in rural areas;<sup>5</sup>
- introduce new rules -
  - requiring the removal of non-compliant wood burners in the Auckland urban airshed when a property in the airshed changes ownership (“point of sale rule”) with effect from the date in 2015 the bylaw is made;
  - prohibiting the use of coal in indoor fires in the Auckland urban airshed also when the bylaw is made (“prohibiting coal rule”);

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<sup>4</sup> Auckland Council report, TR 2013 022 Domestic fire emissions 2012 options for meeting national environmental standard for PM<sub>10</sub>, page 4.

<sup>5</sup> This would effectively ban new open fires in all but large lot rural areas; However, rural areas outside the urban air shed are largely exempt from this restriction.

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- introducing a prohibition on the use of existing indoor open fires in the Auckland urban airshed from October 2018 (“open fires rule”);
- introducing a prohibition on the use of non-compliant wood burners in the Auckland urban airshed from October 2018 (“non-compliant wood burner rule”).

These measures will not achieve the requirements of regulation 16B of the AQNES by the statutory due date in 2016 but it is expected that the measures will ensure the AQNES target will be met in the Auckland urban airshed by 2019.<sup>6</sup>

The following table sets out the layout of the bylaw clauses and provides some comments on the bylaw clauses:

Clause number	Clause title	Comment
1	Title	
2	Commencement	The bylaw takes effect in stages to allow the council time to undertake an education campaign, and to give owners and occupiers time to upgrade their indoor heating systems.
3	Application	Except clauses 7, 8 and 9 that apply to the Auckland urban airshed, the rest of the bylaw applies to the whole of Auckland.
4	Purpose	The bylaw is targeted toward improving the health of Aucklanders by imposing the air quality standards contained in the AQNES in the Auckland urban airshed so that the council can comply with these regulations.
5	Interpretation	This clause provides the required definitions used in the bylaw. These are aligned to the proposed Unitary plan and the AQNES.
6	Use of indoor fires	This clause applies to both urban and rural properties in Auckland. The remainder of the bylaw only applies to properties in the Auckland urban airshed.
7	Point of sale rules for non-compliant indoor fires	The Point of Sale rule imposes an obligation on any vendor selling a property containing a non-compliant indoor fire to remove or replace it at the point of sale.
8	Use of open fires	This clause imposes a prohibition on the use of open fires in the urban airshed after 2018.
9	Use of coal	This clause is intended to deal with the use of coal as fuel for indoor fires as it is a particularly harmful source of pollution.

<sup>6</sup> Auckland Council report, TR 2013 022 Domestic fire emissions 2012 options for meeting national environmental standard for PM<sub>10</sub>, page 4.

10	Use of non-compliant indoor fires	This clause imposes a prohibition on the use of old wood burners in the urban airshed after 1 October 2018.
11	Temporary Dispensations	Temporary dispensations are available to enable use of open fires or non AQNES-compliant wood burners for an event of particular cultural, historical, or national significance.
12	Non-compliance with this bylaw	The council may use its powers under the Local Government Act 2002 to enforce this bylaw.
13	Offences and penalties	A person who fails to comply with this bylaw commits an offence against section 239 of the Local Government Act 2002.

## 2. Statutory requirements to protect public health and improve air quality

Auckland Council has obligations under the Local Government Act 2002, the Health Act 1956, the Resource Management Act 1991 and the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (AQNES) to protect public health and avoid the adverse effects of air pollution.

### **Resource Management Act 1991**

The purpose of the Resource Management Act is to promote the sustainable management of natural and physical resources. Sustainable management is defined as:

*Managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while –*

- (a) sustaining the potential of natural ... resources ... to meet the reasonably foreseeable needs of future generations; and*
- (b) safeguarding the life-supporting capacity of air ...; and*
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

Under the general requirements of section 30 of the Resource Management Act the council has responsibilities in relation to air quality that includes a function to control discharges of contaminants into air.

The objectives for air quality under the legacy Auckland Regional Policy Statement 1999 include avoiding, remedying and/or mitigating the deterioration of air quality in the region and avoiding, remedying or mitigating the adverse effects that arise from the discharge of contaminants to air including those from domestic (indoor) fire places and

solid fuel burning appliances.<sup>7</sup> The corresponding policy for domestic heating is to minimise the discharge of contaminants to air from domestic fireplaces and solid fuel burning appliances.

***Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (AQNES)***

The AQNES were first introduced in 2004 under the Resource Management Act 1991 and was amended on 1 June 2011.

Regulation 22 of the AQNES prohibits the discharge of particles from solid fuel wood burners installed after 1 September 2005 in any building on a property smaller than 2 hectares, unless the wood burner complies with the design and thermal efficiency standards in the AQNES (regulation 23 and 24). Regulation 24A of AQNES also requires that a prohibition on the use of new solid fuel open fires must be imposed by the council after the PM<sub>10</sub> standard is breached for the first time after 1 September 2011.

The AQNES also introduced five ambient air quality standards one of which was for PM<sub>10</sub> particulates (very fine particles with a diameter less than one hundredth of a millimetre – see diagram one). The threshold concentration for PM<sub>10</sub> is 50 micrograms per cubic metre expressed as a 24-hour mean. An airshed became polluted on and from 1 September 2012 or any later date, if the airshed average exceedance of PM<sub>10</sub> was more than one per year, averaged over a prior five year period<sup>8</sup>. As can be seen from diagram two the Auckland urban airshed is officially polluted because over the last five year period the exceedances of the PM<sub>10</sub> standard have averaged out at more than one per year – it averaged two. Consequently the council has given notice each time the PM<sub>10</sub> standard was breached in the Auckland urban airshed.<sup>9</sup> From 2016 the AQNES requires that there be no more than one exceedance of the PM<sub>10</sub> threshold concentration of 50 micrograms per cubic metre (24 hour) in any 12 month period<sup>10</sup>. Where the AQNES restrictions on the use of non-compliant woodburners and open fires are not sufficient to achieve these targets, councils must take additional steps to ensure the exceedance threshold requirements are met. Regulation 28 of the AQNES allows a rule, resource consent or bylaw that is more stringent than the regulations to prevail over the regulations.

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<sup>7</sup> Auckland Regional Council, Auckland Regional Policy Statement (1999), paragraph 10.3 and policy 10.13.

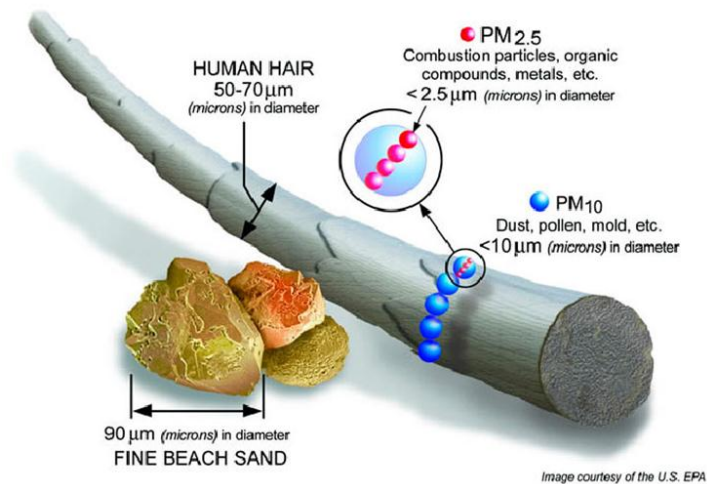
<sup>8</sup> Regulation 17(4) of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

<sup>9</sup> Regulation 24A of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

<sup>10</sup> Regulation 16B of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

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**Diagram 1: Size of PM<sub>10</sub> and PM<sub>2.5</sub> particulates**

The council has responsibilities for controlling discharges to air<sup>11</sup>, as well as observing and enforcing national environmental standards.<sup>12</sup> The Minister for the Environment may request information on the implementation of the AQNES from Auckland Council and the council has 20 working days to respond<sup>13</sup>. Where a local authority is failing to perform its functions, powers, or duties, the Minister has the power to undertake a number of interventions to ensure that those functions are appropriately exercised to achieve the purposes of the Resource Management Act 1991.<sup>14</sup> These interventions range from the ability to direct the council to amend or review a regional plan to address a resource management issue such as air quality, to the appointment of commissioners to exercise or perform all or any of the council's functions in place of the council.

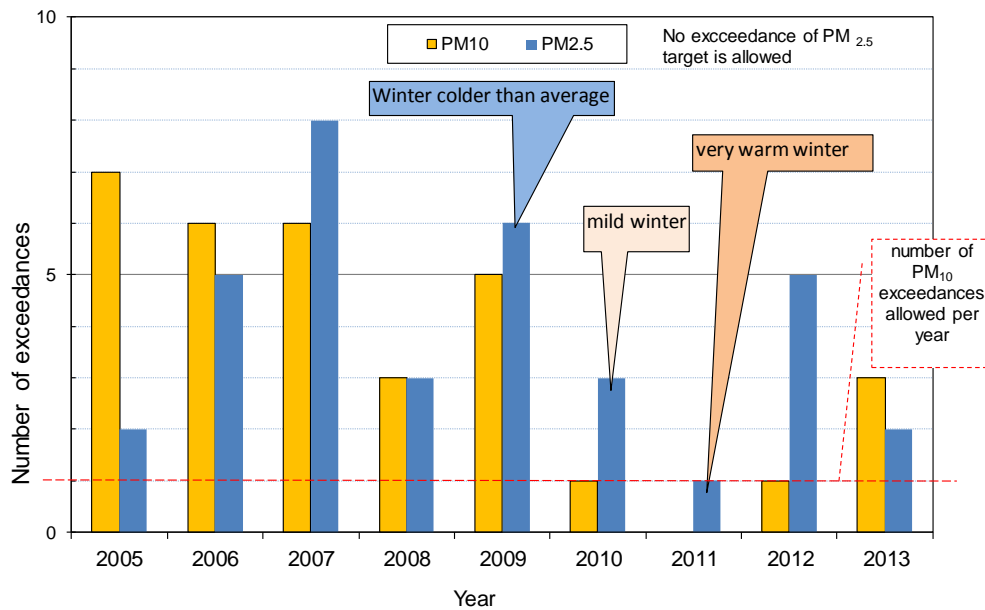
In 2009 there were five exceedances of the 50 micrograms per cubic metre level PM<sub>10</sub> threshold at the monitoring stations in Khyber Pass (one), Takapuna (one), Pakuranga (two) and an Auckland-wide exceedance (one) caused by Australian dust storms. In 2010 there was one exceedance in Pakuranga but this was in February and was not caused by home heating fires. In 2011 there were no exceedances, probably because it was a very mild winter and in 2012 one exceedance occurred in Pakuranga. In 2013 there were two exceedances of the PM<sub>10</sub> threshold level at the Khyber Pass monitoring station and one in Pakuranga (see *Diagram 2: The number of days the ambient PM10 concentration exceeded the AQNES standard, and corresponding exceedances of the regional PM2.5 Target (25mg/m<sup>3</sup>)*). Pakuranga represents an urban area away from major roads, Takapuna an urban area near major roads and Khyber Pass a commercial area near major roads.

<sup>11</sup> Section 30(1)(f) of the Resource Management Act 1991.

<sup>12</sup> Refer section 44A(7)-(8) of the Resource Management Act 1991.

<sup>13</sup> Section 27 of the Resource Management Act 1991.

<sup>14</sup> Section 24A – 25B of the Resource Management Act 1991.



**Diagram 2: The number of days the ambient PM<sub>10</sub> concentration exceeded the AQNES standard, and corresponding exceedances of the regional PM<sub>2.5</sub> Target (25mg/m<sup>3</sup>)**

Nearly all of these exceedances occurred in the winter months and time records at these monitoring stations indicate that the levels of PM<sub>10</sub> increase above 50 micrograms per cubic metre from 7pm onwards, indicating that home heating fires and not vehicles are causing the PM<sub>10</sub> threshold concentration to be exceeded (see *Diagram 3: Effects of winter home heating fires on particulate emissions in Pakuranga in 2009*).

Exceedances from indoor home heating will be materially affected by how warm or cold<sup>15</sup> the weather is, the amount of wind present and whether or not temperature inversions are occurring. Other exceedances on other monitoring sites have been from traffic, road works or rural activities/fires.

<sup>15</sup> Seasonal climate summaries compiled by Niwa - [www.niwa.co.nz/climate/summaries/seasonal](http://www.niwa.co.nz/climate/summaries/seasonal)

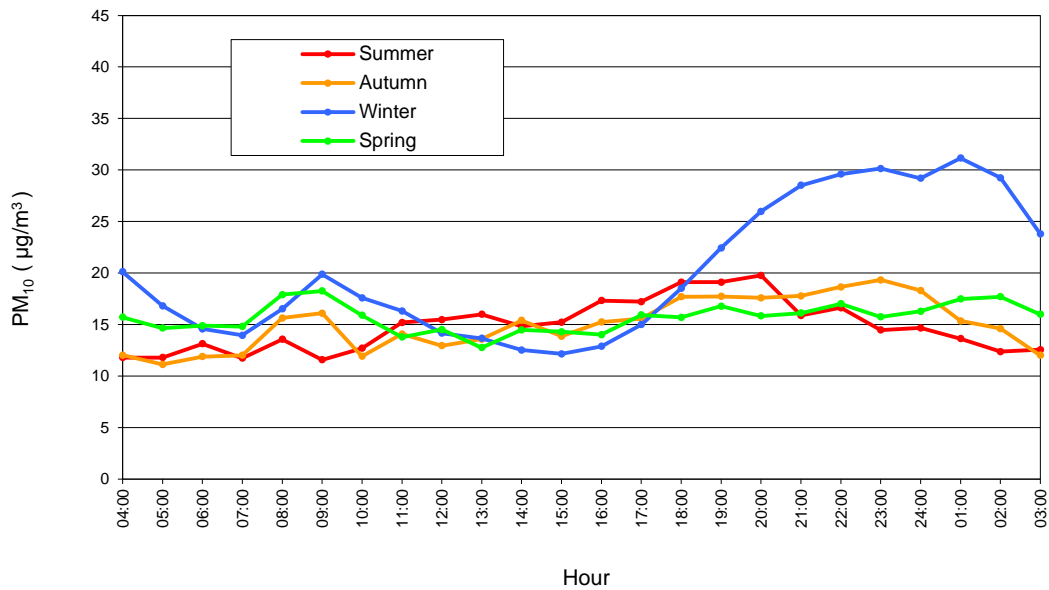


Diagram 3: Effects of winter home heating fires on particulate emissions in Pakuranga in 2009

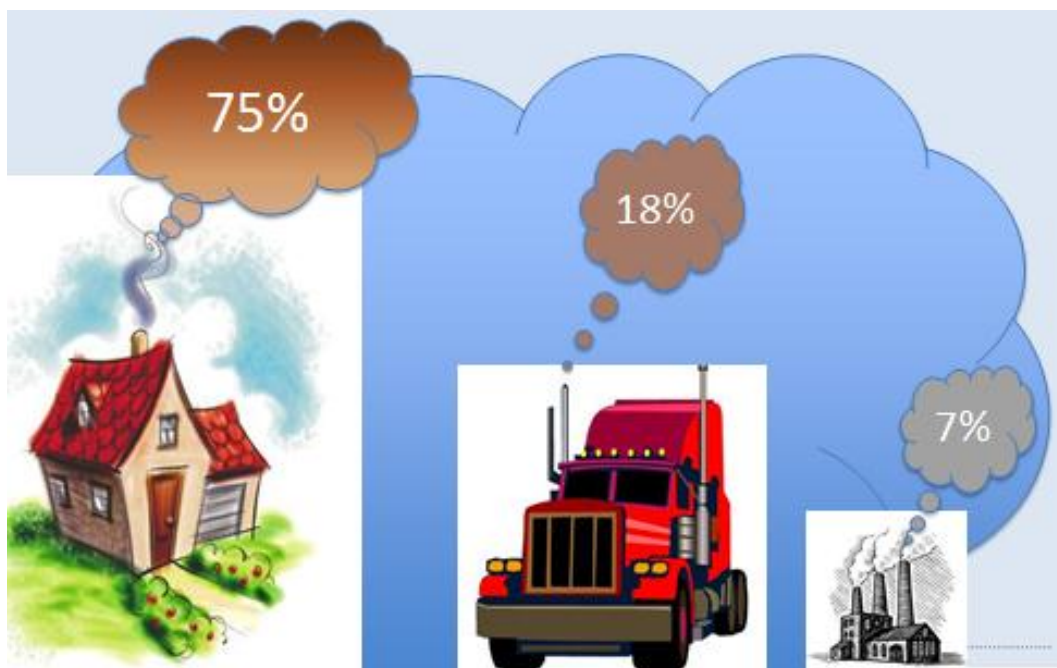


Diagram 4: Winter source of PM<sub>10</sub> in Auckland (excluding natural sources)

When an airshed is polluted the council must decline an application for a resource consent to discharge PM<sub>10</sub> if the discharge from that consent would increase the PM<sub>10</sub> concentration by more than 2.5 micrograms per cubic metre in any part of a polluted airshed. If however the applicant can reduce the PM<sub>10</sub> discharged from another source or sources in that polluted airshed by the same or a greater amount then the council

can consider granting the resource consent application. The cost of this offset can be considerable (see *Table 1: Estimated costs of offsetting PM<sub>10</sub> emissions in a polluted airshed*) and acts as a disincentive for existing industry to expand or for the establishment of new industry with consequential adverse effects on employment and to Auckland's economy.

**Table 1: Estimated costs of offsetting PM<sub>10</sub> emissions in a polluted airshed**

Size of industry	Approx. size of combustion source MW <sup>16</sup>	Estimated total PM <sub>10</sub> tonnes emitted per year	Cost to offset total PM <sub>10</sub>	
			lower cost \$M	upper cost \$M
Small	1	0.3	0.024 <sup>17</sup>	0.130
Medium	20	8.1	0.648	3.5
Large	40	30	2.4	5.68

The AQNES, recognising the poor emissions from older wood burners, also requires wood burners installed after 1 September 2005 in a building on a property with an allotment size of less than 2 hectares to be designed to discharge less than 1.5 grams of particles for each kilogram of dry wood burnt. The AQNES requires such burners to also have a thermal efficiency of at least 65 per cent. The Ministry for the Environment compiles a list of wood burners that have been tested and found to meet the performance requirements of the AQNES. The definition of a wood burner in the AQNES does not include:

- An open fire
- A multi-fuel heater, a pellet heater or a coal burning heater, or
- A stove that is designed and used for cooking and heated by burning wood.

Regulation 28 which was introduced in the 2011 amendment to the AQNES allows a rule, resource consent or bylaw that is more stringent than the regulations of the AQNES to prevail over the regulations. The proposed bylaw introduces requirements that are more stringent than the AQNES to improve the air quality of Auckland.

It is estimated that emissions from motor vehicles and indoor home heating fires will need to be reduced by at least 50 per cent compared with 2006 levels<sup>18</sup> in order to achieve the statutory 2016 compliance date of the AQNES. The council's ability to reduce emissions from motor vehicles significantly is very limited. Although there is an increase in the overall kilometres travelled by vehicles in Auckland by 20 per cent from 2001 to 2011, vehicle emissions have dropped by 19 per cent due to regulations on

<sup>16</sup> These figures are not specific to a particular combustion source i.e. natural gas, oil or coal

<sup>17</sup> Offsetting costs taken from page 31 "Industry Costs – Option 1 (Split Targets)" of 2011 Ministry for the Environment publication, "Revised National Environmental Standards for Air Quality – Evaluation under Section 32 of the Resource Management Act" (\$0.4M per 5 tonne of PM<sub>10</sub>) and actual industry costs to install control equipment.

<sup>18</sup> Auckland Council report, TR 2013 022 Domestic fire emissions 2012 options for meeting national environmental standard for PM<sub>10</sub>, page 4.

emissions standards on imported vehicles. Motor vehicles only account for 18 per cent<sup>19</sup> of Auckland's PM<sub>10</sub> emissions in winter.

Accordingly, restrictions on open fires and phasing out of dirty wood burners are the key measures to meet the AQNES in the Auckland urban airshed, to protect the health of Auckland's citizens and ultimately to remove the polluted status of the Auckland urban airshed.

### **Local Government Act 2002**

Section 145 (*General bylaw-making power for territorial authorities*) of the Local Government Act 2002 allows Auckland Council to make bylaws for one or more of the following purposes:

- protecting the public from nuisance
- protecting, promoting, and maintaining public health and safety.

Before commencing the process for making a bylaw a local authority must under section 155(1) determine whether a bylaw is the most appropriate way of addressing the perceived problem. If the council a local authority has determined that a bylaw is the most appropriate way of addressing the perceived problem, it must, before making the bylaw, determine whether the proposed bylaw is the most appropriate form of bylaw<sup>20</sup> and gives rise to any implications under the New Zealand Bill of Rights Act 1990.

### **Health Act 1956**

The Health Act requires local authorities to improve, promote and protect public health in their area. Sections 64 and 65 of this Act allows local authorities to make bylaws to improve, promote or protect public health, preventing or abating nuisances, and to provide for the inspection of any land or premises for the purposes of the Health Act.

Section 29 of the Act defines nuisances to include:

*“where any chimney, including ... the chimney of a private dwelling house, sends out smoke in such quantity, or of such nature, or in such manner, as to be offensive or likely to be injurious to health, or in any manner contrary to any regulation or Act of Parliament.”*

The Health Act provides the council with the ability to take action against home heating fires which create a nuisance because of the amount of smoke they produce and/or because of their effects on neighbouring properties. However, bylaws made under the Health Act are excluded from regulating smoke from the chimneys of private dwelling houses due to section 64(1)(w).

### **Auckland Plan**

While the Auckland Plan has no regulatory status, it does provide the strategy to guide Auckland's future over the next 30 years, a future that includes dramatically improved air quality. Under Strategic Direction 7 in the Auckland Plan, there is for air quality a target to:

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<sup>19</sup> Auckland Council technical report TR2014 015 - Auckland Air Emissions Inventory 2006, Fig 7.2 page 46.

<sup>20</sup> The analysis is contained in part 7 of this Statement of Proposal.

- 'reduce air pollutant emissions ( $PM_{10}$ ) by 50 per cent by 2016 (based on 2006 levels) in order to meet national and international ambient air quality standards and guidelines and achieve further 20 per cent reduction by 2040'

There are also within the plan specific directives:

- to 'reduce emissions from home heating, transport and other sources to improve air quality' (7.6); and
- 'minimising reverse sensitivity and exposure associated with emissions.' (7.7).

### **The Long-term Plan 2012 – 2022**

Auckland Council is required by the Local Government Act 2002 to provide a long-term plan that sets out how the council plans to invest in projects and programmes over a ten year period. While the *Long-Term Plan 2012 – 2022* (the Long-Term Plan) is currently operative, development of the next Long-Term Plan for 2015-2025 is currently underway.

Chapter 6 (Built and natural environment) of the Long-term Plan 2012-2022 includes *air, land and water monitoring and management* under the activities listed in the *Environment and heritage protection* group of activities. The activities within this group contribute to ensuring our unique natural and built environments are here for generations to come. Main services and responsibilities identified by the Long-term Plan 2012-2022 for this group of activities include *monitoring, educating and promoting emission reductions from home heating, transport and industry in collaboration with other organisations*. The Long-term Plan 2012-2022 includes reference to the measures in the Auckland Regional Plan: Air Land Water and Auckland Council's Retrofit Your Home Scheme to achieve the outcomes identified in the Long-term Plan 2012-2022.

### **The Auckland Regional Plan: Air Land Water**

The Auckland Regional Plan: Air Land Water includes regional air quality targets for a number of contaminants including both  $PM_{10}$  and  $PM_{2.5}$  particulates (see diagram two). The target for  $PM_{10}$  is different from the AQNES in that it sets a target of 20 micrograms per cubic metre averaged over a year so that long term reductions or increases in  $PM_{10}$  can be monitored.  $PM_{2.5}$  is included as it is a better indicator of man-made emissions than  $PM_{10}$  emissions. The regional air quality target sets a target of 25 micrograms per cubic metre averaged over 24 hours for  $PM_{2.5}$  and it is based on a World Health Organisation Guideline<sup>21</sup>. Exceedances of the  $PM_{2.5}$  standard have occurred in Takapuna (11 times), Queen Street, Penrose (four times) and in Khyber Pass Road.

The Auckland Regional Plan: Air Land Water has operative rules for solid fuel domestic fires (wood burners and open fires in homes that use solid materials such as coal, wood, paper or carbonettes), and bans the burning of wet and treated wood as well as high-sulphur coal as a fuel source.

The Auckland Regional Plan: Air Land Water, which became operative in 2010, has prohibited the use of solid fuel burning indoor open fires that were installed on or after 1 September 2005 in any urban, coastal marine, and industrial air quality areas. Solid fuel indoor open fires cannot meet the emission standard requirements of the rules of

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<sup>21</sup> Air quality Guidelines Global Update 2005 published by the World Health Organisation in 2006, page 278.

the Auckland Regional Plan: Air Land Water (particulate emissions of not more than 4g/kg of fuel burned). Neither the Auckland Regional Plan: Air Land Water, nor the AQNES (see below), affect existing (pre 2005) open fires, or pre 2005 wood burners / coal burners in urban or rural areas.

Outdoor fires in urban areas have also been prohibited for a number of years and the Auckland Regional Plan: Air Land Water continues this control. The Auckland Regional Plan: Air Land Water also sets regional air quality targets for air quality across a range of contaminants. The plan has additional technical requirements for flue height and location to reduce the risk of smoke and odour complaints from indoor fires.

### ***The Proposed Auckland Unitary Plan***

The Proposed Auckland Unitary Plan will replace the Auckland Regional Plan: Air Land Water and includes the PM<sub>10</sub> and PM<sub>2.5</sub> air quality targets from the Auckland Regional Plan: Air Land Water. In addition, the Air Quality rules within the proposed Auckland Unitary Plan provide general controls for the discharge of contaminants into air to address the effects of discharges beyond the boundary and visible emissions. Rule 3.1.1 within the Natural Resources section of Part 3 of the proposed Auckland Unitary Plan states:

#### **3.1.1 General Controls**

*The following controls apply to all permitted activities that discharge contaminants to air except from mobile sources. No permitted activity controls apply to mobile sources.*

- 1. The discharge must not contain contaminants that cause, or are likely to cause, adverse effects on human health, property or the environment beyond the boundary of the premises where the activity takes place.*
- 2. The discharge must not cause noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash beyond the boundary of the premises where the activity takes place.*
- 3. There must be no, dangerous, offensive or objectionable visible emissions.*
- 4. There must be no spray drift or overspray beyond the boundary of the premises where the activity takes place.*

As the proposed bylaw ensures compliance with the AQNES the proposed Auckland Unitary Plan does not control the use of inefficient indoor fires nor ensure that indoor fires comply with the requirements in the AQNES.<sup>22</sup>

### ***The Māori Responsiveness Framework***

The air is sacred to all Māori. The Māori Responsiveness Framework supports the council to empower and enable iwi and hapū of Tāmaki Makaurau to uphold their mana, and recognise their customary kaitiaki role. The Māori Responsiveness Framework states that the council will work with Māori stakeholders respecting their role of kaitiaki in areas such as air and water quality monitoring and treatment, pest control, waste disposal and wastewater and stormwater treatment. The council recognises these kaitiaki responsibilities, and want to ensure an outcome where kaitiaki concerns are addressed where possible in ensuring that the quality of the air we breathe sustains our wellbeing.

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<sup>22</sup> Refer to section 6 below, as to why further restrictions were not proposed to be included in the proposed Auckland Unitary Plan.

### ***The Māori Plan for Tāmaki Makaurau***

The council has considered the outcomes in the Māori Plan for Tāmaki Makaurau during the development of the proposed bylaw. The Māori Plan summarises the views about Māori wellbeing in Tamaki Makarau and identifies strategies for improving Māori wellbeing. It provides greater clarity to Auckland Council about mana whenua and mataawaka aspirations for the future.

When considering the key directions in the plan in relation to improving air quality, a bylaw may contribute through measures aimed at ensuring the mauri of te taiao in Tāmaki Makaurau is enhanced or restored for all people, as follows -

- improving quality of life - improvements to air quality will increase the health and wellbeing of our communities;
- ensuring a sustainable future - there is an opportunity to provide cleaner air in the Auckland airshed over the winter months and to facilitate more sustainable outcomes. The bylaw will ensure that the urban air shed is not polluted avoids the off-set requirements of the AQNES that allows Māori businesses to improve and enhance the quality of their people, asset and resource base.

## **3 Reasons for the proposal**

### **Background**

In 2011, home heating fires were estimated to be responsible for 41 per cent of total annual PM<sub>10</sub> emissions in urban areas and 43 per cent of total annual PM<sub>2.5</sub> emissions<sup>23</sup>. On a typical winter's day, however, home heating emissions account for approximately 70 per cent of PM<sub>10</sub> emissions and PM<sub>2.5</sub> emissions<sup>24</sup>.

In Auckland indoor open fires and older (pre 2005) non-compliant solid fuel burners cause about 87 per cent of PM<sub>10</sub> emissions from indoor home heating because of their inefficiencies and age<sup>25</sup>. Open fires in particular are the least efficient form of home heating and are about 15 per cent energy efficient (compared to 65 per cent efficiency required for new AQNES compliant wood burners); they also emit much more fine particles than an AQNES compliant burner (see diagram four).

Population data from the 2013 census and information from the Auckland Council Home Heating Survey in 2012<sup>26</sup> have been used to estimate that of the number and proportions of wood burning appliances in use in Auckland:

- approximately 100,000 dwellings burn wood for home heating<sup>27</sup>
- approximately 10,000 homes or 2 per cent of dwellings in Auckland use coal  
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<sup>23</sup> Auckland council technical report TR2014 015 - Auckland Air Emissions Inventory 2006, Appendix 1: Summary Tables -Table A1.3. Summary of annual emissions 2011 (entire region),

<sup>24</sup> TR2014 015 section 7.1: Conclusions, page 37,

<sup>25</sup> TR2014 015 section 2.2 Results of domestic emissions, page13

<sup>26</sup> Auckland Council technical report TR2014/011 - 2012 Home Heating Survey Results,

<sup>27</sup> Census 2013.



- 17,000 of those in use are open fires which are the most polluting and least efficient
- 64,000 are old wood burners (pre 2005)
- 17,000 are AQNES compliant wood burners and 1000 are AQNES compliant pellet burners.

It is estimated that the total particulate emissions from home heating fires would need to be reduced by half if the AQNES were to be met by 2016.

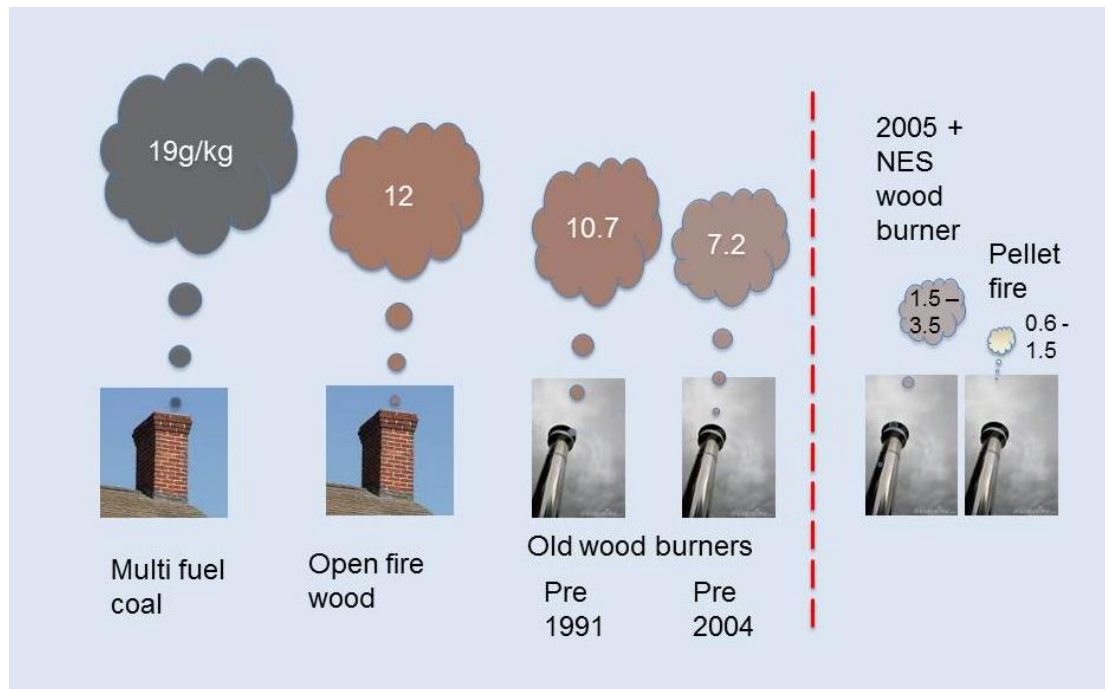


Diagram 5: Emissions from fires (grams PM<sub>10</sub> per kg of wood or coal burnt)

### Health effects

The health effects from air pollutants are a major concern in Auckland because of the prevalence of respiratory and heart disease. Particulate emissions cause the majority of the adverse health effects of Auckland's main pollutants. PM<sub>10</sub> particulates which have a diameter of approximately one-fifth the width of a human hair (see diagram one), can be inhaled easily and can lodge in the lung and adversely affect human health especially for people who are asthmatic or have heart or lung disease. Thus they can reduce lung function leading to premature deaths, contribute to heart attacks, strokes and respiratory diseases. This can also lead to increased levels of medication and days of work or school. The fine (PM<sub>10</sub> and PM<sub>2.5</sub>) particulates produced by burning wood contain a number of toxic and carcinogenic compounds that can penetrate deeply into the lungs<sup>28</sup>.

PM<sub>2.5</sub> particulates, which are a subset of the PM<sub>10</sub> particulates with a diameter under 2.5 micrometres have greater health effects than PM<sub>10</sub> particulates as they are smaller and penetrate more deeply into the tiny air sacs in the lungs and cause greater adverse health effects. PM<sub>2.5</sub> particles come mainly from combustion processes from motor vehicles engines (particularly diesel engines), and the burning of coal, fuel, oil and

<sup>28</sup> Woodsmoke Health Effects: A Review, published in Inhalation Toxicology 2007

wood but can also come from fine road dust and soils.<sup>29</sup> PM<sub>10</sub> particles are more likely to be from natural sources such as sea salt, pollen, agriculture or fires, but can also arise from mining and construction activities. Increases in PM<sub>2.5</sub> levels show greater effects on mortality than increases in PM<sub>10</sub> levels. A growing body of scientific and other evidence also indicates there is no known safe health effect threshold for a population exposed to these fine particles, especially PM<sub>2.5</sub>, for which there is no current national standard.

The Auckland Regional Plan: Air Land Water sets a target of 25ug/m<sup>3</sup> over a 24 hour average for PM<sub>2.5</sub> which is the same as the World Health Organisation's (WHO) recommended guideline. The WHO also have a standard of 10ug/m<sup>3</sup> averaged over a one year period, whilst the US Environmental Protection Agency (EPA) has recently set the annual health standard at 12ug/m<sup>3</sup>. The EPA noted when they announced this standard that the "standards will save lives and reduce the burden of illness in our communities..." The standard was based on extensive scientific evidence that included thousands of studies, including many which showed negative health impacts at lower levels than previously understood.

The health costs associated with indoor home heating emissions are significant. Revised figures from 2006 were recently released in the HAPINZ (Health and Air Pollution in New Zealand) 2012 study. HAPINZ is a jointly funded initiative between the Health Research Council, the Ministry of Transport and the Ministry for the Environment. These findings show that each year in Auckland:

- About 110 adults (including 18 Maori) over 30 years old die prematurely because of air pollution from indoor fires
- There are about 26 cardiac hospital admissions and 50 respiratory hospital admissions because of air pollution from indoor fires. About 30 of these admissions are children under 14
- There are about 190,000 restricted activity days due to indoor fires - days on which people cannot do the things they might otherwise have done if air pollution was not present.

The estimated health effects cost of air pollution from indoor fires is estimated to be approximately \$624 million per year for Auckland. Work by Market Economics Ltd estimated that community health benefits of at least eight dollars would accrue for every one dollar spent to reduce indoor fire emissions in the Auckland regions

### **Existing use of home heating fires**

As noted above approximately 17 per cent of the 100,000 indoor fires in use in Auckland are open fires and 64 per cent are pre 2005 wood burners which do not comply with the AQNES.

Although the generally accepted lifespan of an enclosed solid fuel burner is about ten to fifteen years,<sup>30</sup> the 2012 home heating survey indicates that approximately 20 per cent of wood burners in current use are less than 7 years old. 43 per cent were installed post 1991, 25 per cent pre 1991, and 12 per cent were "unknown". The survey also indicates that the current retirement rate for pre 2005 wood burners is about 1800

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<sup>29</sup> Almost all of the emissions of wood burning will be in the PM<sub>2.5</sub> range.

<sup>30</sup> The manufactures warranties vary between 10 and 15 years and an average lifespan of a wood burner is 13 to 17 years.

per annum and about 1300 indoor open fires are retired per annum and at this rate of retirement Auckland will not meet the 2016 AQNES requirements until after 2031.

The home heating survey also found that

- 51 per cent of those who used wood obtained it free
- 17 per cent of households who have a wood fire typically use timber off-cuts from building framing or fences as wood fuel (which may contain hazardous chemicals)
- 52 per cent of homes surveyed were more than 30 years old and 10 per cent of those home owners surveyed believe they have no insulation in their house at all.

Diagram 6 (*Use of wood for home heating in Auckland*) below indicates below in yellow, orange and red where the highest number of home heating fires are located.

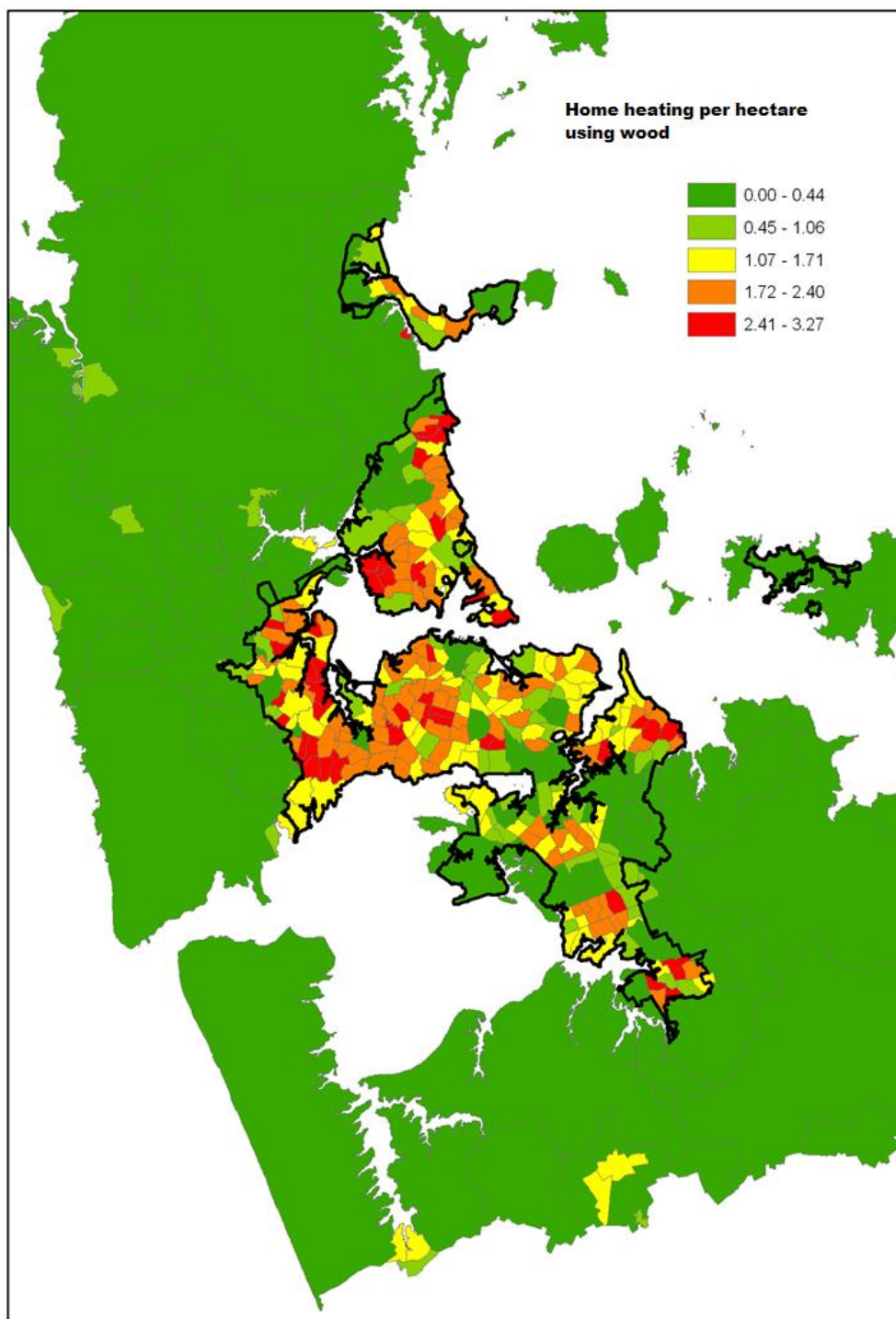


Diagram 6: Use of wood for home heating in Auckland

## 5. Outcomes sought

The council seeks to minimise the potential harm and adverse public health effects in relation to air pollution in Auckland by compliance with the AQNES, which includes:

- improving air quality standards in the Auckland urban airshed;

- regulating the use of new and existing indoor fires in Auckland that:
  - cause adverse effects on neighbouring properties and on air quality;
  - do not comply with the AQNES, including all open fires.

The proposed bylaw should not increase the regulatory impact on Aucklanders outside these objectives and should be consistent with and complementary to other initiatives and regulations, including the Proposed Unitary Plan.

## 6 Perceived problems and recommended options

### A graduated response model

In February 2012 the Regional Development and Operations Committee of Auckland Council considered a report “*Air quality management in Auckland – Domestic emissions reductions*” (CP2011/09555), as referred from the Environment and Sustainability Forum. This report outlined the sources and costs of air pollution in Auckland and noted that domestic fires were the appropriate source for the council to exercise further control over. The report also included cost benefit analysis, approaches of other councils and policy and implementation considerations. The committee agreed that a bylaw approach was the preferred regulatory method for managing domestic air pollution. Section 7 of the report notes regional rules within the Unitary Plan might not be in force in time for the council to meet the AQNES 2016 compliance timeframe. However, objectives and policies would still be required in the Unitary Plan to “set the overall goal for domestic emissions”. Following the council’s analysis, regulation through a bylaw is considered the best way to address the problems presented in the following sections of this report. Under an Auckland bylaw, the council’s response can be proportionate to the scale of the problem - a graduated response. The proposed bylaw has been prepared on this basis.

Regulation requires capacity to effectively monitor the problem and the resources to respond appropriately. For this reason the council considers carefully the administration and enforcement associated with its Bylaw Review Programme. This programme will monitor the effectiveness of the bylaw to achieve the desired operational outcomes so that subsequent policies and programmes can make the necessary strategic adjustments and alignment required under the Auckland Plan.

### Issue 1: Use and replacement of dirty indoor home heating fires

Of the 100,000 indoor fires in use in Auckland about 17,000 are open fires. Open fires are one of the most inefficient means of heating a home – they are approximately 15 per cent efficient, which means about 85 per cent of the heat goes up the chimney and is not heating the house. AQNES compliant wood burners are required to be at least 65 per cent efficient. Open fires are also very dirty (see diagram five) and consequently contribute a significant amount to winter time pollution both within the house and outside.

Pre 2005 non-compliant wood burners make up approximately 64 per cent of the indoor fires in use in Auckland. The PM<sub>10</sub> emissions from non-compliant burners is typically 7-11 grams of PM<sub>10</sub> per kilogram of dry wood burnt if the burner is operating correctly compared with emissions from AQNES compliant burners which should not exceed 1.5g for each kilogram of dry wood burnt.

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Without a rule to prevent the ongoing use of existing indoor open fires and pre 2005 non-compliant wood burners there is little incentive for anyone to replace this form of heating and their adverse health and environmental effects will continue until after 2031.

### **What are the options to reduce the use of dirty indoor home heating fires**

There are a number of options, some of which are outlined in table 2 below to reduce the use of dirty indoor home heating fires. The options in table 2 have various health benefits and costs and are in millions of dollars over the period between 2014 and 2031. If the council retains only the current Auckland Regional Plan: Air Land Water measures in the proposed Unitary Plan or in a bylaw and do not introduce any additional measures it is expected that Auckland will achieve the AQNES standard by 2031. Each option will affect the likely time when the AQNES standard (not more than one exceedance of the PM<sub>10</sub> standard in a 12 month period) will be met.

The costs of each option that has been considered include:

- the cost of compliance for home owners who have an indoor open fire or a pre-2005 non-compliant wood burner (and includes the cost of providing replacement heating if they cannot use their open fire or pre-2005 wood burner),<sup>31</sup>
- the cost of preparing the proposed bylaw, and
- the costs of monitoring and enforcing the bylaw.

All the options include the introduction of a point of sale rule that comes into effect on the making of the bylaw. This will require indoor open fires to be blocked off or disabled and non AQNES-compliant wood burners (burners that don't meet the standards of the AQNES) to be removed when a property in the Auckland urban airshed changes ownership.

The Auckland Regional Plan: Air Land Water restricts the use of coal for home heating to domestic fire burning fuel with a sulphur content exceeding 0.5 per cent (by weight). As the burning of coal is a particularly harmful source of PM<sub>10</sub> all options considered by the council require that coal not be used for home heating from the date when the bylaw comes into force as it produces a high level of particulates in comparison to other forms of heating.<sup>32</sup>

With the exception of **option 1** (this has very high costs as well as high benefits) none of the options will meet the 2016 AQNES deadline. In addition to retaining the rules currently in the Auckland Regional Plan: Air Land Water and introducing the point of sale rule, **option 1** requires the use of all open fires and all non AQNES-compliant

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<sup>31</sup> Cost of compliance for a home owner includes installation, appliance cost and consenting costs. The average cost for consenting is \$237 (recent consent data for wood burners). The cost for a replacement appliance and installation (including removal) were varied depending on house size (number of bedrooms) from appliance cost of \$2300 and installation of \$2200 for 2 bedroom house to appliance cost of \$4000 and installation cost of \$3000 for 8 bedroom house. The cost is for the replacement wood burner only and does not include operating cost. The costs are conservative as replacement costs for heat pump may be lower.

<sup>32</sup> Alan H Lockwood, The Silent Epidemic: Coal and the Hidden Threat to Health; The Lancet, Volume 381, Issue 9882, Page 1979, 8 June 2013 *Smoked out: the health hazards of burning coal.*

word burners to cease at the end of the winter of 2016 (1 October 2016) to achieve the 2016 AQNES date. It is likely that there will be a high level of resistance by affected owners or occupiers due to the limited time available to provide alternative sources of home heating. A sudden increased demand for alternative compliant methods of home heating may also affect the ability of the market to respond adequately or in time. A high level of enforcement by council officers will also be required for this option to meet its target.

In addition to retaining the measures currently contained in the Auckland Regional Plan: Air Land Water and introducing the point of sale rule, **option 2** has a phase-out period for open fires and all non AQNES-compliant wood burners (1 October 2018). This option would target indoor open fires and pre-2005 wood burners which, on a per unit basis, generate significantly more PM<sub>10</sub> emissions per kilogram of wood than AQNES-compliant wood burners. This will allow owners and occupiers with indoor open fires and non AQNES-compliant wood burners a reasonable period of time for the replacement of their fires with compliant heating sources. Considering the cost of replacement of non-compliant fires by the owners or occupiers and the costs to the council of monitoring and enforcement, option 2 provides a balanced approach to achieving compliance with the AQNES.

The council's analysis, based on information from the Home Heating Association is that annual sales of wood burners in New Zealand are between 17,000 and 20,000 of which a greater proportion are sold in the South Island. If the 17,000 indoor open fires and 64,000 old wood burners were replaced over a four year period (i.e. 20,000 per year from 2014 to 2018) it would represent a doubling of annual demand. However, it is highly unlikely that all indoor open fires and all pre-2005 wood burners would be replaced with new wood burners. There are approximately 13 separate suppliers /manufactures in New Zealand that supply wood burners nationwide, of which about five are located in Auckland. The wood burner market is dominated by four or five large suppliers. Information obtained by the council indicates that the industry will be able to respond to demand if enough advance warning is given.

The experience of other councils indicate that although adequate time may be provided to affected home owners to respond to the impending prohibition and to provide for alternative forms of home heating, extensive awareness raising is required well beforehand to avoid frustration when the measures actually take effect.<sup>33</sup> **Option 2** is the preferred option to meet the AQNES requirement within a realistic time frame by approximately 2019.

In addition to retaining the measures currently contained in the Auckland Regional Plan: Air Land Water and introducing the point of sale rule, **option 3** provides for a delayed introduction of a prohibition on the use of open fires only by the end of the winter of 2016 (1 October 2016). Unlike options 1 and 2 it does not require the removal of non AQNES-compliant wood burners, relying on the point of sale rule to incrementally reduce the non-compliant wood burners over time. It has the advantage that it is simpler to implement as enforcement focuses on the 17000 open fires and assumes that the use of the 64000 non-compliant wood burners will incrementally reduce through the point of sale rule and attrition in the use of the wood burners over their lifespan. It is a less onerous regulatory option than option 1 or 2. However, option 3 will not meet the AQNES target until 2021.

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<sup>33</sup> The Southland Times, *Councils expect heat over burners*, 5 September 2014.

**Option 4** is similar to option 3 but it would not permit a new AQNES compliant wood burner into a home unless it would replace an existing wood burner or open fire, which would reduce the heating options for a number of older homes who do not have an existing fire. However, it does have better health benefits than option 3, similar costs to option 3 and but would only meet the AQNES target in 2020.

The removal of existing pre 2005 non-compliant wood burners from a house before a house is sold and the disabling of indoor open fires is a very small cost to the vendor. An open fire can be disabled by permanently blocking off the entrance to the chimney if the features of the fire are to be retained or the open fireplace can be covered by permanent materials if there is no desire to retain the features of the fire place. The blocking of the chimney or fireplace will reduce drafts in the house. Alternatively the vendor could negotiate with a purchaser to put in a new compliant wood burner to replace the existing wood burner or could install an AQNES compliant wood burner in the existing fireplace to replace the open fire.

**Table2: Options to reduce emissions from home heating fires (Auckland urban airshed only)**

Option	Description	Advantages	Disadvantages	Predicted AQNES compliance date	Benefits and cost (millions 2014-2031)
Business as usual (no bylaw or new controls)	No new open indoor fires in urban areas because of existing regional rules.  All new wood burners on lots more than 2ha must be AQNES compliant.	Can continue to use existing open fires and old wood burners. No cost to consumers.  New houses do not require much space heating so unlikely to use wood burner.	Slow replacement of existing old/dirty wood burners. No significant reductions in emissions. High health costs. Will not meet AQNES compliance target.	Post 2031	
1	Non AQNES-compliant wood burners must be removed and open indoor fires disabled when property changes ownership (point of sale	Best health outcome  Will meet the AQNES standard by late 2016 or 2017	High replacement costs to householders who rely on indoor fire as their main heating because of small time frames	2016-2017	Best equal health benefit \$2603 and highest cost \$180 of all options



Option	Description	Advantages	Disadvantages	Predicted AQNES compliance date	Benefits and cost (millions 2014-2031)
	<p>rule) after bylaw comes into force (2015)</p> <p>Prohibit the use of all indoor open fires and all non AQNES-compliant wood burners at the end of winter 2016 (1 October 2016)</p>		<p>High cost to council to ensure compliance because of short lead in time.</p> <p>Potentially high resistance from fire owners</p> <p>Unknown ability for wood burner industry to respond to potential demand</p>		
<p>2 <b>Preferred option</b></p>	<p>Point of sale rule and prohibition on the use of coal introduced when bylaw comes into force.</p> <p>Prohibit the use of all indoor open fires at the end of winter 2018 (1 October 2018)</p> <p>Prohibit the uses of all non AQNES-compliant wood burners at the end of winter 2018 (1 October 2018)</p>	<p>Gets rid of worst fires (open) first. Allows fire owners to plan for the replacement of their existing fires</p> <p>Second best option to meet the AQNES standard</p> <p>Second best health outcomes</p>	<p>Very high replacement costs to open fire owners who rely on open fire as their main heating source</p> <p>Allows owners of wood burners who rely on indoor fire as their main heating costs to fund alternative heating source</p> <p>Allows council more to time to raise awareness, educate and encourage compliance</p>	<p>2019</p>	<p>Best equal health benefit approx. \$2500but high cost \$155</p>
<p>3</p>	<p>Point of sale</p>	<p>Targets</p>	<p>Cost to lower</p>	<p>2021</p>	<p>Good</p>

Option	Description	Advantages	Disadvantages	Predicted AQNES compliance date	Benefits and cost (millions 2014-2031)
	<p>rule introduced when bylaw comes into force (2015)</p> <p>Prohibit the use of all indoor open fires at the end of winter 2016 (1 October 2016)</p> <p>Relies of point of sale rule to reduce non-compliant wood burners incrementally</p>	<p>worst polluters with immediate reductions in emissions when home is sold. Allows open fire owners time to arrange for alternative means of heating before ban comes into force.</p> <p>No cost on lower-income households with wood burners until house sold.</p> <p>AQNES burners can be put into new homes, into home when home sold or to replace open fire.</p>	<p>income families relying on open fire for heating. Relies on AQNES burners maintaining low emissions through life of burner.</p>		<p>benefit \$1327 low cost \$146 compared to options 1 and 2</p>
4	<p>Prohibition on open fire use (as soon as bylaw in force).</p> <p>Point of sale rule for non AQNES-compliant wood burners</p>	<p>Targets worst polluters with immediate reductions in emissions from open fires.</p> <p>Can replace</p>	<p>Cost to lower income families relying on open fire for heating if home poorly insulated. Limits home heating options.</p>	2020	<p>Good benefit \$1728 and low cost \$146 compared to options 1 and 2</p>

Option	Description	Advantages	Disadvantages	Predicted AQNES compliance date	Benefits and cost (millions 2014-2031)
	and open fires.  No new installation of wood burners except replacement AQNES wood burners for existing burners or open fires.	open fire with AQNES compliant burner.			

Note all options assume that no new open indoor fires can be used in the Auckland urban airshed.

## Issue 2: What are the existing rules for indoor home heating fires:

Chapter 4 of the Auckland Regional Plan: Air Land and Water contains regional objectives, policies and rules for air quality. Included within the rules are general permitted activity rules (4.5.1) for discharges to air such as:

- (a) *That beyond the boundary of the premises where the activity is being undertaken there shall be no noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash; and*
- (b) *That there shall be no noxious, dangerous, offensive or objectionable visible emissions; and*
- (c) *That beyond the boundary of the premises where the activity is being undertaken there shall be no discharge into air of hazardous air pollutants that does, or is likely to, cause adverse effects on human health, ecosystems or property;*

Chapter 4 of the Auckland Regional Plan: Air Land and Water also includes specific prohibited activity rules for domestic (indoor) fires:

- 4.5.4 *The discharge of contaminants into air from domestic fires fuelled by natural gas or liquid fossil fuels is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.*
- 4.5.5 *The discharge of contaminants into air from solid fuelled domestic fires installed, replaced (for existing domestic fires) or retrofitted (into existing buildings) in Rural Air Quality Management Areas given in Map Series 1 and 1A is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.*
- 4.5.6 *The discharge of contaminants into air from solid fuelled domestic fires installed before 1 September 2005 is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.*
- 4.5.7 *The discharge of contaminants into air from solid fuelled domestic fires installed, replaced (for existing domestic fires) or retrofitted (into existing buildings) in Urban, Coastal Marine and Industrial Air Quality Management*

*Areas on or after 1 September 2005 is a Permitted Activity, subject to the following conditions:*

- (a) The domestic fire shall be manufactured to comply with a particulate emission rate of no more than 4.0 g/kg of fuel burned (for appliances without catalytic combustors) and 2.25 g/kg of fuel burned (for appliances with catalytic combustors) calculated by averaging the particulate emissions for high, medium, and low burn rates;*
- (b) Conditions regarding the height and location of flues;*
- (c) Conditions (a) to (c) of Rule 4.5.1*

Rule 4.5.7 was notified in 2004 before the AQNES standards for wood burners came into force on 1 September 2005. Rule 4.5.7 effectively eliminates the use of open indoor fires installed after 1 September 2005 in the Urban, Coastal Marine and Industrial Air Quality Management Areas – these areas are identified in the maps of the Auckland Regional Plan: Air Land and Water. The design standard in rule 4.5.7 is technically less stringent than the AQNES requirement that wood burners installed on properties less than 2 hectares in area after 1 September 2005 must not discharge more than 1.5 grams of particles for every kilogram of dry wood burnt. The AQNES requirements for post 1 September 2005 installed wood burners prevails over the less stringent standard in the rule 4.5.7 of the Air, Land and Water plan.

Rules 4.5.8 to 4.5.10 of the Auckland Regional Plan: Air Land and Water lists the prohibited activity standards for domestic fires:

- 4.5.8 The discharge of contaminants into air from domestic fires that do not comply with Rules 4.5.4, 4.5.5, 4.5.6 or 4.5.7 is a Prohibited Activity.*
- 4.5.9 The discharge of contaminants into air from the burning of waste in domestic fires is a Prohibited Activity, including but not limited to:*
  - (a) Refuse;*
  - (b) Wood that is painted, tanned (treated with copper, chrome and arsenic) or treated with preservatives or impregnated with chemicals (including chipboard);*
  - (c) Organic materials including green waste(s) and vegetation but excluding wood, paper, and fossil fuels; and*
  - (d) Plastic, rubber, paint, used (waste) oil, motor oil, and solvents.*
- 4.5.10 The discharge of contaminants into air from a domestic fire burning fuel with a sulphur content exceeding 0.5 per cent (by weight) or burning wood with a moisture content exceeding 25 per cent (by dry weight) is a Prohibited Activity.*

### **What are the options for these regional rules?**

The Auckland Unitary Plan will eventually replace the Auckland Regional Plan: Air Land and Water. The general rules in 4.5.1 have been included in permitted activity rules for air discharges in the proposed Unitary Plan. The more specific efficiency standards for indoor fires have been included in a bylaw rather than within the proposed Unitary Plan because the council has an urgent statutory deadline of 1 September 2016 to meet the AQNES, and the proposed Unitary Plan may take several years to become operative. The proposed bylaw will prevent the burning of refuse, painted or treated wood, organic waste, and other unsuitable materials in indoor fires as does the existing Auckland Regional Plan: Air Land Water rules, and will also prevent the burning of all coal regardless of sulphur content.

Rules in the bylaw will also limit the installation of new indoor open fires to large sites where adjacent neighbours are some distance away and to areas where reticulated power is not available for heating or cooking e.g. Great Barrier Island. This can be achieved by linking indoor open fire use to land zoning and to particular off-shore islands. It is proposed that new indoor open fires and other wood burners that do not comply with the AQNES only be permitted on sites that are more than 2 hectares on land:

- zoned rural production, rural coastal and mixed rural by the Proposed Auckland Unitary Plan;
- zones Landform 2 (sand flats), Landform 3, Landform 4 and Landform 5 on Waiheke Island by the Auckland Council District Plan – Hauraki Gulf Islands section;
- on Great Barrier Island and any other island in the Hauraki Gulf except Waiheke Island where the above definition of rural land applies.

The current Auckland urban airshed does not include the future urban areas proposed in the Proposed Auckland Unitary Plan as these have yet to be confirmed by the unitary plan process. While the initial airshed boundaries were set some time ago and have been adjusted as required and will continue to be adjusted in future.

## **7. Report of determination on appropriateness of a bylaw**

Section 155 of the Local Government Act 2002 requires a local authority, before commencing the process of making a bylaw under the Act, to determine whether a bylaw is the most appropriate way of addressing the perceived problem. If a local authority has determined that a bylaw is the most appropriate way of addressing the perceived problem, it must, before making the bylaw, determine whether the proposed bylaw:

- is the most appropriate form of bylaw; and
- gives rise to any implications under the New Zealand Bill of Rights Act 1990

Section 155 of the Local Government Act 2002 only applies to the extent that the proposed bylaw is made under that Act or the Local Government Act 1974. Auckland Council seeks from the development and implementation of the proposed bylaw to protect, promote and maintain public health and safety by:

- improving air quality standards in the Auckland urban airshed;
- regulating the use of new and existing indoor fires in Auckland that:
  - cause adverse effects on neighbouring properties and on air quality;
  - do not comply with the Resource Management (National Environmental Standards for Air Quality) Regulations 2004, including all open fires.

The council has considered the most appropriate way of addressing controls on what can be burnt in all indoor home heating fires in Auckland, its statutory requirements to promote the sustainable management of natural and physical resources and its need to comply with the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 in a timely manner. The Auckland urban airshed is categorised as a polluted airshed and the AQNES requires that the average yearly exceedance of the PM<sub>10</sub> threshold concentration of 50 micrograms per cubic metre (24

hour) averaged over the immediately prior five year period is one or less by 1 September 2016.

If this matter was addressed by rules in the proposed Unitary Plan (which was notified on 30 September 2013) it could be several years before this rule became operative and would mean that it would take even longer for the council to meet the requirements of regulation 16B. Regulation 28 of the AQNES allows a rule, resource consent or bylaw that is more stringent than the regulations of the AQNES to prevail over the regulations

An analysis of the various approaches that could be used to deliver this was undertaken, and is summarised in this statement of proposal. This included considering a range of regulatory approaches and examining how these would support the desired outcomes and address the identified problems. Following that analysis Auckland Council considers that a bylaw is the most appropriate way to address air quality standards in the Auckland urban airshed.

## 8. Report on the form of the proposed Air Quality Bylaw 2015

Having considered the various issues which arise in relation to air quality, as discussed earlier in this statement of proposal, the council has prepared the proposed Air Quality Bylaw 2015 contained in Appendix 2. The bylaw is drafted in the same form as and is consistent with the form of the council's other bylaws. The council considers that this bylaw is the most appropriate form of bylaw. The following table sets out the layout of the bylaw clauses and provides some comments on the bylaw clauses.

Clause number	Clause title	Comment
1	Title	
2	Commencement	<p>The bylaw takes effect in stages to allow the council time to undertake an education campaign, and to give owners and occupiers time to upgrade their indoor heating systems.</p> <p><b>1st Stage:</b> The bylaw will immediately apply to:</p> <ul style="list-style-type: none"> <li>• indoor fires that discharge harmful contaminants or the burning of harmful substances, including all forms of coal (applies to whole of the Auckland region)</li> <li>• vendors of properties on the market will be required to remove/replace the old wood burner or remove/permanently block an open fire (applies to the Auckland urban airshed).</li> <li>• purchasers of properties sold after commencement cannot use non-compliant indoor fires (applies to the Auckland urban airshed)</li> <li>• the use of coal which will be prohibited</li> </ul> <p><b>2<sup>nd</sup> Stage:</b> On 1 October 2018, the bylaw will be expanded to prohibit the use of open fires (clause 8) and wood burners the do not comply with the standards of the AQNES, in the urban airshed. The council may require removal / permanent</p>

		blocking (applies to the Auckland urban airshed);
3	Application	Except clauses 7, 8, 9 and 10 that apply to the Auckland urban airshed, the rest of the bylaw applies to the whole of Auckland.
4	Purpose	The bylaw is targeted toward improving the health of Aucklanders by imposing the air quality standards contained in the AQNES in the Auckland urban airshed so that the council can comply with these regulations.
5	Interpretation	<p>Some indoor fires located in commercial premises will be exempt if used primarily for cooking or specifically permitted under a resource consent. The definition of commercial premises excludes residential dwellings partly used for a commercial enterprise, such as a home occupation</p> <p>The bylaw only applies to indoor fires. The bylaw does not apply to:</p> <ul style="list-style-type: none"> <li>• indoor fires on commercial premises if the use is specifically authorised under a resource consent, such as an indoor fire in use for a consented industrial activity; or</li> <li>• indoor fires on commercial premises if used for cooking purposes, such as wood fire pizza ovens, tandoor ovens etc.</li> </ul> <p>Any indoor fire which meets both the design emission standard and the thermal efficiency standard will comply with the bylaw. Most wood burners manufactured after 2005 will meet both standards, which are contained in the AQNES</p>
6	Use of indoor fires	<p>This clause applies to both urban and rural properties in Auckland. The remainder of the bylaw only applies to properties in the Auckland urban airshed.</p> <p>Subclause (1)(a) is designed to prevent the discharge of contaminants which have harmful impacts on neighbouring properties. It is consistent with the general controls for air quality within the proposed Unitary Plan.</p> <p>Subclause (1)(b) is designed to prevent the discharge of contaminants which have harmful impacts on neighbouring properties. It is consistent with the general controls for air quality within the proposed Auckland Unitary Plan.</p> <p>Subclause (2) prohibits new non-compliant fires being installed on any urban property.</p>
7	Point of sale rules for non-compliant indoor fires	The Point of Sale rule imposes an obligation on any vendor selling a property containing a non-compliant indoor fire to remove or replace it at the point of sale. The standard sale and

		<p>purchase agreement (Auckland District Law Society) includes a vendor warranty that he/she has notified the purchaser of any outstanding requirements that were notified by the local authority (refer clause 6.1).</p> <p><b>Old Wood Burners</b> - The owner of an old wood burner must replace or remove it before transferring ownership of the property.</p> <p><b>Open Fires</b> - The owner of an open fire must permanently block the fireplace or remove it before transferring ownership of the property. This will be more cost effective. Where necessary the council will confirm that the covering of the fireplace is sufficiently permanent, to determine compliance. It is a breach of the bylaw to make a de-commissioned fire place operational again as this clause prevents purchasers from using a non-compliant fire after the point of sale.</p> <p>An important enforcement tool available to the council is the ability to issue notices requiring removal of a non-compliant indoor fire if it has been used or the owner has unblocked a de-commissioned open fire after a sale of the property, from the date the bylaw comes into effect.</p>
8	Use of open fires	<p>This clause imposes a prohibition on the use of open fires in the urban airshed after 2018. Open fires make up 17 per cent of indoor fires but are very inefficient (15 per cent efficient as compared to 65 per cent efficient for post-2005 wood burners). The council can issue a notice to an owner of an operational open fire requiring it to be permanently blocked or removed after 1 October 2018. The notice can be issued regardless of whether the open fire is in use.</p>
9	Use of Coal	<p>This clause is intended to deal with the use of coal as fuel for indoor fires as it is a particularly harmful source of pollution.</p>
10	Use of non-compliant indoor fires	<p>This clause imposes a prohibition on the use of old wood burners in the urban airshed after 1 October 2018. The council can issue a notice to require removal of the old wood burner after 1 October 2018. The notice can be issued regardless of whether the old woodburner is in use. Old wood burners make up 58 per cent of indoor fires in Auckland, and per unit are nearly as damaging to air quality than open fires. A commencement date in 2018 is justified on the basis that these woodburners are nearly as damaging than open fires (on a per unit basis).</p>
11	Temporary Dispensations	<p>Temporary dispensations are available to enable use of open fires or non AQNES-compliant wood burners for an event of particular cultural, historical, or national significance. The dispensation is on terms and conditions decided by the council and is for up to three months. The narrow scope of the dispensation is designed to limit the number of applications,</p>



		and encourage compliance with the policy objective. The council must consider these factors before granting a temporary dispensation. The factors are targeted toward ensuring the policy objective is not undermined by the granting of a temporary dispensation.
12	Non-compliance with this bylaw	The council may use its powers under the Local Government Act 2002 to enforce this bylaw.
13	Offences and penalties	A person who fails to comply with this bylaw commits an offence against section 239 of the Local Government Act 2002 and is liable on conviction to the penalties set out in section 242(4) of the Local Government Act 2002.

## 9. New Zealand Bill of Rights Act 1990

To the extent that the proposed air quality bylaw is made under the Local Government Act 2002, section 155(3) of that Act says that it cannot be inconsistent with the New Zealand Bill of Rights Act 1990. The issue is whether the bylaw is a justified limitation on those rights, in terms of section 5 of the New Zealand Bill of Rights Act 1990, which states that:

*the rights and freedoms contained in this Bill of Rights may be subject only to such reasonable limits prescribed by law as can be demonstrably justified in a free and democratic society.*

The section 5 inquiry has been summarised in a leading Supreme Court case (*R v Hansen* [2007] NZSC 7) as follows:

- does the limiting measure serve a purpose sufficiently important to justify some limitation of the right or freedom?
- If so, then:
  - is the limit rationally connected with the objective?
  - does the limit impair the right or freedom no more than is reasonably necessary for sufficient achievement of the objective?
  - is the limit in due proportion to the importance of the objective?

In considering the approach to determining whether a limiting measure impairs a right "no more than is reasonably necessary", the Court of Appeal in *Ministry of Health v Atkinson* [2012] 3 NZLR 456 endorsed the following approach from a Canadian case:

*The law must be carefully tailored so that rights are impaired no more than necessary. The tailoring process seldom admits of perfection and the courts must accord some leeway to the legislator. If the law falls within a range of reasonable alternatives, the courts will not find it overbroad merely because they can conceive of an alternative which might better tailor objective to infringement ... On the other hand, if the government fails to explain why a significantly less intrusive and equally effective measure was not chosen, the law may fail.*

The Court of Appeal agreed that if there is an alternative option that will have less impact, it does not follow that the option adopted is necessarily outside the range of reasonable alternatives.

The purposes of the proposed air quality bylaw are set out above. It is considered that these purposes are of sufficient importance to justify the proposed measures and limits. The legislation authorises bylaws for these purposes and so Parliament must be taken as regarding such matters as sufficiently important to warrant some bylaw regulation. Overall, the bylaw is not considered to be a disproportionate limit on the rights contained in the New Zealand Bill of Rights Act, given the importance of the objectives. The bylaw provisions are largely based on achieving the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 and the council is not aware of any issues arising in relation to those provisions suggesting they are out of step with what is considered reasonable regulation of the issues. The proposed bylaw is therefore not considered to be inconsistent with the New Zealand Bill of Rights Act 1990. The limits are reasonable and "can be demonstrably justified in a free and democratic society", in terms of section 5 of that Act.

## Appendix one: Location of Auckland urban airshed and other rural airsheds

