Issue AQL1 Localised air quality issues ## 03-007 01 00

89	J McSweeney	Supports issue AQL1
92	D Minchington	Rental housing should have only electrical heating.
114	N Harris	General agreement with issue AQL1
239	Telecom NZ Ltd	Add at the end of the Explanation and Principal Reasons: "In December 2000 the Ministry of Health and the Ministry for the Environment produced the 'National Guidelines for Managing the Effects of Radio frequency transmitters'. One of the key findings of the guidelines was that there are no established health effects from exposure to radio frequency fields as long as they comply with the new Zealand Standard (2772.1:1999 Radio frequency Fields part 1 – Maximum Exposure Levels 3kHZ – 300GHz). Notwithstanding this, for the avoidance of doubt and for the purpose of this Plan, radio frequency fields are not considered to be a contaminant."
300	L Murahidy	Differentiate between wood and coal as a solid fuel.
301	R Roden	Differentiate between wood and coal as a solid fuel. Explore alternative environmentally friendly technologies e.g. pellet fires and scrubbers.
326	Ilam & Upper Riccarton Residents Association Inc	School burners or boilers burning coal to have the same rules as open fires and become obsolete.
347	Federated Farmers Of New Zealand Inc, North Canterbury Branch	Amend Issue AQL 1 so it does not apply to rural zones.
351	N Crutchley	School burners or boilers using coal to have the same rules applied to open fires and become obsolete.
391	Carter Holt Harvey Panels MDF Ltd	Reword Issue AQL 1 so it is clear that only uncontrolled air discharges resulting in an adverse effect are an issue. The reworded issue also needs to recognise the positive effects the use of the natural and physical resources have on social, cultural and amenity values and that the use of resources is necessary to provide for people's social and economic well-being.
F326	Ilam & Upper Riccarton Residents Association Inc	Support submission 351.
F338	Transit New Zealand	Supports submission 391.
F341	Heinz Wattie's Australasia Pty Ltd	Opposes submission 351.

F342	Canterbury Breweries Ltd	Opposes submission 351.
F352 (point 1)	Feltex Carpets Ltd	Opposes submission 351.
F352 (point 2)	Feltex Carpets Ltd	Opposes submission 326.
F3035	Ilam & Upper Riccarton Residents Association Inc	Supports submitter 351.

Submission Clarification

Submission 89

The submitter supports Issue AQL1 as contamination from smoke must stop.

Submission 92

As a member of the rental housing population only electrical heating should be fitted in such housing. At present wood burners are being fitted in Housing Corporation housing and as most tenants are very environmentally aware they do not use them. The submitter seeks that input into all rental housing be increased where air pollution issues arise.

Submission 239

The submitter is of the view that RF (radio frequency fields) are not a contaminant, and is not a process of an industrial or trade premises, by virtue of the definition. The submitter is concerned that the construction of the Plan may lead to uncertainty and confusion.

Submission 300 and 301

Domestic (small scale) fuel burning devices needs the nature of fuel to be differentiated - ie wood versus coal (wood → CO_2; coal → CO_2 + SO_2); pellet fires/scrubber technology should be further investigated.

Submission 347

Issue AQL 1 should be specifically targeted at dwellings in urban zones.

Consideration

Submission 92

Rules in Chapter 3 permit those dwellings with an existing solid fuel burner, to replace these with low emission forms of heating, including complying low emission burners. In Christchurch, the Clean Heat Project is aimed at assisting and encouraging people who currently have solid fuel heating as their main form of heating to install cleaner forms of heating (including flued gas, electricity, and diesel, and low emission burners). There is specific rental property programme assistance within the Clean Heat Project to encourage clean heating and insulation in rental accommodation – however this is not available for government and other large agency housing portfolios. Chapter 3 also proposes to prohibit new homes from using solid fuel burners in Christchurch Clean Air Zone 1, and for the rest of Canterbury any new burners must meet the complying low emission criteria of 1g/kg and 65% thermal efficiency. The Commissioners doubt that Environment Canterbury can single out rental housing and require rental houses to have only electrical heating as requested. It is recommended that the submission is rejected.

Submission 239

It is noted that in an earlier recommendation ## 01-012 22 00, 239 the submitter asked for radio frequency fields to be specifically excluded from the definition of "contaminant". The Commissioners did not recommend that this change should occur.

In 2000, the Ministry for the Environment and the Ministry of Health produced the "National Guidelines for Managing the Effects of Radio Frequency Transmitters". This report notes the following at page 3:

> "*For radio frequency fields to be considered to be a contaminant it would need to be demonstrated that they change the physical, chemical and biological conditions of air. The air containing radio frequency fields is indistinguishable from the surrounding air and even if there were some physical change (e.g., heating of the air), the Ministry for the Environment considers that the changes are sufficiently negligible in practice to be ignored under the de minimis principle. The Ministry for the Environment recommends that the effects of radio frequency fields continue to be addressed in district plans only.*"

The Commissioners agree with this analysis and they do not consider it necessary to specifically exclude radio frequency fields from the provisions Chapter 3, including the explanation and principal reasons to Issue AQL1 and Objective AQL1 as requested. No change is recommended by the Commissioners, and it is recommended that the submission is rejected.

Submission 300 and 301

If their recommendations are accepted, Chapter 1 of the NRRP will define 'small scale fuel burning device' and 'solid fuel' (as amended by the Commissioners' recommendations) as follows:

> ***"Small scale fuel burning device*** *means all heating devices using solid fuel, gas, diesel, oil or other liquid fuels having a net heat output of 40 kilowatts or less, regardless of the nature of the premises where the device is installed. It includes open fires and enclosed burners, but does not include unflued gas heaters, or gas hobs or gas ranges used for cooking."*

*"**Solid fuel** includes wood, coal and its derivatives, and manufactured fuel pellets."*

While solid fuel by definition includes coal, wood and manufactured fuel pellets, Chapter 3 is managing the effects of particulate emissions from small scale fuel burning devices, so the burning device needs to meet the proposed criteria in Rule AQL2 (essentially 1 g/kg of total suspended particulate and 65% thermal efficiency), regardless of the fuel type. It is unnecessary to differentiate between wood and coal. It is noted that Rule AQL5 proposes to prohibit the use of any fuel having a sulphur content greater than 1% by weight. The rule is considered below. It does not alter the Commissioners' views. No change is recommended by the Commissioners, and they recommend that the submissions are rejected.

Submission 347

Issue AQL1 applies to all areas of Canterbury as discharges into air can create localised air quality issues in both rural and urban areas. These are the localised air quality issues that Chapter 3 seeks to manage and these local issues can occur in less populated rural areas or in more densely settled urban areas. The actual mechanisms to manage these issues follow in the objective, policies, and methods (including rules in some cases). The consideration above (see Chapter 3 - General Submissions ## 03-000 00 00, 155) is also relevant and is adopted. No change is recommended by the Commissioners, and it is recommended that the submission be rejected.

Submission 326, 351, Further Submission F326, F341, F342, F352 (points 1 and 2), F3035

School boilers burning coal or oil are classified in the plan as large scale fuel burning devices. The combustion process in such boilers can be controlled to a greater degree than combustion in domestic open fires and solid fuel burners. Consequently, the emission rate of particulate matter, per kilogram of fuel burned, from typical school boilers is likely to be much less than the emission rate from open fires. They are also likely to have an emission stack. The combination of the lower emission rate and discharge at a higher elevation via an emission stack reduces the potential effects of discharges from such boilers, putting aside the issue of scale. Chapter 3 requires that resource consents be obtained for these boilers in Christchurch, whereby factors such as contaminant emission rate and stack height can be controlled. The Commissioners accept that this is the appropriate mechanism to address issues of scale. It is noted that coal boilers in schools are being gradually phased out by the Ministry of Education. There are a number of schools that only have short-term consents and are now converting to diesel or liquefied petroleum gas. No change is recommended by the Commissioners, and it is recommended that the primary submission (and those in support) are rejected. Those in opposition should be accepted.

Submission 391, Further Submission F338

Both controlled (e.g. via resource consent) and uncontrolled discharges have the potential to cause adverse effects if appropriate mitigation measures are not applied. Issue AQL1 therefore addresses nuisance and health effects, and adverse effects from all sources. The positive effects of the use of natural and physical resources are not issues that need to be controlled under the plan. No change is recommended by the Commissioners, and it is recommended that the submissions are rejected.

Submission 89 and 114

The submitters support Issue AQL1. Given their recommendations the submissions can be accepted.

Recommendations

Reject

Submission 92, 239, 300, 301, 326, 347, 351, 391, Further Submission F326, F338, F3035, Reject the submissions.

Accept

Submission 89, 114 and Further Submission F341, F342, F352 (points 1 and 2).

Amendment Required

None required.

Issue AQL1 (a) ## 03-007 05 00

351	N Crutchley	Do not grant too many licences for wood burners.
907	P L Tilley	Provide information on the height of the air pollution monitors.

Submission Clarification

Submission 351

What will happen to domestic wood burners when wood supply is short? Abuse of their privilege to burn wood may occur and wet or green wood will be better than no wood or expensive wood. The availability of dry wood and increase in wood prices may result in the use of inefficient wood or waste burning.

Submission 907

How high up are the pollution monitors situated? Noses would not reach chimney level so the submitter assumes that the pollution the community is supposed to suffer would be from the traffic, not household fires. As the late Mr. Phil Warren said of Auckland pollution, “let’s be honest, diesel is to blame.”

Consideration

Submission 351

The quality of wood burned is controlled by proposed Rule AQL5. Therefore, the issue becomes one of enforcement. Environment Canterbury currently responds to complaints in relation to smoky chimneys. The officer seeks to determine the cause of the smoke coming from the chimney and provide advice on how to minimise such emissions. If there is no change in burning practices of the fire operator, or the recommended changes have not been undertaken, then stronger enforcement action can be undertaken, including fines and abatement notices. Environment Canterbury is also providing a 'Home Heating Advice Service' in Christchurch, which is freely available to anyone who wishes to know more about their fire, how to use it, and how to store firewood. Other information on how to use your wood burner is also available, including what to burn and what not to burn. No change is recommended by the Commissioners, and it is recommended that the submission is rejected.

Submission 907

When the air is cold, calm and stable, as under inversion conditions, air pollutants are not able to be dispersed easily, compared to times when it is windy. In such conditions, any mixing of air pollutants occurs within this stable layer, which may be in the order of tens of metres above ground level and may vary through the night. During these calm times, pollution emitted from a chimney will slowly drift sideways and towards the ground. Car emissions, although emitted at a lower level, will be mixed upwards from the turbulence created by the movement of the cars, but will be contained within the same layer.

Ambient air quality monitoring stations measure air pollutants at a height of about 2 to 3 meters above ground level to capture a sample of air that may typically be breathed in within the stable layer.

In Christchurch, approximately 90% of the measured PM_{10} concentration comes from burning wood and coal on domestic fuel burning equipment, including open fires and enclosed burners. Some 7% of the concentrations of PM_{10} come from industrial sources and 3% from motor vehicles (based on 1999 emissions).

No change is recommended by the Commissioners, and it is recommended that the submission is rejected.

Recommendation

Reject

Submissions 351 and 907

Amendment Required

None required.

Issue AQL1 (a) (i) ## 03-007 06 00

108	A Cunliffe	Delete reference to section (a)(i), or delete any reference or advocacy of electric power used for home heating (refer sub points 3-36-43, 3-39-33, 3-41-29, 3-42-28, 3-43-42)
351	N Crutchley	Phase out wood burners. Those already approved to have a shorter lifespan than predicted.
379	Christchurch City Council, Civic Offices	Delete the term 'fuel burning devices' and replace with 'fuel burning equipment'.
402	Donnelly Marketing	The term 'small scale fuel burning devices' should relate to residential and smaller commercial applications.

Submission Clarification

Submission 108

Opposes section 1(a)(i) of Issue AQL1 as Environment Canterbury cannot focus on local air quality issues and advocate a solution that causes additional air pollution outside the Canterbury region.

Throughout Chapter 3 electricity is advocated as an acceptable alternative energy to provide domestic heating. Advocating the use of electricity to heat homes is fundamentally flawed as according to the Ministry of Economic Development (2000), 66% of all electrical power generated in New Zealand is produced by thermal generation where products of combustion enter the atmosphere. The combustion products will degrade the air quality at the thermal power station site (remote from Canterbury but still in New Zealand).

Submission 351

Council approved log fires become polluters of the air.

Consideration

Submission 108

Domestic (small scale) fuel burning devices, are one combustion source of contaminants that may contribute to localised air effects such as nuisance and health effects on people, their social, cultural and amenity values, and adverse effects on natural and physical resources. Other combustion sources noted in Issue AQL1, include industrial (large scale) fuel burning devices, motor vehicles and outdoor burning.

In Christchurch, approximately 90% of the measured PM_{10} concentration comes from burning wood and coal on domestic fuel burning equipment, including open fires and enclosed burners. Some 7% of the concentrations of PM_{10} come from industrial sources and 3% from motor vehicles (based on 1999 emissions).

The Ministry of Economic Development's "New Zealand Energy Data File" (2004), indicates that approximately 61% of electricity generated is from hydro and wind.

Environment Canterbury's "Regional Energy Survey 1982-2002" (2003), has assumed that in Canterbury 100% of electricity is generated from hydroelectric sources (excluding dry years where energy from the thermal power stations in the North Island has been used) (section 3.2.5 Fuel origin). This reflects the considerable hydro electricity generation resource within Canterbury and the South Island. There is apparently some difficulty in determining how much energy from the North Island thermal power stations is used in Canterbury during the 'dry years'.

Regional councils are responsible for controlling the discharge of contaminants in their own regions under section 15 of the RMA (regardless of whether the energy produced is used in another region). Chapter 3 controls the discharge of contaminants into air from a variety of sources in the Canterbury region, including the discharge of contaminants into air from combustion sources such as small scale fuel burning devices, large scale fuel burning devices, motor vehicles and outdoor burning, as indicated in Issue AQL1. Elsewhere in Chapter 3, alternative forms of heating to burning solid fuel are encouraged so as to not increase the number of dwellings using solid fuel as a main form of heating in the Christchurch Clean Air Zone 1. These alternatives include flued gas, electricity and diesel, and low emission solid fuel burners (1g/kg and 65% thermal efficiency). Analysis of the submissions on these provisions is undertaken elsewhere. It is not considered necessary to delete Issue AQL1(a)(i) as domestic small scale fuel burning devices are one source of discharges of contaminants into air. Nor do the Commissioners consider it necessary to delete any references to electric power used for home heating anywhere else in Chapter 3 as this is one of the alternatives that can be used for home heating. No change is recommended, and it is recommended that the submission is rejected.

Submission 351

Chapter 3 seeks to place a 15-year life span on non-complying solid fuel burners in Christchurch Clean Air Zone 1 - Rule AQL11. There is no provision currently in Chapter 3 that places a 15-year life span on solid fuel burners throughout Canterbury. All solid fuel burners can be replaced with cleaner forms of heating, which includes low emission burners that meet the 1g/kg and 65% thermal efficiency criteria. Burners that meet the 1g/kg and 65% thermal efficiency criteria do not have to be replaced 15 years after installation anywhere in Canterbury.

Although anecdotal evidence suggests that wood burners are generally removed during a period between 12 and 20 years after installation, there is no guarantee that this will occur. Environment Canterbury has therefore set an age limit on appliances to provide greater assurance that older appliance will be removed within a reasonable timeframe. The mandatory phase-out of high emission burners from 2008 as proposed under Rule AQL11 will achieve significant air quality gains which will go towards the attainment the Christchurch ambient air quality target for PM_{10} of 50 $\mu g/m^3$ (24 hour average), with no more than one annual exceedence averaged over three years (Objective AQL3). The 15-year life span was chosen on the basis of a number of estimates that identify the average life of a burner to be between 12 and 20 years. It recognises that the life of a burner can vary depending on the frequency of operation, the manner in which it is operated and whether appropriate fuels have been burnt in it.

The US Environmental Protection Agency undertook some research on the long-term performance of EPA-Certified Phase 2 Woodstoves[1]. This was a result of concern that laboratory and field studies had shown that certified wood heaters could physically degrade with use and their air emissions commensurately increase. The results showed that the emission level of all sixteen stoves that were considered in the study degraded (got worse) with age.

> "*However, only six were degraded to the point that it was speculated that their condition would significantly affect air emissions. Routine maintenance or minor repairs could have kept all units in good operating condition if they had been done"* (Fisher *et al,* 2000, page 58).
>
> *The particulate emission factors of the certified Phase 2 stoves considered in this study appear to have increased with use, but on the average, after about seven years they still have lower emissions than uncertified conventional stoves*" (Fisher *et al,* 2000, page iii).

It was not considered efficient to specify a 15-year life span on all burners. Environment Canterbury considered that outside the Christchurch Clean Air Zone 1, higher emission burners will, over time, be replaced with cleaner forms of heating (which may include low emission burners). In Christchurch Clean Air Zone 1, this replacement process needs to occur at a faster rate, and there is effectively a cap on the number of burners as new homes or existing homes without solid fuel burners need resource consent to install a burner. It is not considered to be cost effective to phase out solid fuel burning completely as the net present value (NPV) of this option is between $128 million to $231 million (Environment Canterbury, 2002, page 287[2]). Environment Canterbury chose options that will cost the people of Christchurch at least $109 million to achieve an air quality of a reasonable standard (Environment Canterbury, 2002, page 288[3]). If a total solid fuel ban was to occur as suggested by the submitter, then the cost of achieving this would double the costs to at least $215 million (Environment Canterbury, 2002, page 288[4]).

While the low emission burners may degrade over time, the ongoing monitoring of ambient air quality will indicate whether the Chapter 3 provisions are working to achieve the ambient air quality objective. If it is found that more needs to be done to achieve the ambient air quality objective, then a change to Chapter 3 can be undertaken at that time. Currently, there is not enough information to put in place a 15-year life ban on solid fuel burning appliances, nor is it cost-effective to proceed with a total solid fuel ban. No change is recommended by the Commissioners, and it is recommended that the submission be rejected.

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[1] Fisher, L. H., Houck, J. E., Tiegs, P. E., and McGaughey, J., "Long-Term Performance of EPA-Certified Phase 2 Woodstoves, Klamath Falls and Portland, Oregon: 1998/1999", A report prepared for the US Environmental Protection Agency, Office of Research and Development, Washington, DC, Report Number NRMRL-RTP-195 (R3/27/00).

[2] Environment Canterbury, 2002, "*Section 32 Report: Air quality chapter of the Proposed Canterbury Natural Resources Regional Plan*", Report No. R02/4, Environment Canterbury, Christchurch.

[3] Op. cit.

[4] Op. cit.

Submission 379

The terms “fuel burning device” and “fuel burning equipment” have both been used in the plan. “Large scale fuel burning device” is defined in the plan. The plan states that “industrial fuel burning equipment” means “large scale fuel burning device”. To avoid confusion, it is recommended by the Commissioners that the term “large scale fuel burning devices” be used consistently throughout the plan, and that references to “fuel burning equipment” be deleted. Further the Commissioners note that the expression “fuel burning appliances” has also been used in Chapter 3. Changing this reference to fuel burning devices would add further consistency to the chapter. The Commissioners note that their recommendation in relation to the definition of “Large scale fuel burning device” excludes solid fuel burning devices used in dwellings. Submission 379 does not provide scope for the changes suggested. The Commissioners recommend that ECan notify a variation to make the changes suggested, and it is recommended that the submission be accepted in part.

Submission 402

The plan’s definition of “small scale fuel burning devices” includes all heating devices having a net heat output of 40kW or less, regardless of the nature of the premises where the device is installed. Thus the term applies to small commercial applications, as well as the more common domestic installations. It is recommended that the submission is accepted – but no change to Chapter 3 is required.

Recommendations

Reject

Submission 108 and 351

Accept

Submission 402

Accept in Part

Submission 379

Amendment Required

1. None required.

2. It is recommended that ECan consider notifying a variation to the following effect:

Throughout Chapter 3, delete all references to fuel burning “equipment” and “appliances” and replace with fuel burning “device(s)”.

Issue AQL1 (a) (ii) ## 03-007 07 00

379	Christchurch City Council, Civic Offices	Delete the term 'fuel burning devices' and replace with 'fuel burning equipment'.

Consideration

Submission 379

This submission was considered at Issue AQL1 (a) (i) ## 03-007 06 00, 379 above. That consideration is adopted. The Commissioners recommend that ECan notify a variation to provide consistency in the use of terms fuel burning device, fuel burning appliance and fuel burning equipment.

It is recommended that the submission is accepted in part.

Recommendation

Accept

Submission 379

Amendment Required

1. None required.

2. It is recommended that ECan consider notifying a variation to the following effect:

Throughout Chapter 3, delete references to fuel burning "equipment" and "appliances" and replace with fuel burning "device(s)".

Issue AQL1 (a) (iii) ## 03-007 08 00

338	Transit New Zealand, Christchurch	Supports the overall intent of Objective AQL 1.

Submission Clarification

Submission 338

Supports the overall intent of the objective but is concerned that the lack of definition of terms used in it make its interpretation unclear. The submitter has filed submissions on specific terms, which are assessed separately.

Consideration

Submission 338

The submission supports the overall intent of Objective AQL1. There are no contrary submissions and the Commissioners recommend that the submission therefore be accepted in part.

Recommendation

Accept in part

Submission 338

Amendment Required

None required.

Issue AQL1 (e) ## 03-007 16 00

403	Board of Airline Representatives of New Zealand Inc	Add at the end of clause (e) to read: '... (but excluding emissions from moveable sources such as aircraft while located on such premises).' Make any other consequential amendments to the Plan as necessary.

Submission Clarification

Submission 403

The submitter considers that discharges into air from aircraft (as moveable sources) are covered by section 15(2) of the RMA. It submits that while moveable sources such as aircraft may be located on industrial or trade premises at times, discharges from these sources should not be considered to be discharges from those industrial or trade premises. The submitter acknowledges that some persons may contend that section 15(1) of the RMA does apply to moveable sources when they are located for any period of time on industrial or trade premises. If moveable sources are seen as falling within section 15(2), the submitter accepts that these sources can still be required to obtain resource consent in the event that a rule is included in a regional plan that specifies that air emissions from moveable sources require consents and are no longer permitted activities.

Consideration

Submission 403

The substance of this submission is considered above (see Chapter 3 – General Submissions ## 03-000 00 00, 403). That consideration is adopted. The Commissioners note that the definition of large scale fuel burning device excludes aircraft. The Commissioners' recommendation is the same, that the submission be accepted in part and that changes be made as identified above - ## 03-000 00 00, 403. No change is required to Issue AQL 1(e).

Recommendation

Accept in part

Submission 403

Amendment Required

None Required