

NELSON CITY COUNCIL

## **Nelson Air Quality Plan**

Proposed Plan Change A1

### **Planning Officer's Report - Addressing Submissions on the Plan Change prior to Hearing**

**Date of hearing**

15 July 2011



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## **PART A - INTRODUCTION**

### **1. Reporting Officer**

- 1.1. My name is David Jackson. I am employed by Nelson City Council in the role of Principal Adviser – City Development. I have been with the Council for 16 years, during which time I have led teams developing the Nelson Resource Management Plan and the Nelson Air Quality Plan.
- 1.2. I have a Bachelor of Science (Hons) and a PhD in Plant Science from the University of Canterbury. I am a full member of the New Zealand Planning Institute.
- 1.3. I have been involved in this Plan Change from the beginning and have led the process through the notification period.
- 1.4. I engaged Jeff Bluett, an air quality scientist with the National Institute of Water and Atmospheric Research (NIWA), to provide me with technical advice in relation to Plan Change A1.1, which I have adopted. His report is appended as Attachment 1.

### **2. Overview of Proposed Plan Change**

- 2.1 The Plan Change consists of six parts, as follows. No submissions were received on Plan Changes A1.2, A1.3 and A1.5, and are not discussed further in this report, apart from the overview that follows in this section.

#### ***Plan Change A1.1 – Industrial combustion of wood pellet fuel***

PM<sub>10</sub> emissions from purpose-built pellet-fired boilers can be approximately one third the emissions of wood or coal boilers of equivalent size, and boilers converted from wood or coal to burn pellets can have emissions about one half the levels typical for wood and coal. (NIWA report CHC2010-061 'Proposed classification of Wood Pellet Fuelled Boilers'. This report forms Appendix 1 of the section 32 report for the Plan Change).

Proposed change PCA1.1 a) inserts a new definition of wood pellet fuel (to become A2-91, in Chapter 2, Meaning of Words).

PCA1.1b) inserts a new rule to deal with the use of wood pellet fuel in industrial-scale fuel burning appliances.

In the proposed rule use of wood pellet fuel as a new discharge is permitted if the appliance is purpose-designed to burn pellets, the heat output is not more than 220kW, the pellets meet the standards specified, and there is a compliant stack.

Since new or retrofitted pellet boilers would substantially improve the emissions from any existing industrial combustion involving wood or coal, the replacement or conversion of an existing large-scale wood-burning or coal burning appliance to instead run on wood pellets has been made a controlled activity in the proposed rule. A key proviso in the rule is that the appliance being replaced must have a heat output the same or larger than the pellet appliance replacing it. Since pellet appliances have lower emissions, this requirement ensures there is a net reduction in emissions from the change. As a controlled activity consent cannot be declined, and does not have to be publicly notified, this rule is designed to facilitate a transition to lower emitting appliances and to improve ambient air quality.

However, it allows the Council the ability to set appropriate consent conditions to mitigate adverse effects.

Two submissions and one further submission were received on Plan Change A1.1a) [the definition].

Three submissions and one further submission were received on Plan Change A1.1b) [the rule].

### ***Plan Change A1.2 – ‘Urban Area’ expansion – transition provisions***

This change provides transitional or ‘grandparenting’ provisions for domestic open fires and enclosed burners in rural properties which, through change in land use, have or will become subject to the Air Quality Plan’s ‘Urban Area’ controls. An open fire in a farmhouse in a rural area can be used as a permitted activity. If that property becomes part of the ‘Urban Area’ through rezoning or subdivision, use of the fire would be illegal (rule AQR.24 prohibits use beyond 1 Jan 2008). Nor could the open fire be replaced with a woodburner, leaving the person with limited heating options. Similar transitional issues apply to some woodburners depending on the ‘airshed’ the property is in.

Plan Change A1.2a) inserts a new rule (AQR.25A) to allow such fires to continue to be used and to be replaced in the future with clean air approved burners if the owners wish. This is done by permitted rule AQR.25A.1. There are few such fires and this change is expected to have a negligible effect on urban air quality.

No submissions were received on Plan Change A1.2 and PC A1.2 is not discussed further in this report.

### ***Plan Change A1.3 – Update of Figure A2.1 ‘Extent of Nelson Urban Area’***

‘Urban Area’ in the Air Quality Plan is the area where outdoor burning is not permitted and where use of open fires and burners is restricted. ‘Urban Area’ is defined both by a map (Figure A2.1) and by words (definition A2-86) to deal with new areas that become residential by changes to the Nelson Resource Management Plan and by resource consent (e.g. subdivision for residential use). This approach avoids the need to constantly change Figure A2.1 as the urban area expands. However, when other changes are being made to the Air Quality Plan, it is timely to update Figure A2.1, which is what Plan Change A1.3 does.

No submissions were received on Plan Change A1.3 and PC A1.3 is not discussed further in this report.

### ***Plan Change A1.4 – Replacement of ‘Jetmaster’-type domestic fireplaces***

This plan change amends an error that prevents existing ‘Jetmaster’-type fires within the Urban Area from being replaced with a complying woodburner. ‘Jetmaster’-type fires are special inserts that fit into open fireplaces. They improve the efficiency of open fires, but under the Air Quality Plan they are still modified open fires. In response to submissions on the proposed plan the Council in 2005 agreed to give ‘Jetmaster’-type fires a longer phase-out date than other open fires. This was because many were relatively new and because

they had cleaner emissions than open fires. While the use of open fires has been banned since 1 January 2008, 'Jetmaster'-type fires are allowed to be used until 1 January 2013. When the rule was amended to permit longer use, the rule to allow their future replacement with a complying woodburner was not properly amended. As the Plan currently reads, the right to replace a 'Jetmaster'-type fire disappeared on 1 January 2008, the same as it did for all other open fires.

One submission (support in part) and one further submission (support) were received on Plan Change A1.4.

***Plan Change A1.5 – Outdoor burning of polyethylene agricultural wrap & plastic containers (rule AQR.55A)***

This change proposes deleting rule AQR.55A which allows the burning of certain agricultural plastics. When the Air Quality Plan was drafted, AQR.55A.5 signalled that such burning was a temporary approach until recovery or recycling options became available for polyethylene agricultural wrap and polyethylene agrichemical containers. Two product stewardship programmes now operate in the region enabling the recycling of both bale wrap and agrichemical containers.

No submissions were received on Plan Change A1.5 and PC A1.5 is not discussed further in this report.

***Plan Change A1.6 – Domestic Diesel burners – provision for different stack configurations***

This change allows provision for other stack (flue) arrangements for domestic burners running on diesel. Under Appendix AQ4 of the Air Quality Plan domestic diesel burners are required to have an emission stack that discharges above roof level. Some newer models are designed with flues that end below the soffit of the building. Currently under the Plan their installation would require resource consent. This can discourage the uptake of these cleaner heating options.

Three submissions were received on Plan Change A1.6 (two in support, one support in part).

**3. Purpose of this Officer's Report**

3.1 This officer's report has been prepared under Section 42A of the Resource Management Act:

- to assist the Independent Commissioner in making recommendations to Nelson City Council on the submissions and further submissions to Proposed Plan Change A1 – Nelson Air Quality Plan;
- to assist submitters and further submitters who requested to be heard, by providing, prior to the hearing, a staff evaluation of decisions requested in submissions.

3.2 The evaluations and recommendations presented in the report are based on the information available prior to the hearing, including that contained in the submissions and further submissions, and the technical advice of Jeff Bluett (Attachment 1). In evaluating the submissions and further submissions, the matters considered include whether a decision requested:

- falls within the functions of Nelson City Council under the Resource Management Act 1991 (RMA);
- will enhance the ability of the Plan to achieve the purpose of the RMA;
- will improve a policy, rule or other method so that it is more efficient and effective for achieving the relevant objectives;
- will improve the Plan in relation to such matters as its lawfulness, clarity, accuracy, effectiveness and coherence.

#### 4. Consultation during development of the Plan Changes

4.1. In addition to the required consultation with the relevant Ministers (Environment and Agriculture), and iwi, the following consultation was undertaken during development of these Plan Changes.

4.2. **Plan Change A1.1** The NIWA report assessing the emissions from pellet compared to wood or coal boilers was sent to Solid Energy Ltd, the Energy Efficiency and Conservation Authority, South Pine Ltd and Waimea Sawmillers Ltd. Solid Energy provided technical comments which have been used to revise the report.

4.3. **Plan Change A1.2** The draft rule addressing changing of rural areas to urban and the transitional provisions for open fires and woodburners was sent to the consultants acting for Plan Change 13, a major rezoning of Marsden Valley. A positive response was received.

4.4. **Plan Change A1.3** Mapping change – consultation to occur via submission process.

4.5. **Plan Change A1.4** The need to amend the provisions relating to ‘Jetmaster-style’ domestic fireplaces was raised with Council in writing by a member of the public, Jim Sinner.

4.6. **Plan Change A1.5** Burning of agricultural plastics. Consultation occurred with recycling operators operating in the Nelson region [Agrecovery and Plasbac (previously Agpac)]; Federated Farmers; and Tasman District Council.

4.7. **Plan Change A1.6** Consultation occurred with manufacturers and suppliers of diesel and pellet burners, and Environmental Inspections Limited staff who undertake building consent work for burners on behalf of Council.

#### 5. Notification, submissions and further submissions

5.1 The Proposed Plan Change was publicly notified on 25 September 2010, with submissions closing on 3 December 2010. Seven submissions were received.

5.2 A summary of the decisions requested was notified 26 March 2011 and closed 8 April 2011. Two further submissions were received.

5.3 A summary of the submissions and further submissions is included in Part B.

5.4 The table below lists the submissions and further submissions received:

Submission Number	Submission Name
1	Central Heating New Zealand Ltd
2	Energy Efficiency & Conservation Authority

3	Nicky and Alan Mitchell
4	Jim Sinner
5	Colin Stewart Campbell (Avon Electric)
6	Living Energy Ltd
7	Solid Energy New Zealand Ltd (SENZ)

Further Submission Number	Further Submission Name
X1	Solid Energy New Zealand Ltd (SENZ)
X2	Diane Penman

## 6 Statutory assessment

6.1 Council must consider the relevant provisions of the RMA in its assessment of the Plan Change. This includes an assessment of the purpose and principles of the Act (Part 2), consideration of Council's functions (s30), an assessment of the alternatives and their costs and benefits (s32), and shall consider the Regional Policy Statement, regional plans, and management plans prepared under other acts, (s65-68, and s70), and any regulations (s43-44). The relevant provisions of the RMA are assessed below.

### 6.2 *Part 2*

Part 2 of the RMA (Purpose and Principles) is considered further under Part B (Recommendations and Reasons) for each part of the Plan Change.

### 6.3 *National Environmental Standards*

A regional council in preparing or changing a regional plan is required to do so in accordance with any regulations prepared under the Act (s66). National environmental standards for air quality are in force - the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (referred in this report as the 'NES'). These regulations set ambient standards for a number of air contaminants, set certain prohibited activities, and set compliance standards for woodburners on sites less than 2 ha in area.

The standard for PM<sub>10</sub> is a 24 hour level of 50ug/m<sup>3</sup>. The NES when gazetted in 2004 allowed not more one exceedance of this level by 1 September 2013. The NES was amended in April 2011 and relaxed this time requirement slightly. Now under the NES the 50ug/m<sup>3</sup> level must not be exceeded more than 3 times annually by 1 September 2016, with only 1 exceedance per year by 2020. The Nelson Air Quality Plan, which was made operative in 2005, incorporates the standards and target dates from the original 2004 NES. Section 43B provides that a regional plan may be more, but not less, stringent than a national standard. The operative Air Quality Plan therefore is not inconsistent with the amended 2011 NES.

#### 6.4 **Section 32**

Before adopting for public notification any objective, policy, rule or other method promoted through this proposed Plan Change, section 32 of the RMA imposes upon the Council a duty to consider:

- the extent to which each objective is the most appropriate way to achieve the purpose of this Act; and
- whether, having regard to their efficiency and effectiveness, the policies, rules, or other methods are the most appropriate for achieving the objectives.

A section 32 assessment was prepared and made available as part of the public notification process (document 980444).

Nothing in any of the parts of the Plan Change amends the single objective in the operative Nelson Air Quality Plan (this objective is set out in section 6.5 below).

The recommended decision on submissions in Part B for Plan Change A1.1 is considered the most efficient and effective way of achieving the objective of the Air Quality Plan. The amendments suggested by submitter 6 would undermine achievement of the objective, and therefore are not considered the most efficient and effective approach, for the reasons set out in Part B.

The recommended decision on submissions for Plan Change A1.4 involves a minor grammatical change and does not affect the original section 32 assessment, which as reporting officer, I still support.

For Plan Change A1.6, submitter 5 suggested that the proposed amendment apply not just to domestic diesel-fuelled burners, but to all liquid-fuelled domestic burners. That change is supported in part, for the reasons set out in Part B, because it further helps achieve the objective of the Air Quality Plans, and is more efficient and effective.

#### 6.5 **Regional Policy Statement**

The Proposed Plan Change gives effect to the Nelson Regional Policy Statement (RPS), particularly the following provisions:

- Objective DA1.2.1 – *Improvement in Nelson’s ambient air quality.*
- Policy DA1.3.1 - *To set minimum ambient air quality that are at levels which ensure that adverse effects on people or ecosystems at ground level are avoided or mitigated.*

#### 6.6 **Nelson Regional Air Quality Plan**

The operative Air Quality Plan has a single objective, A5-1 Air Quality:

***The maintenance, and the enhancement where it is degraded, of Nelson’s ambient air quality, and the avoidance, mitigation or remediation of any adverse effects on the environment of localised discharges to air.***

The context for development of the Nelson Air Quality Plan was that in 2001, in the worst affected areas of the city, PM<sub>10</sub> levels (24 hour average) as high as 165ug/m<sup>3</sup> were measured. This is 3.3 times the national standard. There were 81 exceedances in that year (compared to 1 allowed by the NES). PM<sub>10</sub> levels in the city put Nelson in the three worst urban areas in New Zealand, along with Christchurch and Alexandra.

The strategy developed, and reflected in the operative Air Quality Plan policies below, was that because the assimilative capacity of the air was substantially over allocated, reductions in emissions by 70% would have to be achieved to comply with the NES for PM<sub>10</sub>. Emissions

from existing domestic and industrial sources, outdoor burning and vehicles would all need to be reduced to varying degrees (as set out in Policy A5-1.4).

Because the air was already very polluted any new discharges needed to be carefully managed to ensure that the required improvement in air quality was not compromised, or once achieved, not worsened to again breach the NES. Hence considerable attention was paid to the thresholds for permitted discharges when the operative Air Quality Plan was developed.

**policy**  
**A5-1.3 Ambient air quality targets**

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- a) ***Nelson's ambient air quality will be managed in accordance with the Ministry for the Environment Ambient Air Quality Guidelines 2002, consistent with the guideline values in Table A5-1 and the air quality categories in Table A5-2, and with the National Environmental Standards for air quality<sup>1</sup> (the ambient air quality standards of which are reproduced in Table A5-3), and***
- b) ***Where for any contaminant, ambient air quality is worse than the 'Alert' category in Table A5-2, it will be a priority to enhance that air quality to an 'Alert' level or better within any timeframe specified by the NES, or where no timeframe is specified, as soon as practicable and no later than 8 years after the exceedance is first reported, and***
- c) ***Where for any contaminant, ambient air quality is worse than the 'Acceptable' category in Table A5-2, air quality should be progressively enhanced to an 'Acceptable' level or better, and***
- d) ***Where for any contaminant, ambient air quality is 'Acceptable' or better, no further degradation of the existing ambient air quality that is more than minor will be allowed.***

**policy**  
**A5-1.4 Fine particle pollution**

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- a) ***A mid-term target for ambient PM<sub>10</sub> levels will be, at a minimum, compliance with the Ministry for the Environment 'Alert' Air Quality Category (relative to the guidelines and standards in Policy A5-1.3) by:***
  - i) 1 September 2013 when measured as a 24-hour mean, with air quality improving on a 'straight line path' as defined in the National Environmental Standard for air quality<sup>2</sup>, and***
  - ii) 1 January 2016, when measured as a daily annual average,***  
***or sooner if practicable, towards ultimate compliance or better with the 'Acceptable' air quality category as in Policy A5-1.3 by 2025.***
- b) ***Discharges to air from all sectors producing fine suspended particles (domestic, transport, industrial or trade) shall be managed to support the achievement of these ambient targets, and the implementation of Policy A5-1.3.***
- c) ***In order to achieve the mid-term target in (a), the following reductions in PM<sub>10</sub> emissions (relative to 2001 levels) are required across the Urban Area:***
  - i. At least 70% from domestic heating, and***
  - ii. At least 98% from outdoor burning, and***

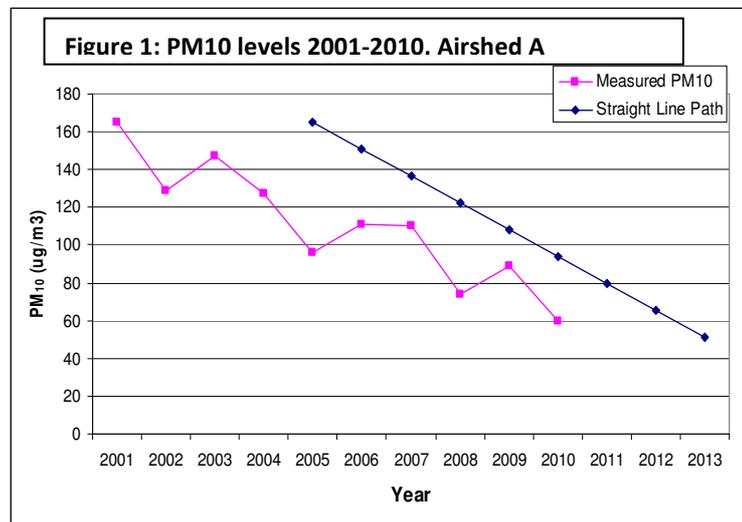
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<sup>1</sup> as defined in A2-59A. Abbreviated to NES.

<sup>2</sup> as defined in A2-59A.

- iii. **At least 10% from industrial and trade sources (in aggregate), except in any area with a high concentration of industrial and trade discharges where higher percentage reductions may be required to achieve the target, and**
  - iv. **A reduction in emissions from the transport sector.**
- d) **Greater or lesser reductions may be required in certain parts of the city to achieve the mid-term target, while recognising the potential contribution of contaminants from one airshed to another (interconnectedness of many airsheds), and also the reductions required to meet the longer term target of compliance or better with the 'Acceptable' air quality category.**

Figure 1 below indicates that for PM<sub>10</sub> the objective of the Air Quality Plan (degraded air quality being enhanced), and Policies A5-1.3 and A5-1.4 (compliance with the national standard for PM<sub>10</sub> by 2013) are on track to be achieved. The decisions being recommended to the Commissioner are considered to be consistent with the objective and policies of the Air Quality Plan, and further promote their achievement as they seek to reduce discharge of contaminants.



## 6.7 **Any other relevant planning documents**

In preparing or changing a regional plan, a regional council must take into account any relevant planning document recognised by an iwi authority and lodged with the council, to the extent that its content has a bearing on resource management issues of the region (RMA s66 (2A)).

‘Nga taonga tuku iho ki Whakatu’ (June 2004) is the only iwi management plan existing within the Nelson City Council area. It was prepared by Ngati Rarua Iwi Trust, Te Runanga of Toa Rangitira, Te Atiawa Manawhenua Ki Te Tau Ihu Trust, Ngati Koata No Rangitoto Ki Te Tonga Trust, and Ngati Tama Manawhenua Ki Te Tau Ihu Trust.

The objective relating to air (Tawhirimatea) is:

**The mauri (life force) of air is maintained at a level which achieves the best air quality possible and safeguards the:**

- **Spiritual nature of air;**
- **Health of flora and fauna;**
- **Well-being and health of nag tangata; and**
- **Customary practices and tikanga (protocols) of tangata whenua.**

Relevant policies are:

- To protect the health of *nga tangata* (the people) from harmful discharges to air;
- To protect *waahi tapu* (sacred places) from visual, foul-smelling and harmful discharges to air;
- To manage the air resource in a way that recognises and provides for the relationship of *tangata whenua* and their culture and traditions with their ancestral lands, water, sites, *waahi tapu*, and other taonga; and
- To manage the air resource in a way that takes into account the principles of *Te Tiriti O Waitangi*, according to *kaitiakitanga* (customary practices).

The above iwi were consulted during development of the Plan Changes, and had no concerns. Iwi were sent a copy of the notified Plan Change. No submissions were received.

In my view the proposed Plan Changes, including my recommendations on submissions, are consistent with the objective and policies listed above.

## **PART B – SUBMISSIONS AND RECOMMENDATIONS**

### **Plan Change A1.1 - Industrial Combustion of Wood Pellet Fuel**

#### **1. *Introduction and Discussion***

This proposed plan change introduces a new separate rule to regulate the industrial combustion of wood pellet fuel (Part b & c of Plan Change A1.1) and introduces a definition of wood pellet fuel (Part a of Plan Change A1.1). Domestic-scale pellet burners are subject to their own rules, and not this rule.

The submissions and further submissions are summarised in the following section, and then the officer's recommendation is given in the grey shaded box.

Solid Energy New Zealand Limited (Solid Energy, submission 7) and the Energy Efficiency and Conservation Authority (EECA, submission 2) supported the proposed rule as notified. Living Energy Ltd (submission 6) supported the rule in part but wanted it amended to:

- Also include wood chip fuel (wherever the plan change refers to wood pellets)
- Allow combustion devices up to 3500kW output as permitted activities (compared to 220kW in the proposed rule)
- Under the permitted conditions, add a new requirement of “at least 5 independent tests can be supplied showing Total Suspended Particulate emissions of less than 100mg/Nm<sup>3</sup>”.

Living Energy included with their submission results of testing wood chip boilers in support of their view that modern wood chip fuelled appliances were very clean burning, and “in the same range as the NIWA report identifies for pellet boilers (on which this proposed change is based)”.

Solid Energy lodged a further submission (X1) opposing the Living Energy submission, arguing that wood pellets and wood chips are two different types of fuel with different combustion characteristics due to higher moisture content of chips and their irregularity, and they should be treated differently in the Plan.

EECA sought retention of the definition of wood pellets as notified. Living Energy sought that it also refer to wood chips, but did not propose a definition of wood chips.

I commissioned Jeff Bluett, air quality scientist with NIWA, to provide me with technical advice in relation to the issues raised in the Living Energy Ltd submission. His report is Attachment 1.

## 2. Summary of Submissions - Plan Change A1.1

### Part a) A2-91 Definition of ‘wood pellets’ - for Chapter 2, Meaning of Words

Sub#: 6	Living Energy Ltd	Statement#: 1
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**Details** Support in part. Should include wood chips also.

**Reasons** The proposed plan change covers only wood pellets burning appliances. Modern wood chip burning appliances are also very clean-burning - with Total Suspended Particulate (TSP) emission levels of under 100mg/Nm<sup>3</sup>, so in the same range as the NIWA report identifies for pellet boilers (upon which this proposed change is based). This is why the Auckland Regional Council pre-consented 40 wood pellet or wood chip boilers - having recognised that modern wood chip boilers are also very clean burning and perform an equally valuable - but less costly, therefore more accessible - role in improving air quality.

**Remedy** Wherever the plan refers to wood pellet appliances, it should be amended to say "wood pellet and wood chip".

X1	Solid Energy New Zealand Ltd (SENZ)	1
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#### Oppose

Wood pellets and wood chips are two different types of fuel and should be treated as such. They have very different combustion characteristics linked to much higher moisture content in wood chips, and its lack of consistency. As actual air emissions from these fuels differ, they should accordingly be treated differently in the plan.

Sub#: 2	Energy Efficiency & Conservation Authority	Statement#: 1
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**Details** EECA supports the plan change.

**Reasons** The definition of wood pellet fuel provides certainty to developers and decision makers. The use of wood fuels provides both economic and environmental benefits and there are significant opportunities to increase use of wood as a clean, efficient and renewable source of energy in NZ.

The Government’s goal for energy is that NZ makes the most of its abundant energy potential for the benefit of all, through the environmentally-responsible development and efficient use of the country’s diverse energy resources. The development of renewable energy is a key area of focus of the draft NZ Energy Strategy (NZES). The draft NZES seeks to encourage the economically viable use of biomass resources - residues or purpose-grown, and at all scales of development.

It

**Remedy** Retain definition of wood pellet fuel.

### Part b) AQr.30A Large-scale fuel burning appliance - Wood Pellets (general)

Sub#: 6	Living Energy Ltd	Statement#: 2
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**Details** I support in part the above Plan Change section. The rule should include wood chips as well as wood pellets.

**Reasons** The proposed plan change covers only wood pellets burning appliances. Modern wood chip burning appliances are also very clean-burning - with Total Suspended Particulate (TSP) emissions levels of under 100mg/Nm<sup>3</sup> [test results appended to original submission], so in the same range as the NIWA report identifies for pellet boilers (upon which this proposed change is based). This is why the Auckland Regional Council pre-consented 40 wood pellet or wood chip boilers - having recognised that modern wood chip boilers are also very clean burning and perform an equally valuable - but less costly, therefore more accessible - role in improving air quality. The 220kW maximum size proposed should also be raised to 5000kW (5MW) to reflect that emissions can be very low for well-designed larger boilers too. In the UK the Government has approved certain burner makes up to 3500kW (3.5MW) for operation in "Clean Air" zones (i.e. central urban areas) under the Exempted Appliances Clean Air Act 1993 - therefore qualifying appliances do not need a consent.

My views are based on independent test results from various modern wood chip boilers, showing TSP results well under 100mg/Nm<sup>3</sup>. Wood chip is also much more widely available than wood pellets, with multiple potential suppliers (sawmills and forest owners etc) and has a much lower cost of production. This results in wood chip being less than half the cost (on a per Gigajoule basis) of wood pellets - making it a significantly more viable option for commercial and industrial heat users. This can make a big difference in an increasingly competitive world for some of the region's industry.

**Remedy** A) Wherever the plan refers to wood pellet appliances, it should be amended to say "wood pellet and wood chip".  
 B) Wherever the plan refers to wood pellet quality/standards, it should be amended to say "wood pellet and wood chip".

X1	Solid Energy New Zealand Ltd (SENZ)	2
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**Oppose**

Wood pellets and wood chips are two different types of fuel and should be treated as such. They have very different combustion characteristics linked to much higher moisture content in wood chips, and its lack of consistency. As actual air emissions from these fuels differ, they should accordingly be treated differently in the plan.

Sub#: 7	Solid Energy New Zealand Ltd (SENZ)	Statement#: 1
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**Details** SENZ is in general support of proposed Plan Change A1.1  
**Reasons** Generally supported because it introduces a new rule to specifically deal with use of wood pellet fuel in industrial-scale fuel burning appliances. When burnt in an appropriate boiler, wood pellets produce significantly less particle matter (PM<sub>10</sub>) than coal or other fuel, and therefore should be dealt with separately. Generally this proposed rule appropriately provides for the use of wood pellet fuel in industrial-scale fuel burning appliances.

**Remedy** Retain rule as notified.

Sub#: 2	Energy Efficiency & Conservation Authority	Statement#: 2
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**Details** EECA supports the proposed plan change.  
**Reasons** The proposed rule will facilitate the use and development of wood energy resulting in a range of positive effects and benefits consistent with RMA section 7(j). The uptake of wood pellets combined with modern burning technologies can reduce PM<sub>10</sub> compared with non-renewable fuels resulting in improved local amenity. The use of wood energy aligns with the Government's wider energy objectives recently confirmed in the draft NZES and the draft NZEECS (Energy Efficiency & Conservation Strategy) including the target for additional energy utilised for heat from biomass by 2025. The Council, when preparing regional plans, must give regard to the NZEECS pursuant to RMA section 66 (2)c(i). The draft NZES seeks to encourage the economically viable use of biomass resources - residues or purpose-grown, and at all scales of development. It recognises the considerable

opportunities for future development of a range of biomass resources. A key target for the business sector is "An additional 95 PJ of energy utilised for heat and/or fuel from biomass and/or geothermal sources, per year by 2025" [emphasis added] .

**Remedy** Retain rule AQR.30A.

## Plan Change A1.1b)

### AQR.30A.1 Wood pellets - permitted rule

Sub#: 6	Living Energy Ltd	Statement#: 3
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**Details** Support in part. Should deal with wood chips too and the threshold of 220kW for permitted activity ought to be increased to 3500kW (3.5MW). Also need to ensure quality of burner output.

**Reasons** Modern wood chip burning appliances are also very clean-burning - with Total Suspended Particulate (TSP) emissions levels of under 100mg/Nm<sup>3</sup> [test results attached to original submission], so in the same range as the NIWA report (upon which this proposed change is based) identifies for pellet boilers. This is why the Auckland Regional Council pre-consented 40 wood pellet or wood chip boilers - having recognised that modern wood chip boilers are also very clean burning and perform an equally valuable - but less costly, therefore more accessible - role in improving air quality. The 220kW maximum size proposed should also be raised to 5000kW (5MW) to reflect that emissions can be very low for well-designed larger boilers too. In the UK the Government has approved certain burners makes up to 3500kW (3.5MW) for operation in "Clean Air" zones (i.e. central urban areas) under their Exempted Appliances Clean Air Act 1993 - therefore qualifying appliances do not need a consent. My views are based on independent test results from various modern wood chip boilers, showing TSP results well under 100mg/Nm<sup>3</sup>.

**Remedy** A) Reference to a maximum size of 220kW should be amended to say 3500kW (3.5MW).

B) In order to ensure only quality wood chip appliances are "Permitted" the qualifying criteria for Permitted Activities in section AQR.30A.1 should have an additional criteria added stating "i) At least 5 independent tests can be supplied showing Total Suspended Particulate emissions of less than 100mg/Nm<sup>3</sup>."

**Comment**

X1	Solid Energy New Zealand Ltd (SENZ)	3
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#### Oppose

Wood pellets and wood chips are two different types of fuel and should be treated as such. They have very different combustion characteristics linked to much higher moisture content in wood chips, and its lack of consistency. As actual air emissions from these fuels differ, they should accordingly be treated differently in the plan.

Oppose request to change 220kW to 3500kW (3.5MW). SENZ believe it is appropriate to set an upper limit for permitted wood pellet boilers which is approximately equivalent to what a permitted diesel boiler would produce. A 3.5MW limit would produce significantly higher emissions than a permitted diesel boiler. Oppose request for additional criteria regarding 5 independent tests showing TSP levels of less than 100mg/Nm<sup>3</sup>. This is excessive and would create unnecessary additional expense. 2-3 independent tests is sufficient.

### **3. Recommendation for Plan Change A1.1**

#### **AQr.30A Large-scale fuel burning appliance - Wood Pellets (general)**

##### **Recommendation**

That the Independent Commissioner:

- A) Reject submission 6/1 and accept further submission X1/1.  
Accept submission 2/1
- B) Accept submission 7/1 and 2/2  
Reject submission 6/2 and accept further submission X1/2
- C) Reject submission 6/3 and accept further submission X1/3

##### **REASONS**

###### **A) and B). Amend wood pellet definition and rule AQr.30A to include 'wood chips'**

Submitter 6 (Living Energy Ltd) sought that wherever the plan change referred to 'wood pellets' it be amended to say 'wood pellets and wood chips'. In support of this Living Energy stated that modern wood chip burning appliances are in the same range of emissions as wood pellet ones. If this submission were accepted it would require amendment both to the definition of 'wood pellet fuel' proposed in the Plan Change, and to the text of rule AQr.30A, which as notified, provided only for pellet burning appliances.

Wood pellets are very different to wood chips. The submitter provided no definition of what a 'wood chip' is. The Bioenergy Association of NZ 'Wood Fuel Classification Guidelines' contain a wide range of types of wood chips. These are defined by their cross sectional area (30, 50 or 100 cm<sup>2</sup>), moisture content (less than 20%, 30%, 35%, 40%, 55% or 65%), ash content (0.5%, 1%, 3%, 6%, or a larger value as stated), bulk density (kg/m<sup>3</sup>) and energy density (MJ/kg). There is a very large range of permutations and combinations of wood chips e.g. small with high moisture, medium bulk density, and say low energy density. Or there could be very large chips, moderate moisture content etc. Wood chips can be expected to burn very differently depending on the combination of parameters.

On the other hand, the wood pellets allowed in rule AQr.30A are very tightly defined – either in compliance with AS/NZS4014.6:2007, or as Category A (premium pellets) in the Bioenergy Association of NZ 'Wood Fuel Classification Guidelines Version 5, July 2010. Both of these set very tight parameters that the pellets must meet – for instance, 6mm diameter, <10% moisture, energy density >17MJ/kg.

Advice from Jeff Bluett, Senior Air Scientist at NIWA, is that *"there are significant differences between the chemical and physical properties of wood pellet and wood chip fuel type; e.g. moisture content, fuel size and shape consistency. These differences are great enough such that it would be risky to assume that particulate emissions from burning wood chips are equivalent to those from wood pellet fuel."*

Mr Bluett states this is not to say that wood chips cannot be burned in industrial boilers with relatively low emissions compared to untreated waste wood or coal. *"However, to confirm this with any degree of certainty a similar review and classification process undertaken for wood pellet fuel would need to be undertaken for wood chip fuel. At the time of undertaking the wood pellet review, particulate emission data from wood chip boilers operated in New Zealand was sparse. I note that the recent EECA commissioned report does not include any specific data on particulate emissions from wood chip fuelled boilers."*

Mr Bluett reviewed the emission test results from wood chip and wood pellet fuels that Living Earth appended to their submission. He commented that *"The wood chip emission data appears to have been measured in Austria over the years 1998 to 2003. This data could potentially be used in a future review and analysis of emissions from wood chip fuelled boilers. However, the source of this data is unknown, the test method by which the emissions were measured not clear, nor is it stated if the company which carried out the emission test procedure is accredited for the required standard test method. Without this information, it is not possible to confirm the quality of the data supplied by Living Earth. Therefore at this point in time it would be unwise to use these four specific wood chip emission test results as sole justification to include this fuel in the permitted activity of AQr.30A."*

He concludes that including “wood chip fuel would be a significant and scientifically unjustifiable departure from NCC’s current approach to assigning activity classifications for industrial combustion sources. This is because the properties of wood chip fuel are such that when they are burned emissions of PM<sub>10</sub> are potentially higher than wood pellet fuel. A more comprehensive set of emission data and a thorough review and analysis of this data is required to robustly and quantitatively demonstrate that including wood chip fuel in the permitted activity category would not compromise NCC’s ability to attain the National Environmental Standard for air quality.”

His recommendation, which I adopt, is that Living Energy’s remedy request for the inclusion of wood chip fuel be declined.

Because wood chips are substantially different to wood pellets, and because there is not yet reliable evidence to confirm that emissions from wood chips would be as low as from wood pellets, treating wood chip fuel the same as wood pellets, in my view, would not help achieve the purpose of the Resource Management Act.

Nor would it be consistent with Objective A5-1 of the Air Quality Plan [*..enhancement where it is degraded, of Nelson’s ambient air quality ..*], and achieving compliance with the national standard for PM<sub>10</sub> as required in Policy A5-1.3 and the National Environmental Standard for air quality.

The recently amended NES requires that air quality be improved so that, by 1 September 2016, there are not more than 3 exceedances per year of the national standard for PM<sub>10</sub>, and by 1 September 2020, not more than one exceedance per year. The Air Quality Plan, Policy A5-1.4, requires compliance with the NES PM<sub>10</sub> standard by 1 September 2013 (the NES allows a regional plan to be stricter than the NES, but not more lenient).

Allowing use of wood chips under the proposed permitted and controlled rules (where consent cannot be declined) would potentially allow considerably greater emissions of PM<sub>10</sub> than was modelled for when the operative Air Quality Plan was developed and the 2013 target set. But even under the amended NES, the target PM<sub>10</sub> levels remain the same in absolute terms and must be achieved, albeit over a longer timeframe. Any significant ‘as of right’ increase in PM<sub>10</sub> emissions would be contrary to the requirements of the NES and the current operative Air Quality Plan.

The industrial combustion of wood chips is currently catered for in rule AQR.31, along with other non-pellet wood fuel, and coal. Individual applications to burn wood chips can be considered on a case by case basis as a discretionary activity. Consent may be granted if the discharge would not compromise the targets in the Air Quality Plan and the NES. This approach is more consistent with the objective and policies of the Air Quality Plan (which are not subject to amendment under this proposed Plan Change). If, in the future, acceptable categories of wood chip fuel can be defined, and if further testing shows that wood chips ought to be regulated differently to other wood fuel, then their regulation within the Air Quality Plan could be reviewed.

### **C) Increase in permitted threshold for AQR.30A and new permitted condition on TSP levels**

While EECA and Solid Energy Ltd both supported rule AQR.30A as proposed, Living Energy sought in their statement #3, two other changes. The amendments related to:

- i) increasing the permitted threshold for boilers from 220kW as notified to 3500kW, and
  - ii) adding a new permitted condition requiring Total Suspended Particulate (TSP) emissions to be less than 100 mg/Nm<sup>3</sup>.
- i) *Permitted Threshold:* Increasing the thermal capacity for a permitted boiler from 220kW to 3500kW is not supported. The capacity limits for large-scale fuel-burning appliances in the existing rules in the operative Air Quality Plan cover LPG (AQR.28), kerosene and diesel (AQR.29), light or heavy fuel oil (AQR.30), and wood or coal (AQR.31). Whether an appliance is permitted, and if so, how large it can be, was decided having regard to NIWA report ALK2002-037-R1 ‘External and Stationary Internal Combustion Rule – Proposed Classification of Activities’, the existing elevated PM<sub>10</sub> levels in Airsheds A & B in the city, and the potential cumulative effects of new industrial emissions. New industrial discharges are only permitted activities (or controlled activities) in these rules if they have minor effects on the air quality, particularly having regard to cumulative effects. The threshold for a permitted activity is generally set at a level where dispersion modelling shows an expected ground level concentration of PM<sub>10</sub> from the appliance and the fuel of less than 2.5µg/m<sup>3</sup>.

The same approach was used to establish the permitted, controlled and discretionary consent categories in this Plan Change for pellet combustion. NIWA was commissioned to advise on the appropriate standards in any permitted rule (report CHC2010-061). The level of 220kW for a permitted pellet burner is scientifically based and consistent with the framework used to set the other rules. As the Solid Energy further submission notes, the 220kW threshold is approximately equivalent to the PM<sub>10</sub> that a permitted diesel boiler would produce. The thermal capacity that Living Energy propose in their submission (nearly 16 times greater) would produce considerably more emissions.

The permitted (and controlled) thresholds set in the operative Air Quality Plan, and in this Plan Change, have been modelled by NIWA to ensure there is no adverse effect on air quality, which in Airsheds A and B has breached the National Standard for Air Quality and been amongst the worst airsheds in New Zealand in terms of PM<sub>10</sub> concentrations.

Mr Bluett noted in his report, *“Nelson City Council have invested a significant amount of time and resources in developing a robust, transparent, objective and equitable method for classifying industrial combustion sources of different fuel types and sizes into activity classes (permitted, controlled and discretionary). The method used to classify industrial combustion sources is described in detail in report AKL2002-037-R1. The outcomes of classifying wood pellet fuelled boilers are detailed in report CHC2010-061. Together these two documents provide the scientific evidence to support the proposed 220 kW permitted activity threshold.”*

He concluded that *“raising the permitted activity threshold to 3500 kW for wood pellet (and chip) fired boilers would be a significant and scientifically unjustifiable departure from NCC’s current approach to assigning activity classifications for industrial combustion sources. Operating at full capacity, a 3500 kW boiler will burn approximately 16 times more wood pellet or chip fuel than a 220 kW boiler. The greater fuel use will result in an increase in the total mass of particulate emissions from the larger boiler compared to the smaller unit.”*

*“The 220 kW permitted activity threshold was established using a methodology and assessment criteria designed to ensure that permitted activity discharges have only minor effects on ambient concentrations of PM<sub>10</sub>. Boilers with greater heat output capacity, larger fuel use and increased particulate discharges are treated as discretionary activities under this classification system. This approach is taken because specific consideration is needed to robustly assess the impact that activity’s discharge will have on ambient PM<sub>10</sub> concentrations and on the achievement of NCC’s and NES air quality targets.”*

Mr Bluett concluded that *“Living Energy’s remedy request for an increase in the permitted activity threshold to 3500 kW for pellet (and wood chip) fired boilers be declined”*. I adopt his recommendation.

For the same reasons as outlined in A) above, increasing the permitted threshold would allow, as of right, much greater emissions of PM<sub>10</sub> emissions which would be contrary to the requirements of the NES and the current operative Air Quality Plan. It would not “promote the sustainable management of the..[air] resource” as required under the purpose of the Resource Management Act, as it could contribute to worsening the city’s air quality, rather than promoting its improvement.

- ii) *TSP testing:* Living Energy Ltd propose the addition of a new permitted activity condition that five independent test results be required that demonstrate that TSP emissions are less than 100 mg/Nm<sup>3</sup>. Total Suspended Particulate (TSP) is determined from sampling the gases coming out the stack. It is a measure of the efficiency of combustion and/or the pollution abatement equipment installed, and the amount of particle being discharged into the air. PM<sub>10</sub> forms part of Total Suspended Particulate.

This would raise the bar for compliance with the permitted activity criteria. Mr Bluett advises that, depending on how it was implemented, this new criterion would potentially provide additional assurance that the wood pellet fuelled boilers would actually achieve their theoretical relatively low particulate emission rates. He notes there are at least two ways such a standard could be used: i) test results provided by the boiler supplier, or ii) testing on the specific boiler after installation and commissioning. The former has low costs to industry but lacks site-specific results. The second approach gives more useful results but is relatively costly.

His report states that *“the proposed additional criterion does present a potential positive from an environmental management perspective. However, from the industrial perspective the proposed new criterion could have potentially negative administrative and cost implications”*.

On balance he concludes *“the criteria as they stand provide sufficient certainty for both the regulator and the resource user. I recommend that the criteria as proposed in the NCC plan change be adopted”*.

In support of this he cites his report “Review of the industrial use of wood pellet fuel in NZ and recommendations for Nelson City Council – NIWA report CHC2009-170-R1”. This report suggests that, on balance, as long as the other proposed permitted activity criteria are complied with, it is likely that particulate emissions from the wood pellet fired boilers will be at or below 100 mg/Nm<sup>3</sup>.

I adopt this advice and recommendation.

I do not support his possible caveat, however. This is that if the Commissioner feels there is benefit in seeking more environmental certainty, the additional criterion could be considered but only after a cost benefit analysis to decide on how the additional criterion be implemented. I believe the costs and benefits are sufficiently clear to leave the rule as it is. If the permitted threshold remains at 220kW, then this represents relatively small boilers in industrial terms - equivalent to 30-40 domestic pellet fires, or the capacity of a school boiler. Stack testing is costly and could become a disincentive for the installation of pellet burning appliances under the proposed rule, the use of which can have benefits compared to other fuels in terms of particle emissions, greenhouse gases and being a renewable resource.

# Plan Change A1.4 Replacement of 'Jetmaster-type' domestic fireplaces

## 1. Introduction and Discussion

This plan change amends an error in the operative Air Quality Plan that prevents existing 'Jetmaster'-type fires within the Urban Area from being replaced with a complying woodburner.

'Jetmaster'-type fires are special inserts that fit into open fireplaces and improve their efficiency. As they do not have a door, under the Air Quality Plan they are considered open fires.

In a decision on submissions on the proposed Air Quality Plan the Council in 2005 agreed to give 'Jetmaster'-type fires a longer phase-out date than other open fires. This was because many were relatively new and because they had cleaner emissions than open fires. While the use of open fires has been banned since 1 January 2008, 'Jetmaster'-type fires are allowed to be used until 1 January 2013. When the rule was amended to permit longer use, the rule to allow their future replacement with a complying woodburner was not properly corrected. As the Plan currently reads, the right to replace a 'Jetmaster'-type fire disappeared on 1 January 2008, the same as it did for all other open fires.

Proposed Plan Change A1.4 sought to fix this by amending clause a) of rule AQR.25.1. Rule AQR.25.1 provides the ability for a homeowner to replace an open fire or an enclosed burner with a 'clean air' compliant burner, if the original fire or burner was lawfully installed at the time the proposed plan was notified on 23 August 2003. Replacement of a fire or burner with a compliant burner however must occur before any phase-out date specified in the Air Quality Plan for that fire or burner. The phase out date for open fires was 1 January 2008.

The proposed Plan Change amends clause a) of rule AQR.25.1 so that a compliant burner may be installed in place of a "[lawfully installed] solid fuel burning appliance or a 'Jetmaster'-type insert fireplace".

The clause as amended by the proposed notified Plan Change would read:

- a) *The solid fuel burning appliance replaces a solid fuel burning appliance or a 'Jetmaster'-type insert fireplace in the building and on the site that was lawfully approved before the date of notification of this Plan, or was otherwise authorised under Rule AQR.24, and where a cessation date is specified under Rule AQR.24.1.cc), the building consent for replacement is lodged with the Council prior to that date, or"*

## 2. Summary of Submissions - Plan Change A1.4

### AQR.25.1 Replacement of 'Jetmaster-type' domestic fireplaces

Sub#: 4	Jim Sinner	Statement#: 1
<b>Details</b>	I support in part the above Plan Change section. I support proposed Plan Change A1.4 but am requesting further grammatical changes to clarify the intent of the clause.	
<b>Reasons</b>	This plan change rectifies a drafting error that arose when the original plan was amended as a result of submissions. Homeowners who have more efficient (and, at the time, recently installed) Jetmaster fireplace inserts were allowed to operate those fireplaces until 2012 but were inadvertently not given the ability to replace those inserts with complying woodburners after that date. I consider that such replacements should be allowed, consistent with the intent of the	

original plan. New complying woodburners in 2012 are likely to be more efficient (i.e. less polluting) than those available in 2008.

My additional amendment is necessary to give proper effect to clause (a), because a comma is missing and there is a closed bracket ")" without a corresponding open bracket "(", rendering the entire clause grammatically difficult to interpret.

- Remedy** In rule AQR.25.1 (permitted) amend clause a) as follows:
- a) as currently proposed [in the proposed Plan Change][i.e. insert the words "or 'Jetmaster'-type insert fireplace" immediately after the words "the solid fuel burner replaces a solid fuel burning appliance"];
  - b) insert a comma after "or was otherwise authorised under Rule AQR.24, and"; and
  - c) delete the closed bracket ")" where it appears in "Rule AQR.24.1.cc),".

X2	Diane Penman
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### Support

As in original submission. However, extend phase-out date in line with Plan Change A1.2 (change from rural to urban notation) allowing such fireplaces "to continue to be used and replaced in the future with clean air approved burners if the owners wish". Jetmaster universal fire (which I have) has recently been added by HETAS to the list of approved appliances that meet European standards for clean air. [information attached to further submission].

## **3. Recommendation for Plan Change A1.4**

### **AQR.25.1 Replacement of 'Jetmaster-type' domestic fireplaces**

#### **Recommendation**

That the Independent Commissioner:

Accept in part submission 4/1 and further submission X2/1

Amend clause a) of AQR,25.1 as follows (new text underlined):

*"a) the solid fuel burning appliance replaces a solid fuel burning appliance or 'Jetmaster'-type insert fireplace in the building and on the site that was lawfully approved before the date of notification of this Plan, or was otherwise authorised under Rule AQR.24, and, where a cessation date is specified in Rule AQR.24.1.cc), the building consent for replacement is lodged with the Council prior to that date, or"*

#### **REASONS**

Submitter 4, Jim Sinner, supports the amendment in the proposed Plan Change in his remedy sought a), but in remedies b) and c) seeks grammatical changes "to clarify the intent of the clause".

Allowing for the replacement of 'Jetmaster'-type fireplaces with clean air approved enclosed burners is consistent with the purpose of the Resource Management Act (RMA), with the objective of the operative Air Quality Plan, and with Policies A5-1.3 and A5-1.4 which relate to achievement of the national standard for PM<sub>10</sub>. This is because approved (compliant) burners have lower emissions than 'Jetmaster'-type fireplaces, and facilitating their replacement improves air quality. It could be argued that continuing to not allow replacement at all of 'Jetmaster'-type fires would have better outcomes for air quality. However, that would not enable "people to provide for their social, economic and cultural wellbeing and their health and safety" (section 5, RMA).

The amendment is consistent with Policy A5-1.5 Solid Fuel Fire Numbers, clause a):

*“In order to achieve the targets in Policy A5-1.4, no increase in the total number of fires (as at the date of notification of this Plan) should occur within the Urban Area, and within the worst polluted airsheds, reductions by up to 30% should occur (excluding low emission pellet burners)”.*

Even in the most polluted airsheds fire numbers comply with this policy, and there is only a small number of ‘Jetmaster’-type fires affected (estimated to be less than 50).

The amendment is consistent with Policy A5-1.4 (Fine Particle Pollution) which requires compliance with the national particle (PM<sub>10</sub>) standard by 1 September 2013. Even in the most polluted parts of the city (Airshed A), improvements in air quality are on track to achieve this and the replacement of ‘Jetmaster’-type fires will have a minor effect on air quality).

Remedy b) of Mr Sinner’s submission seeks the insertion of a comma after “or was otherwise authorised under Rule AQR.24, and”. The amended clause would then read (new text proposed by Plan Change, single underline; additional comma proposed by submitter, double underline):

*“a) the solid fuel burning appliance relaces a solid fuel burning appliance or ‘Jetmaster’-type insert fireplace in the building and on the site that was lawfully approved before the date of notification of this Plan, or was otherwise authorised under Rule AQR.24, and, where a cessation date is specified in Rule AQR.24.1.cc), the building consent for replacement is lodged with the Council prior to that date, or”*

The insertion of the additional comma is supported as a minor consequential amendment. The new text proposed by the Plan Change makes the clause longer and more complex to read. The extra comma helps with its reading, without changing its meaning or intent.

The second grammatical change Mr Sinner seeks relates to the bracket in the last line of the text in italics above i.e. “cc)”. He is seeking its deletion, arguing there is no corresponding open bracket. The removal of the closing bracket is not recommended. It is not an orphan closing bracket without its open twin. It is part of the rule identifier. Clauses within the rules in the Plan are identified as a), b), c) etc [see for example Rule AQR.25.3]. The bracket needs to remain. Overall therefore Mr Sinner’s submission is accepted in part, and the amendment above is recommended.

Further submitter Diane Penman (X2) supports Mr Sinner, but also seeks that the 1 January 2013 phase-out date for ‘Jetmaster’-type fireplaces be removed completely so that they can continue to be used for an unrestricted period and can ultimately be replaced with a compliant woodburner. This goes well beyond both the scope of the proposed Plan Change, and Mr Sinner’s submission, and seeks to amend a completely different rule (AQR.24.1).

Clause 8(2) of the First Schedule to the Resource Management Act states that “A further submission must be limited to a matter in support of or in opposition to the relevant submission made under clause 6 [the making of original submissions]”. Further submission X2/1 can only be accepted in part – that is, insofar as it supports Mr Sinner’s submission, and, specifically, that part recommended to be accepted by the Commissioner. The additional changes sought by the further submission are outside the scope of what can be allowed under the Act.

## Plan Change A1.6 - Appendix AQ4 - Stack Requirements

### 1. Introduction and Discussion

This plan change proposes to amend Appendix AQ4, the stack requirements applying to domestic-scale appliances burning gas, oil or other liquid fuels.

Under the operative Air Quality Plan appliances burning liquid fuel are required to have a flue that discharges above the roof of the building. The change was introduced because domestic diesel burning appliances are now being manufactured with flues designed to exit via a wall and terminate lower than the roof line. These are particularly suited to two storeyed houses.

### 2. Summary of Submissions - Plan Change A1.6

#### AQ4.3 Appendix AQ4 - Stack Requirements

Sub#: 1	Central Heating New Zealand Ltd	Statement#: 1
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**Details** Support the proposed plan change to allow horizontal flues for diesel burners,  
**Reasons** Low level horizontal flues have been used with no safety problems in Europe, where building densities are much greater than NZ. Burners in modern diesel boilers are pressure jet which are much safer than old fashioned vaporising burners. Horizontal flues are protected with a basket to prevent accidental contact with the end of the hot inner flue and to prevent leaves and other rubbish entering the flue. The outer flue is the air intake and is not a hazard to touch or for heat sensitive materials.

Changing the Air Plan will encourage uptake of clean burning technology by reducing the cost of installation:

- a) reducing material used because a shorter flue can be used, and
- b) eliminating the charge & cost of time taken to submit a resource consent application.

We recommend use of horizontal flues according to manufacturer's instructions. [See example attached to original submission for Firebird diesel boiler - complies with British Standard BS5410-1997 "Code of practice for oil firing installations up to 45kW output capacity for space heating and hot water supply purposes".]

**Remedy** Change the plan as proposed.

Sub#: 3	Nicky and Alan Mitchell	Statement#: 1
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**Details** I support the change to the Air Plan to allow a horizontal flue to be installed in accordance with manufacturer's recommendations.

**Reasons** The current the Nelson Air Plan prevents home owners from installing an environmentally friendly central heating system without having to apply for a costly resource consent. The system relevant to this change comprises hot water radiators throughout the home, run off a clean burning diesel boiler, which is connected to an external diesel tank. Modern systems are designed to allow the boiler to be positioned anywhere in the home. In our case the only feasible location is in the basement area, with a simple flue out to an external wall. Under the current plan

we would have to fit a flue up through two additional storeys of living space to comply. This requirement would also result in higher particle emissions than a horizontal flue and result in loss of living space.

The proposed plan change would allow home-owners to install internationally accepted central heating systems without any additional compliance costs other than normal building permit fees.

All of the above system requirements are fully compliant with the New Zealand Building Code and ERMA regulations.

Diesel boilers are the most sensible fuel source for systems installed in the South Island, as the other alternatives have significantly higher costs to the home-owner - i.e. LPG (very high running costs due to LPG price), no reticulated natural gas in the South Island, wood pellet boilers cost approximately \$30k to install, and air to water heat pumps can only be utilized in new build situations where underfloor hot water central heating is an option.

The plan change would allow the same flue configurations for diesel and LPG boilers. This is the only viable option for retro-fitting existing homes with a heating system designed to heat the entire house rather than spot heating individual rooms. Home owners prepared to make this sort of investment (approximately \$20,000) should not be hindered by additional compliance costs.

**Remedy** Retain the proposed wording

Sub#: 5	Colin Stewart Campbell (Avon Electric)	Statement#: 1
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**Details** I support in part the above Plan Change section.

**Reasons** The comments in Nelson Air Quality Plan A1 Section 32 Report -- Table 4 Plan -- Change A1-6 are 100% common sense. The wording of the benefits in respect of Energy Efficiency, Air Quality & Economics, is the most concise, and accurate detailed explanation that I have seen, and is a credit to the author.

As recently as 1-12-10, Mr G Hewitt Consultant Hazardous Substances Group ERMA Wellington confirmed that part of the Current Standard Approvals used for Diesel Heater Design approvals in NZ is Australian Standard AS1690-1975. That Standard was withdrawn by the Australian Standards Institute on 31-12-2005, and in the absence of a replacement Standard, is still used by NZ. The same applies to the Installation Standard for Diesel Burners - AS 1691:1985. At the time the above two Standards were issued Balanced Flues as now in common use in the ultra efficient Diesel and Gas Burners were not in commercial / industrial

use.

To the writer's knowledge, the balanced flues that install "through the wall, behind the heater" were first introduced by overseas manufacturers in the early 1990s, and are now used by manufacturers of diesel and gas burning appliances world wide. In respect of gas heaters marketed in NZ and Australia, my understanding is that balanced flues which are identical to those used by modern diesel burners, are specifically recognised in recent issues of AS/NZ Gas Heating Appliance Standards, and the failure to provide same for liquid fuelled (diesel) heaters is a result of the "Standards anomaly" described above. Plan Change A1-6 corrects the anomaly.

I also confirm that the Toyotomi Laser 73 9.5kW Diesel Heater that this Company has imported from Japan since 2005 is ECAN and ERMA approved (CRC 062469 & BUR0512), and in February 2011 was added to the list of approved Fireplace Replacement Heaters which qualify for up to a 100% subsidy in the Christchurch Damaged Chimney Replacement Programme supervised by EECA.

I endorse and recommend the approval of Plan Change A1.6 - Provision for different stack configurations.

In Plan Change A1.6 wording refers to diesel burners in various parts. Times are changing. Already several types of diesel are available including Bio Fuels as one example. Heaters that can burn mixtures of kerosene and diesel are common. ERMA approvals for individual types /brands/ models of Liquid Fuelled Heaters specify the fuels that the individual heater may burn as a condition of the ERMA approval.

**Remedy** I recommend the Word "Diesel" is replaced with "Liquid Fuel" or "Liquid Fuelled". Retain proposed wording in A1.6 - provision for different stack configurations.

### **3. Recommendation for Plan Change A1.6**

#### **AQ4 'Appendix AQ4 - Stack Requirements**

##### **Recommendation**

That the Independent Commissioner:

Accept submission 5/1

Accept in part submissions 3/1 and 1/1

Amend new clause AQ4.3 in Appendix AQ4 as follows (new text double underlined; ~~strike through~~ applies to text in the proposed Plan Change recommended to be deleted):

AQ4.3 For ~~diesel~~ liquid-fuelled appliances under rule AQR.23, compliance with the manufacturer's installation instructions and stipulated clearances will be deemed to be compliance with the stack requirements of AQR.23.1.

##### **REASONS**

All three submissions (#1, 3, and 5) support the proposed plan change. The support of submitter 1 (Colin Campbell, Avon Electric), however is conditional. Submitter 1 sees no reason for the change to be restricted solely to burners fuelled by diesel. He submits that several types of diesel are available, including bio fuels [which, under the Air Quality Plan definition, is not 'diesel'], and that heaters can also burn diesel and kerosene mixtures.

Staff support in part Mr Campbell's submission that restricting the proposed change to diesel is too narrow. He has requested that the words 'liquid fuel' or 'liquid fuelled' replace the proposed word 'diesel' in the amendment. 'Liquid fuel' is not defined in the Air Quality Plan and can have a wide meaning, including light or heavy fuel oil which can have higher emissions of contaminants. Liquid fuelled domestic burners are covered by rule AQR.23, which does not include light and heavy fuel oil. Therefore adding reference to this rule would clarify that those fuels are excluded from this provision.

The recommended amendment provides more flexibility for *"people to provide for their social, economic and cultural wellbeing and their health and safety"* (section 5, Resource Management Act). It is also consistent with the National Environmental Standard for air quality, the objective of the operative Air Quality Plan, and Policies A5-1.3 and A5-1.4. It facilitates the use of fuels that produce lower PM<sub>10</sub> emissions, since an alternative for many homeowners faced otherwise with the cost of obtaining resource consent would be to install a more polluting woodburner.

Stacks that discharge below the roof line have greater potential for adverse effects on neighbours e.g. noise (where fans are used), odour or gaseous emissions. This is not unique, however. Traditional stacks can sometimes cause problems with houses on hillsides, where the discharge point can be close to other dwellings. Rule AQR.22 in the operative Air Quality Plan sets general conditions that apply to all discharges, and deal with offensive and objectionable odour, dispersal of particulates, visibility, corrosion or potential noxious or dangerous discharges. I am satisfied that AQR.22, and the noise rules in the Nelson Resource Management Plan, contain provisions sufficient to manage any potential adverse effects.



**Attachment 1:**

**Report from Jeff Bluett  
Air Quality Scientist  
NIWA**

**30 June 2011**



30 June 2011

David Jackson  
Principal Adviser - City Development  
Nelson City Council  
PO Box 645  
NELSON 7040

Dear David

**NELSON CITY COUNCIL:  
PLAN CHANGE TO THE NELSON AIR QUALITY PLAN: A1.1 INDUSTRIAL COMBUSTION OF  
WOOD PELLET FUEL**

**Background:**

My name is Jeff Bluett. I have a BSc in chemistry (Otago) and an MSc (Hons) in meteorology (Lincoln). I am an air quality scientist with 15 years experience in the field and have worked for NIWA for the last 11 years. I manage the Atmospheric Process and Resource Management group in NIWA Christchurch. I assisted with development of Nelson Air Quality Plan 2002-2005, and wrote the report Nelson City Air Quality Provisions: External and Stationary Internal Combustion Rule – proposed Classification of Activities.

Nelson City Council (NCC) has commissioned NIWA to provide advice on a number of submissions made on proposed addition of the new rule AQR.30A to the Nelson Air Quality Plan.

**The scope of work commissioned by NCC is defined as follows:**

- A) Review and comment on the Living Energy Ltd request for remedy the new Rule AQR.30A to be expanded to include wood chip fuel as well as wood pellet fuel). (Submission number 6, Statement number 1)
- B) Review and comment on the Living Energy Ltd request for remedy that the permitted threshold within the new Rule AQR.30A to be increased from 220kW to 3500kW (for wood pellet and for wood chip fuel). (Submission number 6, Statement number 3)
- C) Review and comment on the Living Energy Ltd request for remedy that the new Rule AQR.30A be expanded to include an additional permitted activity assessment criteria that requires "At least 5 independent test can be supplied showing total suspended particulate emissions of less than 100 mg/Nm<sup>3</sup>. (Submission number 6, Statement number 3)

**Documents reviewed in the preparation of this response include**

- DRAFT Planning Officer Report – Addressing Submissions on The Plan Change prior to hearing (1086279 06/05/2011)
- Proposed Plan Change A1 – Proposed Plan Amendments (092866 06/05/2011)
- Emission Ruths Bindre GimBH Wood Chip an Pellet Boilers – attachment to Living Energy Ltd (03/12/2010)
- Guidance on woody biomass as an Energy Source: PM<sub>10</sub> emissions. EECA report produced by SKM. DRAFT 29/05/2011.

#### **Other relevant reports:**

- Nelson City Air Quality Provisions: External and Stationary Internal Combustion Rule – proposed Classification of Activities, Revised background report – NIWA report AKL2002-037-R1
- Review of the industrial use of wood pellet fuel in NZ and recommendations for Nelson City Council – NIWA report CHC2009-170-R1
- Nelson City Air Quality Provisions: External and Stationary Internal Combustion Rule – proposed Classification of Wood Pellet Fuelled Boilers – NIWA report CHC2010-061

#### **Response to and Recommendations on Submissions:**

##### ***A) Expansion of Rule AQR.30A to include wood chip fuel as well as wood pellet fuel.***

NIWA has collated and reviewed for Nelson City Council national and international data on the particulate emissions from wood pellet fired boilers. The outcomes of this investigation are presented in report CHC2009-170-R1. Summary data obtained from this review was the best and most comprehensive information on particulate emissions from wood pellet fired boilers available in New Zealand at the time that report was written. The emission data were used as input into the method used to classify wood pellet fuelled boiler activity (CHC2010-061). The emission review and classification process were undertaken to ensure transparency, robustness and consistency with all other work NCC has undertaken on classifying industrial boiler emissions.

Preliminary investigations indicate that there are significant differences between the chemical and physical properties of wood pellet and wood chip fuel type; e.g. moisture content, fuel size and shape consistency. These differences are great enough such that it would be risky to assume that particulate emissions from burning wood chips are equivalent to those from wood pellet fuel. This is not to say that wood chips cannot be burned in industrial boilers with relatively low emissions compared to untreated waste wood or coal. However, to confirm this with any degree of certainty a similar review and classification process undertaken for wood pellet fuel would need to be undertaken for wood chip fuel. At the time of undertaking the wood pellet review, particulate emission data from wood chip boilers operated in New Zealand were sparse. I note that the recent EECA commissioned report does not include any specific data on particulate emissions from wood chip fuelled boilers. I acknowledge that Living Earth appended a set of emission test results from wood chip and wood pellet fuels to their submission. The wood chip emission data appear to have been measured in Austria over the years 1998 to 2003. This data could potentially be used in a future review and analysis of emissions from wood chip fuelled boilers. However, the source of this data is unknown, the test method by which the emissions were measured not clear, nor is it stated if the company which carried out the emission test procedure is accredited for the required standard test method. Without this information, it is not possible to confirm the quality of the data supplied by Living Earth. Therefore at this point in time it would be unwise to use these four specific wood chip emission test results as sole justification to include this fuel in the permitted activity of AQR 30A.

I conclude that expanding rule AQR.30A to include wood chip fuel would be a significant and scientifically un-justifiable departure from NCC's current approach to assigning activity classifications for industrial combustion sources. This is because of the properties of wood chip fuel are such that when they are burned emissions of PM<sub>10</sub> are potentially higher than wood pellet fuel. A more comprehensive set of emission data and a thorough review and analysis of this data are required to robustly and quantitatively demonstrate that including wood chip fuel in the permitted activity category would not compromise NCC's ability to attain the National Environmental Standard for air quality.

I recommend Living Energy's remedy request for the inclusion of wood chip fuel into AQR.30A be declined.

***B) Increase of the permitted threshold within the new Rule AQR.30A from 220kW to 3500kW.***

NCC has invested a significant amount of time and resources in developing a robust, transparent, objective and equitable method for classifying industrial combustion sources of different fuel types and sizes into activity classes (permitted, controlled and discretionary). The method used to classify industrial combustion sources is described in detail in report AKL2002-037-R1. The outcomes of classifying wood pellet fuelled boilers are detailed in report CHC2010-061. Together these two documents provide the scientific evidence to support the proposed 220 kW permitted activity threshold.

I conclude that raising the permitted activity threshold to 3500 kW for wood pellet (and chip) fired boilers would be a significant and scientifically unjustifiable departure from NCC's current approach to assigning activity classifications for industrial combustion sources. Operating at full capacity, a 3500 kW boiler will burn approximately 16 times more wood pellet or chip fuel than a 220 kW boiler. The greater fuel use will result in an increase in the total mass of particulate emissions from the larger boiler compared to the smaller unit. The 220 kW permitted activity threshold was established using a methodology and assessment criteria designed to ensure that permitted activity discharges have only minor effects on ambient concentrations of PM<sub>10</sub>. Boilers with greater heat output capacity, larger fuel use and increased particulate discharges are treated as discretionary activities under this classification system. This approach is taken because specific consideration is needed to robustly assess the impact that activity's discharge will have on ambient PM<sub>10</sub> concentrations and on the achievement of NCC's and NES air quality targets.

I recommend Living Energy's remedy request for an increase in the permitted activity threshold to 3500 kW for pellet (and wood chip) fired boilers be declined.

***C) Expansion of AQR.30A to include an additional permitted activity assessment criteria requiring that five independent tests be supplied showing TSP emissions are less than 100 mg/Nm<sup>3</sup>.***

Providing five independent emission test results demonstrating that TSP emissions are less than 100 mg/Nm<sup>3</sup> raises the bar for compliance with the permitted activity criteria. Depending on how it was implemented, including this new criterion would potentially provide additional assurance that the wood pellet fuelled boilers are likely to actually achieve their theoretical relatively low particulate emission rates. So the proposed additional criterion does present a potential positive from an environmental management perspective. However, from the industrial perspective the proposed new criterion could have potentially negative administrative and cost implications.

The environmental efficacy and financial cost implications of the proposed additional criterion would depend on how it was implemented. There are at least two options that could be considered; 1) The test results can be provided by the boiler supplier for similar units operated at other sites; or 2) The testing must be undertaken on that specific boiler after commissioning. It is not clear to me which (if either) the submitter is proposing.

The benefits of option 1 are that there will be very little (if any) additional cost for industry. However, the negatives of this option are that no site specific data would be available and the efficacy of this approach therefore relies on assumption that the specific unit in question will operate in a similar manner to those tested at other sites.

Assuming emission tests are conducted to standard methods, the benefits of option 2 are that robust evidence will be available to demonstrate the actual levels of particulate emissions achieved by that specific boiler. The compliance costs of option 2 for the operator will be non-trivial and certainly higher than option 1. Therefore meeting this criterion may act as a potential disincentive for a change from coal or un-processed wood to wood pellet fuelled boilers.

The NCC review of industrial use of wood pellet fuel in NZ suggests that on balance, as long as the other proposed permitted activity criteria are complied with, it is likely that particulate emissions from the wood pellet fired boilers will be at or below 100 mg/Nm<sup>3</sup>.

I conclude there are some potential environmental benefits from including this new criterion. To balance this potential benefit there will be additional administrative and financial costs, which will be borne mainly by industry. On balance, I am comfortable that the criteria as they stand provide sufficient certainty for both the regulator and the resource user. I recommend that the criteria as proposed in the NCC plan change be adopted.

However, if the commissioner feels there is benefit in seeking more environmental certainty, the additional criterion is certainly an option worth considering. If this path is chosen, I recommend that a cost benefit analysis be used to decide on how the additional criterion be implemented into AQR. 30A.

I trust that the above information is helpful to and informative for the plan change process. I am more than happy to respond to any questions on these issues or provide additional information should it be required.

Yours sincerely



Jeff Bluett  
Air Quality Scientist  
Group Manager of Atmospheric Processes and Resource Management  
(03)-343-7887  
(021)-232-5584  
j.bluett@niwa.co.nz