



STAFF REPORT

TO: Environment & Planning Committee

FROM: Mary-Anne Baker Policy Planner

REFERENCE: C301

SUBJECT: **RICHMOND AIR QUALITY / ENERGY EFFICIENCY- BUDGET 2008/2009 – REPORT EP08/03/07** - Report prepared for 4 March Meeting

1. PURPOSE OF REPORT

This report briefs the Committee on an opportunity to reduce contribution by open fires and non-compliant old woodburners to PM₁₀ pollution in the Richmond airshed as a result of government funding becoming available.

2. BACKGROUND

A National Environmental Standard (NES) sets an air quality standard for ambient air quality in relation to PM₁₀ - particulate matter which is less than 10 microns in size of 50ug/m³. (Standards have also been set for other contaminants, but none of these are a concern in Tasman). The Standards require regional councils to meet ambient air quality for PM₁₀ in airsheds that don't meet the standard by 2013.

Air quality in the Richmond Airshed does not meet the PM₁₀ standard during winter. The standard is frequently exceeded (up to nearly 50 times per year) and often by a significant amount (highest level recorded is 112ug/m³). Emissions must be reduced by 55% of 2001 levels to meet the NES. The greatest source of PM₁₀ is from domestic heating sources (over 80%). Of this, old model wood burners and open fires contribute the greatest proportion of PM₁₀.

The Council has already introduced new rules to:

- prevent new wood burners from being installed into the Richmond airshed (unless they are an upgrade of an existing fire)
- prevent use of non-compliant wood burners or open fires once a house changes ownership.
- improve quality of emissions from domestic chimneys
- regulate industrial or large scale emissions of PM₁₀.

There are currently no rules that prevent the continued use of existing non-compliant wood burners including open fires, other than as specified above. The above provisions were operative in September 2007, having been introduced by Variation 51 in January 2007.

Other parts of the Council strategy to improve air quality include education and advocacy campaigns to ensure people operate wood burners properly and working with Nelson City on the Good Wood Supplier Scheme which encourages wood merchants to ensure clients get 'good wood' and to be part of the strategy to improve air quality.

The Council has considered offering incentives and subsidies, especially for low income households, to assist people to make a change from open fires and old model burners. However, at that time of consideration (2006), no government assistance was available and Council decided against this as part of its strategy. Subsidies and financial incentives were not originally included in the strategy because of the high costs involved and the impact this has on ratepayers as well as concerns about equity between ratepayers (i.e. half of the Richmond ratepayers already use clean heat systems).

The likely effects on air quality from the strategy adopted by Council were modelled and while it is possible that Richmond will meet the air quality standards by 2013, it is not very likely. The strategy relies very heavily on voluntary changes by wood burner operators to reduce smoke emissions and to replace non-compliant models with clean heat through the requirement upon property transfer. Confidence that these parts of the strategy will make a significant difference to the air quality is not high.

Any additional strategies to assist faster replacement of non-compliant models will help meet the standard by the required date.

3. ADDITIONAL FUNDING

The government, through the Ministry for the Environment and EECA (the Energy Efficiency and Conservation Authority) is offering two programmes to increase the rate at which open fires and non-compliant wood burners are replaced with either clean heat systems or compliant (clean air) wood burners. Funding is being offered for the present 2007/08 financial year and is also expected to be available for the 2008/09 year.

The two programmes being offered are:

EnergyWise Homes
EnergyWise Funding.

To be eligible for funding under the EnergyWise Homes programme Clean Heat, the project must:

- target only low-income households; and
- target only householders currently using an open fire or NES non-compliant wood burner, to heat the main living area of the house; and
- include the option of installing all of the following clean heat devices: heat pumps, wood burners, pellet burners and, flued gas heaters; and
- target only houses that are insulated to the EECA Insulation standard applicable at the time of tender prior to or at the time of the installation of the heating device.

The money would only be available for houses in the Richmond Airshed and is dependent on the funding partner (council or some other third party) contributing 50% of the costs.

The EnergyWise Funding programme offers interest free loans:

- Household income must be less than \$100,000 (or less than \$140,000 where there are three incomes).

- Interest free loans can be made available for replacement of woodburners or open fires, improving insulation and installation of solar water heating.

For both schemes, EECA criteria also require that only homes built before 1978 can be eligible as this date signalled better insulation standards. This date is not relevant when considering compliance or age of wood burners/open fires and the Tasman District Council is supporting initiatives in seeking a change this restrictive requirement.

For both schemes, EECA require that the house owners are provided with an assessment of energy efficiency options and that all appliances or materials provided meet specified standards. Council staff do not have the expertise to deliver all aspects of the programme and would need to work in partnership with a third part with experience and expertise in providing the required goods and services. The offer requires that the cost of this service is included in the delivery of actual goods and services.

3.1 EnergyWise – Homes Programme Options

Two options under possible subsidy scheme programmes are described in more detail in appendix 1. Both focus on low income households in Richmond and explore funding options for Council. The first considers a scheme that is targeted at replacement of non-complying solid fuel burners for low income households that meet the required insulation standards. The second option considers only the replacement of open fires in low income households.

3.2 EnergyWise – Funding Options

Appendix 2 describes options for Council to provide an interest free loan programme for the replacement of non-complying wood burners.

4. OPTIONS – SUBSIDY SCHEME

The government offer of 50% funding for the replacement of non-complying wood burners can be seen in two ways. It is either:

1. a significant contribution (up to \$316,400 depending on option chosen) towards improving ambient air quality in the Richmond airshed sufficiently to meet air quality standards in 2013

Or

2. it is half the contribution needed for a woodburner replacement programme, which, if adopted by Council, results in a significant impact on rates for Richmond residents or those in the wider Tasman District or both.

4.1 Meeting the Ambient Air Quality Standard – or Not.

As noted above, Richmond air quality will be improved by the measures already adopted by Council. However, there is some doubt as to whether the NES for air quality will be met by 2013. Council's strategy somewhat optimistically expects people to operate solid fuel burners efficiently and encourages people to upgrade voluntarily.

It is more likely that air quality will take until about 2021 to meet the standards if Council continues to depend on these voluntary actions. The addition of a ban on open fires would improve chances of meeting the standard by a couple of years.

Not meeting the air quality standard means that Council will not be able to issue resource consents for PM₁₀ discharges in the Richmond Airshed (which will be mainly for any new industrial sources of PM₁₀).

The impact of the national regulation on new sources of PM₁₀ is not likely to be very great. New significant sources of PM₁₀ are not provided for in the Council's land use planning provisions in Richmond West, as new industry in the Mixed Business Zone is expected to use 'clean technology' and the new Industrial Zone locations are outside the airshed boundary.

It is possible that renewal of existing PM₁₀ air discharges will not be considered "to cause the concentration of PM₁₀ to breach the standard" because they were already existing and therefore not subject to this part of the regulation. This aspect of the regulations has not been tested in court. Since the existing industrial sources of PM₁₀ are mostly relatively insignificant in the airshed this part of the regulation may well not have that much effect after 2013.

However, not meeting the standard also means that the Richmond community (including residents as well as people who come to school or work in Richmond) will continue to suffer adverse health effects of the PM₁₀ levels that are ongoing. As well as being a nuisance and unpleasant for people, PM₁₀ is known to cause premature death and aggravate existing respiratory diseases. These effects on people's health are not insignificant, although not easy to quantify more precisely for Richmond.

The Council has already committed to a review of the air quality management provisions in 2010 by which time more climate/weather information and emissions data will have been collected. It has signalled the need for a review if air quality is not improving at the required rate. It is possible that more regulatory measures may need to be considered if the 2013 target is to be met.

4.2 The Costs

It is unlikely that low income households (those on community services cards) will be able to meet the capital costs of a replacement burner easily without some financial assistance. A subsidy under this programme will enable replacements to be made quickly and thereby help improve air quality for the entire community. If open fires are replaced, then living conditions for individuals are also improved which also provides for good social outcomes which benefit the entire community.

Without some assistance for low income households, regulation to require upgrades by a certain date may well cause hardship for some people and compliance costs for Council would be significant.

However, in order for low income people to receive assistance under the proposed incentive package offered by EECA, Council must be prepared to contribute to the package from rates, and the rate contribution must be re-distributed either within the district or within Richmond (or both). This could be considered to be beyond the scope of the Council's resource management duties to improve air quality and more

of an exercise in social welfare and income redistribution. Such a proposal is not an even-handed approach to the polluter pays principle.

The Council could suggest to the government, that since replacement of non-complying woodburners is an issue with social welfare implications, government should provide sufficient funding to address the problem through its welfare agencies and not require regional or district authorities to impose these costs on local communities as part of its resource management functions.

5. INTEREST FREE LOANS

EECA is also offering interest free loans to assist more people to upgrade non-compliant burners or improve insulation levels in older homes. The EECA interest contribution is \$1250 per household. Based on an average cost of \$3,500 for upgrade work a householder could get a loan for six years at an interest rate of 10%.

The funding package offered by EECA is contestable and allows homeowners to get the interest free loan for any required insulation upgrade as well as a heating upgrade or just the insulation upgrade on its own.

EECA is also allowing interest free loans for installation of solar water heating and replacement of old fridges.

The scheme is less concerned with social issues surrounding ability to pay as it enables a greater number of people to upgrade non-compliant wood burners and is less focused on low income households. The more people that upgrade their woodburners, the quicker Richmond air is improved.

This scheme does not require a local contribution to funding. It is likely that providers of energy efficiency advice, insulation goods and services etc may also be able to provide this service to Richmond (and other) ratepayers. Energy Smart Ltd (who currently deliver the HHNT project and operate several similar schemes in other areas) have indicated they are planning to offer the scheme in Tasman and would welcome support by the Council to promote the scheme.

6. RECOMMENDATIONS

It is recommended that the Committee:

1. **Request** the Ministry for the Environment to reconsider subsidy schemes targeted at low income households so that social welfare costs associated with replacing non-compliant wood burners are not met by ratepayers.
2. **Recommend** that Council adopts option 5 and offers support to service providers who are partners with EECA in establishing an interest free loan programme for replacement of non-compliant wood burners and upgrades of insulation and targets Council support to households in the Richmond Airshed

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1. CALCULATION OF COSTS – SUBSIDY SCHEME

Of the total number of woodburners and open fires in Richmond (1835 approximately) at least 1050 (possibly up to 1500) of them are old model or non-clean air compliant wood and multi fuel burners and open fires in Richmond. Not much is known about the level of insulation in all of these houses.

A number of these homes would not have sufficient insulation but there is little information available about the likely costs of improving insulation to required levels.

Considering the findings of the Nelson Clean Heat programme however, an average of \$1200 was needed for upgrading insulation and the majority of houses needed some insulation work to meet EECA standards

An estimated 30% (315) of these are in households with low incomes (holding community services cards). The numbers of households are an estimate based on a ratepayer survey and Work and Income data.

National research has shown that consumer uptake of the four clean heat choices is detailed in the table below as follows:

Table 1; Uptake of Heating Choices

Clean Heat device	Approximate % uptake
Heat pump	60%
Wood burner	20%
Pellet burner	15%
Flued gas heater	5%

The numbers may not be accurate for Tasman, but in the absence of better data, these figures will be used in estimating programme costs

Estimates of costs for the various options;

Table 2; Average Heating Costs¹

Heating Method ²	Average cost/house (incl assessment and project management costs)
Heat Pump ³	\$2,600
Woodburner	\$3,490
Pellet Fire	\$3,550
Flued Gas	\$3,930

¹ These costs are based on data received from Nelson City.

² Eligible models are pre-selected by the project manager and tenders are sought from suppliers.

³ Replacement costs for new heaters are based on heating the main living areas.

OPTION 1 - MAKE SUBSIDY AVAILABLE FOR ALL SOLID FUEL BURNERS WHERE HOUSE IS FULLY INSULATED

The Healthy Homes Nelson Tasman Project has carried out 77 insulation retrofits. The retrofits have been carried out in houses under the same eligibility criteria as the new subsidy programme. All of these houses have old model burners or open fires. There are a further 39 houses waiting to be assessed and retrofitted.

Up to 100 eligible houses (other than those already retrofitted by the HHNT project) may also meet the criteria bringing the total to 216.

Based on the research, the following heating choices and total costs are calculated for all low income households:

Table 3: Estimate of Costs - Insulated Low Income Houses

Clean Heat device	Approximate uptake	Total cost
Heat pump	106	\$275,600
Wood burner	35	\$122,150
Pellet burner	26	\$92,300
Flued gas heater	9	\$35,370
Total	176	\$525,420

Option 1a.

The EECA subsidy is 1:1 so total council contribution for this option is \$262,710

Option 1b

The EECA programme allows up to \$500 to be sought from each household to help pay costs. If Council were to seek this contribution, the total cost reduces by \$88,000 to \$437,420

The EECA subsidy is 1:1 so total council contribution for this option is \$218,210

OPTION 2 MAKE SUBSIDY AVAILABLE ONLY FOR REPLACEMENT OF OPEN FIRES

The emissions inventory showed that there are about 170 houses in the Richmond airshed with open fires used for heating. Not only do open fires contribute a proportionately significant amount of PM₁₀ to the air, they are also a very inefficient way of heating a home. Much of the heat is lost up the chimney, and drafts created by the chimney decrease temperatures in living areas.

Research has shown that open fires can be present in households that are above low income thresholds, but these fires are mostly used for ambience or atmosphere. It is more likely that low income homes will rely on them for heating. This analysis will assume all open fires are eligible and may be an over-estimate.

This analysis will assume that where open fires are used as the main form of heating, the household will be eligible for a community services card. It will also assume that most of the houses do not meet insulation requirements and that an additional \$1200 needs to be allowed for. (This is an average costs based on data supplied by Nelson City.) Eleven houses have already had insulation retrofits as part of the Healthy Homes Nelson Tasman Project.

The total is calculated using the costs above, but assuming all open fires will be replaced with complying woodburners (because firewood may be easier for low income people to pay for than electricity, and open fires are more likely in older homes that may be costly to warm by electricity)

Clean Heat device	Approximate uptake	Total cost
Heat pump	170	\$632,800

Does not include the \$13,200 for the houses already insulated.

Option 2a.

The EECA subsidy is 1:1 so total council contribution for this option is \$316,400

Option 2b

The EECA programme allows up to \$500 to be sought from each household to help pay costs. If Council were to seek this contribution, the total cost reduces by \$85,000 to \$547,800

The EECA subsidy is 1:1 so total council contribution for this option is \$273,900

2. FUNDING OPTIONS

Funding options for the Council will depend on decisions being made about proportion of community benefit from improved air quality in Richmond.

Based on limited monitoring, the Richmond Airshed extends south to White Rd, west to McShane Rd and includes the foothills. Air quality will vary within the airshed depending on local weather and topography conditions. Further work is being done to refine the level of knowledge.

It is not just people who live in Richmond who will benefit from improved air quality. People coming to Richmond for work or school and visitors to Richmond including people from Nelson and elsewhere in Tasman and tourists may be adversely affected by poor air quality in winter.

While just over 50% of households in Richmond already have clean heating systems, it is clear that improvements to ambient air will not be made quickly, especially by low income households. The costs of poor air quality will be evident for longer without some financial assistance. In addition to adverse health effects, the NES either imposes costs on new and existing industry to meet higher performance standards or

requires that resource consents be declined. This is a penalty on the whole community.

The Council will need to consider the relative benefits to the district as a whole and to Richmond people in particular. The following table shows how the contributions can be adjusted for option 1b.

Table 4: Ratepayer Contributions

Proportion of public benefit to Richmond	Contribution by Ratepayer – not in Richmond	Contribution by Richmond Ratepayer
100%	0	\$218,710
80%	\$43,742	\$174,968
50%	\$109,355	\$109,355
20%	\$174,968	\$43,742

Council has two main methods of raising its share of the costs. It can raise a loan which is then repaid over a defined term by rates contributions or it can rate ratepayers directly.

Table 5: Loan Funding Options

\$218,700 @ 8% for 20 & 10 year timeframes				
Proportion of public benefit to Richmond	Loan Charge per annum (for Richmond Only)		Loan Charge per annum (for Rest of TDC)	
	20 years	10 Years	20 years	10 years
100%	21,960	31,860	0	0
80%	17,568	25,488	4,392	6,372
50%	10,980	15,930	10,980	15,930
20%	4,392	6,372	17,568	25,488

Table 6: Annual Repayments for Funding Options for the 20 and 10 Year Loans

	100% Richmond Contribution		80% Richmond Contribution		50% Richmond Contribution		20% Richmond Contribution	
	20 year	10 year	20 year	10 year	20 year	10 year	20 year	10 year
Rest of TDC ratepayers	0	0	\$0.28	\$0.40	\$0.69	\$1.00	\$1.10	\$1.60
Richmond ratepayers	\$3.92	\$5.69	\$3.13	\$4.55	\$1.96	\$2.84	\$0.78	\$1.14
Total Cost Spread Evenly Over Ratepayers	\$1.02	\$1.48						

Calculations are done on the basis of 5,600 rateable properties in Richmond and 21,500 rateable properties in all TDC, (15,900 outside Richmond).

1. INTEREST FREE LOAN PROGRAMME

There are over 1000 households with old model burners or open fires that don't meet the low income criteria.

However, Nearly 80% of households in Richmond have incomes of less than \$100,000, so for the purposes of making estimates it is assumed that all houses with old model burners or open fires will meet the income criteria for the loans scheme. (Higher income people are more likely to upgrade and replace old inefficient models)

A significant proportion is also likely to meet the house built before 1978 criteria. There is little information about the level of insulation of these houses and given NCC experience, it is likely that many houses will need some insulation retrofitting to meet EECA standards.

Option	Description	Benefits	Costs
<p>3. A "targeted rate" whereby a loan is available through Council for the replacement of a burner and which is repaid over a set time through a rate for that property.</p> <p>3a. Council may also chose to offset capital portion loan for low income households.</p>	<p>This option will require some amendments to LTCCP.</p> <p>A low income household choosing this option may be eligible for assistance from Work and Income (though their accommodation supplement).</p>	<p>Provides incentive for people to upgrade.</p> <p>Costs of replacement are linked to the house where the replacement is made – individuals won't have to carry replacement debt with them from property to property. (if the house is sold, it is expected that the balance will be paid off then.)</p> <p>Debt recovery options for rates are more secure than other debt recovery methods.</p>	<p>The scheme is linked to LGA rating provisions and potentially complex to implement. (option 3a adopted by NCC)</p> <p>Staff time costs will be significant</p> <p>The scheme is potentially inflexible as rates must be established prior to July each year.</p>
<p>4. A subsidised loan scheme either through–</p> <p>4a.</p> <ul style="list-style-type: none"> • a recognised lender (e.g.bank) <p>or</p>	<p>The scheme repays interest of up to \$1250 and the householder pays off capital over set term.</p> <p>Initially, and in order that the programme remain a manageable size the offer could be made available for 3 years with a limit of 200 households per year and be limited to households in the Richmond airshed.</p>	<p>Provides incentive for people to upgrade.</p>	<p>Loan carried by individuals even if they move house.</p> <p>People may be unwilling to assume a debt – even if it is interest free.</p> <p>4a.</p> <p>Banks assume any bad debtor risks</p> <p>Need for security against property may be barrier for some people.</p>
<p>4b</p> <ul style="list-style-type: none"> • Council funds <p>With interest costs met by the EECA/MfE scheme</p>		<p>4.b</p> <p>No local contribution is needed from Council although it would have to have capital funding available up front (budget item)</p>	<p>4.b</p> <p>Some staff time costs to set up an administer the scheme.</p> <p>Council will be responsible for bad</p>

		Potentially involves fewer barriers to householders	debtors
5. Subsidy scheme run by third party	<p>Costs of interest are met by EECA and bank or other lending institution provides capital costs.</p> <p>Other businesses providing energy efficiency advice and products could also administer a scheme without Council input.</p> <p>Council could offer assistance in promoting the scheme.</p>	<p>Very little cost to Council.</p> <p>Ratepayers still get access to EECA funds through third party.</p> <p>Council can work with provider to support and promote the scheme</p>	<p>No certainty that third party will offer scheme in Tasman. (although Energy Smart has indicated an interest to EECA in offering the scheme in Tasman and has expressed a desire to work with Council in delivering a scheme).</p> <p>Council has less control over how the scheme is promoted; it may be made available for all the district and not limited to the Richmond Airshed.</p>