

# Environmental Compliance Audit Report

Wood heater industry sector in NSW

The *Environmental Compliance Audit Report: Wood heater industry sector in NSW* was undertaken by the Environment Protection Authority.

**More information**

For technical information on the matters discussed in this paper contact NSW Environment Protection Authority Environmental Audit on (02) 9995 5424.

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Published by:

Environment Protection Authority  
59 Goulburn Street, Sydney NSW 2000  
PO Box A290, Sydney South NSW 1232  
Phone: (02) 9995 5000 (switchboard)  
Phone: 131 555 (environment information and publications requests)  
TTY: (02) 9211 4723  
Email: [info@environment.nsw.gov.au](mailto:info@environment.nsw.gov.au)  
Website: [www.environment.nsw.gov.au](http://www.environment.nsw.gov.au)

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## Executive summary

The NSW Environment Protection Authority (EPA) has completed a compliance audit program focused on domestic solid fuel burning appliances (wood heaters) distributed and sold in NSW.

The audit program included compliance audits conducted at a selection of manufacturers, retailers, importers and distributors of domestic wood heaters in NSW.

The objective of the compliance audit program was to:

- a) assess the level of industry compliance with the requirements of Part 2 Domestic solid fuel heaters (Sections 4 to 7) of the Protection of the Environment Operations (Clean Air) Regulation 2010 and of AS/NZS 4012:2014 (Sections 7.2 and 8) and AS/NZS 4013:2014 (Sections 8.3 and 10), relating to particulate emission and efficiency limits, and testing, reporting and compulsory permanent marking requirements
- b) improve manufacturers' and retailers' awareness and understanding of the requirements in legislation and the relevant standards relating to wood heaters.

The Wood Heater Compliance Audit Program aims to improve wood heater compliance with legislative requirements and to ensure that any issues of non-compliance identified during the audit inspections of manufacturers, distributors, importers and retailers of wood heaters are addressed in an effective and meaningful manner.

The EPA audited 30 businesses representing all major manufacturers and distributors/wholesalers in NSW, as well as core and non-core retailers in NSW metropolitan centres and the main NSW regions. The selection included businesses of all sizes with showrooms, stores or storages of wood heaters.

Audit results have shown that whilst most wood heaters currently sold in NSW are certified as compliant with the new, more stringent emission and efficiency standards, several issues relating to the labelling of wood heaters and certification of wood heaters were identified. The EPA will continue to collaborate with industry stakeholders to improve compliance and environmental performance of wood heaters.

## About this report

This report summarises the findings of the compliance audit program targeting wood heaters sold in NSW completed by the EPA.

### Key findings

Several non-compliances were identified, but they related mostly to marking and labelling requirements and are not considered to impact the emission rate or efficiency of the wood heaters audited. The majority of wood heater models audited were compliant with the current emission rate and efficiency requirements for wood heaters. However, the EPA considers that all non-compliances are important and must be addressed. The audits present an opportunity for improvement by the industry.

Wood heater businesses can improve their compliance with current regulatory requirements and standards by ensuring that all heaters sold in NSW:

- have an easily visible compliance plate attached, marked according to the Standards AS/NZS 4012:2014 and 4013:2014 in a permanent and legible manner
- are permanently marked with the words 'BURN ONLY HARDWOOD', visible when opening the fuel-loading door
- have a current Certificate of Compliance, which has been provided (by the manufacturer or distributor) to the retailer/person that sells the heater, and can be produced if requested by a buyer or an EPA-authorized officer.

Environmental Compliance Audit Report: Wood heater industry sector in NSW

The EPA will follow up all identified non-compliances with the relevant wood heater manufacturers, importers, wholesalers and retailers to ensure issues identified with wood heaters are addressed.

## 1 Compliance audits

The compliance audit program conducted by the NSW Environment Protection Authority (EPA) focused on wood heaters sold in NSW and their compliance with the Protection of the Environment Operations (Clean Air) Regulation 2010 (POEO [Clean Air] Regulation) and relevant Australian standards.

### 1.1 Why has the wood heater sector been selected for auditing?

The NSW Government recognises the importance of minimising air pollution in NSW. Wood heaters and open fireplaces are a major source of air pollution in Sydney and many regional towns in NSW. The Air Emission Inventory from the NSW Greater Metropolitan Region, and a number of particle characterisation studies, confirm that wood smoke is the dominant source of particle pollution in winter.

The negative health effects of residential wood smoke have been extensively documented in scientific studies. Yet despite the vast scientific evidence, the attitude that wood smoke is 'natural' and emission-friendly prevails among many wood heater owners and the industry. The NSW Government has addressed this issue, amongst other initiatives, with new regulatory requirements for domestic solid fuel heaters offered for sale in NSW.

The Protection of the Environment Operations (Clean Air) Amendment (Solid Fuel Heaters) Regulation 2016, which came into effect on 1 November 2016, requires all new wood heaters sold in NSW to comply with the updated standards AS/NZS 4012:2014 and AS/NZS 4013:2014. The updated Australian/New Zealand Standards include more stringent limits for wood heater emissions (2.5 grams [g] of particle emissions per kilogram [kg] of fuel burnt; formerly 4 grams per kilogram) and new efficiency limits (55%).

### 1.2 Types of wood heater businesses in NSW

The wood heater industry in NSW comprises:

- small-scale manufacturers of wood heaters (such as Burning Log in Kingswood, and Aurora in Byron Bay), with production premises located in NSW
- large-scale chain stores that manufacture wood heaters overseas and/or import wood heaters from overseas and sell specific brands of wood heaters in NSW (e.g. Barbeques Galore, Bunnings)
- specialist importers and wholesalers of specific brands (e.g. Dragon Wholesaling, Chazelles, Cheminees)
- non-core (e.g. hardware or outdoor furniture) retail stores and/or franchises that have added major (mid-range priced) Australian wood heater brands to their product range (e.g. Mitre 10)
- small, medium and large specialised retail and installation businesses with one or more showrooms and/or stores selling Australian and/or overseas brands
- small retail businesses without showrooms or stores importing and selling only online
- wood heater and fireplace installers that do not sell wood heaters
- wood heater maintenance companies
- firewood businesses
- wood heater testing laboratories
- industry bodies.

## Australian Home Heating Association

The Australian Home Heating Association Inc (AHHA) is a national industry body currently representing approximately 250 Australian domestic solid fuel heater manufacturers, importers, wholesalers, retailers, installers and maintenance companies, as well as businesses in the firewood sector. The AHHA aims to promote 'the optimum development and self regulation of the industry relevant to solid fuel and wood heating appliances and associated accessory products' (AHHA 2017). The AHHA aims to help in the co-ordination of policy formulation and the implementation of relevant legal, technical and environmental requirements of each State and Territory in Australia.

The AHHA is currently the only industry body that issues compliance certificates for wood heaters manufactured and offered for sale in Australia. AHHA members and non-members can apply to the AHHA for a compliance certificate for wood heaters that have been tested to the Australian Standards by National Association of Testing Authorities (NATA) accredited laboratories. The AHHA maintains a list of certified wood heaters of AHHA members on its main website <http://www.homeheat.com.au/wood-heaters/certified-wood-heaters> and a full list of all AHHA certified wood heaters of members and non-members on <http://www.certifiedwoodheaters.com.au>.

## NATA accredited laboratories testing wood heaters

NATA currently lists four laboratories on its website (NATA 2017) accredited to conduct performance tests on solid fuel appliances by the methods of AS/NZS 4012/4013:

1. VIPAC Engineers and Scientists with laboratories in Melbourne, Sydney, Brisbane, Perth and Adelaide
2. HRL Technology Group Pty Ltd, Morwell, Vic
3. Adelaide Heating Technology (AHT), Dry Creek, SA
4. Australian Solid Fuel Testing Pty Ltd, Morwell, Vic

The four laboratories also issue certificates of exemption for wood heater models that are exempt from testing or retesting and/or exempt from compliance with the Australian Standards 4012:2014 and 4013:2014.

## 1.3 Relevant legislation

### POEO (Clean Air) Regulation 2010 Part 2

The December 2016 version of the Protection of the Environment Operations (Clean Air) Regulation 2010 Part 2 – Domestic solid fuel heaters, Sections 4 to 6, defines the requirements when heaters are sold.

Section 6 of the Regulation requires that:

- (1) A person must not sell a heater to any other person unless:
  - (a) the heater is marked in accordance with Standard 4012 and Standard 4013, and
  - (b) a certificate of compliance is in force in relation to heaters of the same model as that heater, and
  - (c) in the case of a sale to a person whose business includes the wholesale or retail sale of heaters – a copy of the certificate of compliance has been given to the purchaser.
- (2) This clause does not apply to a heater of a model for which a certificate of exemption is in force.

Section 4 defines that:

**certificate of compliance**, in relation to a heater, means:

- (a) in the case of a heater sold before 1 September 2019 – a certificate issued by a body approved by the EPA and certifying that all heaters of that model:
  - (i) comply with Standard 4012 and Standard 4013, and
  - (ii) have an overall average efficiency of not less than 55% as tested and calculated in accordance with Standard 4012, and
  - (iii) have an appliance particulate emission factor, as tested and calculated in accordance with Standard 4013, not greater than:
    - (A) 2.5 g/kg (for heaters without catalytic combustors), or
    - (B) 1.4 g/kg (for heaters with catalytic combustors), or
- (b) in the case of a heater sold on or after 1 September 2019 – a certificate issued by a body approved by the EPA and certifying that all heaters of that model:
  - (i) comply with Standard 4012 and Standard 4013, and
  - (ii) have an overall average efficiency of not less than 60% as tested and calculated in accordance with Standard 4012, and
  - (iii) have an appliance particulate emission factor, as tested and calculated in accordance with Standard 4013, not greater than:
    - (A) 1.5 g/kg (for heaters without catalytic combustors), or
    - (B) 0.8 g/kg (for heaters with catalytic combustors).

**certificate of exemption** means a certificate issued by a body approved by the EPA, being a certificate exempting all heaters of a particular model from compliance with Standard 4012 and Standard 4013.

**heater** means any solid fuel burning appliance that is designed, manufactured or adapted for domestic use.

**model** of heater means a particular design of heater made by a particular manufacturer.

**Standard 4012** means the document entitled AS/NZS 4012:2014, Domestic solid fuel burning appliances – Method for determination of power output and efficiency, as in force from time to time.

**Standard 4013** means the document entitled AS/NZS 4013:2014, Domestic solid fuel burning appliances – Method for determination of flue gas emission, as in force from time to time.

Section 5 of the Regulation defines its application and exemptions:

1. This Part applies to heaters (including the wholesale and retail sale of heaters).
2. However, this Part does not apply to the sale or installation of heaters of the following kind:
  - (a) a masonry appliance built on site
  - (b) a central heating appliance
  - (c) a cooking stove appliance
  - (d) an appliance intended for use solely for heating water
  - (e) an appliance intended for use solely for distributing heat through ducts
  - (f) a pellet heater.



3. In this clause:

**central heating appliance** means a heating appliance that is intended for space heating of premises by means of transferring heat to the living areas of the premises by ducted hot air, hot water or another fluid.

**cooking stove appliance** means a solid fuel burning appliance:

- (a) that has at least one cooking hot plate, and
- (b) that has an oven with a volume of not less than 28 litres, and
- (c) around which gaseous combustion products are capable of being routed.

**pellet heater** means a domestic, automatic, continuous feed, pellet fuel burning appliance that is designed and manufactured to burn compressed wood or biomass pellets.

### Australian Standard AS/NZS 4012:2014

**Clause 8.1 (General)**, of AS/NZS 4012:2014 states that:

The following information shall be marked, in a permanent and legible manner and easily visible, on one or more plates permanently attached to the appliance, except the additional requirements of Clause 8.4 shall not be included where the results are deemed to be invalid when assessed in accordance with Clause 8.5.'

**Clause 8.2 (Compulsory permanent marking)** requires that:

'The following shall be marked as set out in Clause 8.1:

- (a) Name and trade mark of the manufacturer or distributor of the appliance.
- (b) Type, unique model and serial number of the appliance or sufficient information to provide adequate identification for replacement parts and necessary servicing.
- (c) If the appliance has a catalytic combustor fitted, the type model and serial number of the combustor, or sufficient information to provide adequate identification for replacement.'

**Clause 8.3 (Fuel types)** requires that:

If the appliance is to be used only with certain fuels or combinations of fuels the words 'BURN ONLY' followed by the specific fuels or combination of fuels shall be marked in letters not less than 3 millimetres (mm) in height. This wording shall be visible to an operator when opening the fuel-loading door.

**Clause 8.4** defines the necessary **Additional Marking** as:

'Except where Clause 8.5 applies, the following additional information shall be marked in letters not less than 3 mm in height:

- (a) The words 'MAXIMUM AVERAGE HEAT OUTPUT BURNING', followed by –
  - (i) The fuel or fuels as specified in the AS/NZS 4014 series; followed by
  - (ii) The average power on high burn rate calculated in accordance with Clause 7.1.1 to the nearest kilowatt; followed by
  - (iii) The letters 'kW' (kilowatts).
- (b) The words 'OVERALL AVERAGE EFFICIENCY BURNING', followed by –
  - (i) The fuel or fuels as specified in the AS.NZS 4014 series; followed by
  - (ii) The average of all the values calculated in accordance with Clause 7.1.4; followed by
  - (iii) The symbol '%' (per cent).

This wording shall be repeated for each fuel for which the appliance has been tested using the method set out in this Standard.

Beneath this there shall be the words 'when tested in accordance with AS/NZS 4012'.

**Clause 8.5 (Retesting Exemption)** defines that:

'Any appliance for which retesting exemption has been granted under Clause 9.2 in AS/NZS 4013:2014 shall not include the additional marking specified in Clause 8.4 unless the testing agency is of the opinion that the heat output and efficiency of the exempted appliance are not significantly different from the appliance tested (see note). Any such opinion should be made by a NATA or IANZ\* accredited testing agency and given in writing.

Freestanding and fireplace insert models are likely to have different heat output and efficiencies and separate tests shall be carried out on each model.

Note: Appliances that rely on radiant heat transfer are likely to have significantly different heat output and efficiency compared to appliances that rely on convective heat transfer. An appliance with a fan and one without a fan are also likely to have different heat outputs and efficiencies.'

\* International Accreditation New Zealand (IANZ)

#### **Australian Standard AS/NZS 4013:2014**

**Clause 9.2 (Retesting Exemption)** of AS/NZS 4013:2014 defines that:

'If, in the opinion of the testing agency, modifications to the appliance design or construction, or a combination of these will not change or will increase the efficiency, and will lower the particulate emission rate, then the appliance may not need retesting. Any such opinion should be made by a NATA or IANZ accredited testing agency and be given in writing and provide –

- (a) Details of the changes made to the appliance; and
- (b) Detailed opinions as to why such changes or alternatives would not be expected to result in an increase in the original emission results.'

**Section 10 (Marking)** requires that:

If the appliance meets the 'Maximum allowable appliance particulate emission factor', the following information shall be marked, in a permanent and legible manner and easily visible, on one or more plates permanently attached to the appliance:

- (a) Name and trade mark of the manufacturer or distributor of the appliance.
- (b) Type, unique model and serial number of the appliance and emission report number or sufficient information to provide adequate identification for replacement parts, traceability of testing and necessary servicing.
- (c) If the appliance has a catalytic combustor fitted, the type model and serial number of the combustor, or sufficient information to provide adequate identification for replacement.
- (d) The words 'TESTED TO AS/NZS 4013:2014'. This information shall be in letters not less than 3 mm in height.
- (e) Fuel types (where applicable) and additional marking in accordance with marking requirements for AS/NZS 4012:2014.
- (f) The particulate emissions factor, in g/kg. This information shall be in letters not less than 3 mm in height.
- (g) The name and address of the testing agency that tested that model of appliance, and the year in which it was tested.

## 1.4 Compliance audit program focus

The compliance audit program focuses on assessing compliance with the requirements of Part 2 Domestic solid fuel heaters of the Protection of the Operations (Clean Air) Regulation, and with Section 6 (Requirement for certificates of compliance when heaters are sold). It includes an assessment of compliance of the permanent marking requirements as outlined in:

- AS/NZS 4012:2014, Section 8 (Marking), and
- AS/NZS 4013:2014, Section 10 (Marking), Section 9.2 (Retesting Exemption).

It also checks to see if the retailer or distributor has valid copies of certificates of compliance of the models offered for sale at the premises.

## 2 About the audits

### 2.1 Selecting the business premises

#### Criteria for selecting business premises

A range of factors was considered in selecting the businesses for this audit program. The selection process was conducted by the EPA and used the following guidelines:

- the business is manufacturing, distributing and/or selling Australian or imported wood heaters in NSW
- the business has wood heaters stored or displayed at its premises
- the business advertises the sale of wood heaters on the internet on its own website, or with other internet marketing websites such as yellow or white pages or websites of wood heater associations, such as the Australian Home Heating Association
- the size of business
- the location of business
- the number of wood heater models offered for sale
- the wood smoke sensitivity of region.

#### Selection of businesses

The EPA undertook online research, including an analysis of data on the Australian Home Heating Association (AHHA) website.

The analysis of AHHA wood heater data on its websites <http://www.homeheat.com.au/> (viewed on 30 March 2017) and <http://www.certificewoodheaters.com.au> (viewed on 28 April 2017) showed that there are:

- 411 certified wood heater models (of AHHA members and non-members)
- 61 different wood heater makes/brands
- 33 retailers/manufacturers from NSW (Barbeques Galore stores are counted as one), that are members of AHHA.

Further online research (including Yellow and White Pages) identified a total of approximately:

- 120 wood heater businesses (all chain stores, such as Barbeques Galore, Bunnings and Mitre 10, and retailers with more than one store or showroom, are counted as one) operating in NSW
- 35 wood heater brands offered for sale in NSW
- 300 wood heater models sold in quantities above 10 heaters per year in NSW.

It was decided that 25% of NSW business premises (30 premises) would be audited as part of this compliance audit program. These 30 premises represent at least:

- 100% of manufacturers in NSW of wood heaters regulated by POEO
- 80% of brand distributors and wholesalers in NSW
- 80% of large specialist retailers
- 70% of wood heater brands sold in NSW
- 75% of wood heater models sold in NSW (ca. 300 models)
- the range of premises operating in the sector in NSW:
  - manufacturers
  - large and medium-sized distributors or wholesalers
  - large and small specialist importers
  - large, medium and small specialist retailers
  - non-core businesses selling and installing appliances (including chain stores, such as hardware stores and outdoor furniture stores)
- the varying scales of operations
- the different regions of NSW, including wood smoke sensitive areas.

The sites selected for audit cover the greater proportion of the market and therefore have the biggest impact on the environmental performance of the wood heater industry.

## 2.2 Audit scope, criteria and method of assessment

### Audit scope

Geographical – premises manufacturing, selling, distributing or importing wood heaters in NSW.

Temporal – the examination of testing results and compulsory permanent marking requirements of wood heaters in accordance with the current Australian Standards AS/NZS 4012 and 4013 on the day of the compliance audit inspections.

Activities – wood heaters being offered for sale in NSW.

### Audit criteria

Part 2 (Sections 4 to 7) of the POEO (Clean Air) Regulation 2010 and of the Australian Standards AS/NZS 4012:2014 (Section 8), and AS/NZS 4013:2014, Sections 9.2 and 10).

### Audit methodology

The compliance audits were undertaken in accordance with the procedures and protocols outlined in the *Compliance Audit Handbook* (December 2006). Each of the site audit inspections was conducted unannounced.

EPA auditors visited premises manufacturing, selling, distributing or importing wood heaters in NSW. Audit evidence was collected during the premises inspection, which included:

- discussion with relevant staff
- inspection and observation of wood heaters displayed at the premises
- examination of the certificate of compliance provided by the auditee
- photographs of the relevant labels and markings on wood heaters inspected.

The evidence collected was objectively evaluated against the audit criteria to determine compliance.

When an audit has been completed, the findings are presented to the audited organisation in an individual compliance audit report. These reports contain an action program outlining any non-compliance and listing actions the audited organisation must take to be compliant. EPA

officers follow up on compliance audits to ensure audited organisations are implementing the actions required in the report within the agreed time frame.

The findings presented in this summary report are a collation of the findings presented in the individual compliance audit reports.

### 2.3 Wood heater businesses audited

Thirty business premises were audited by EPA officers between 13 April and 16 June 2017 (see Appendix A and Figure 1 for the location of premises).

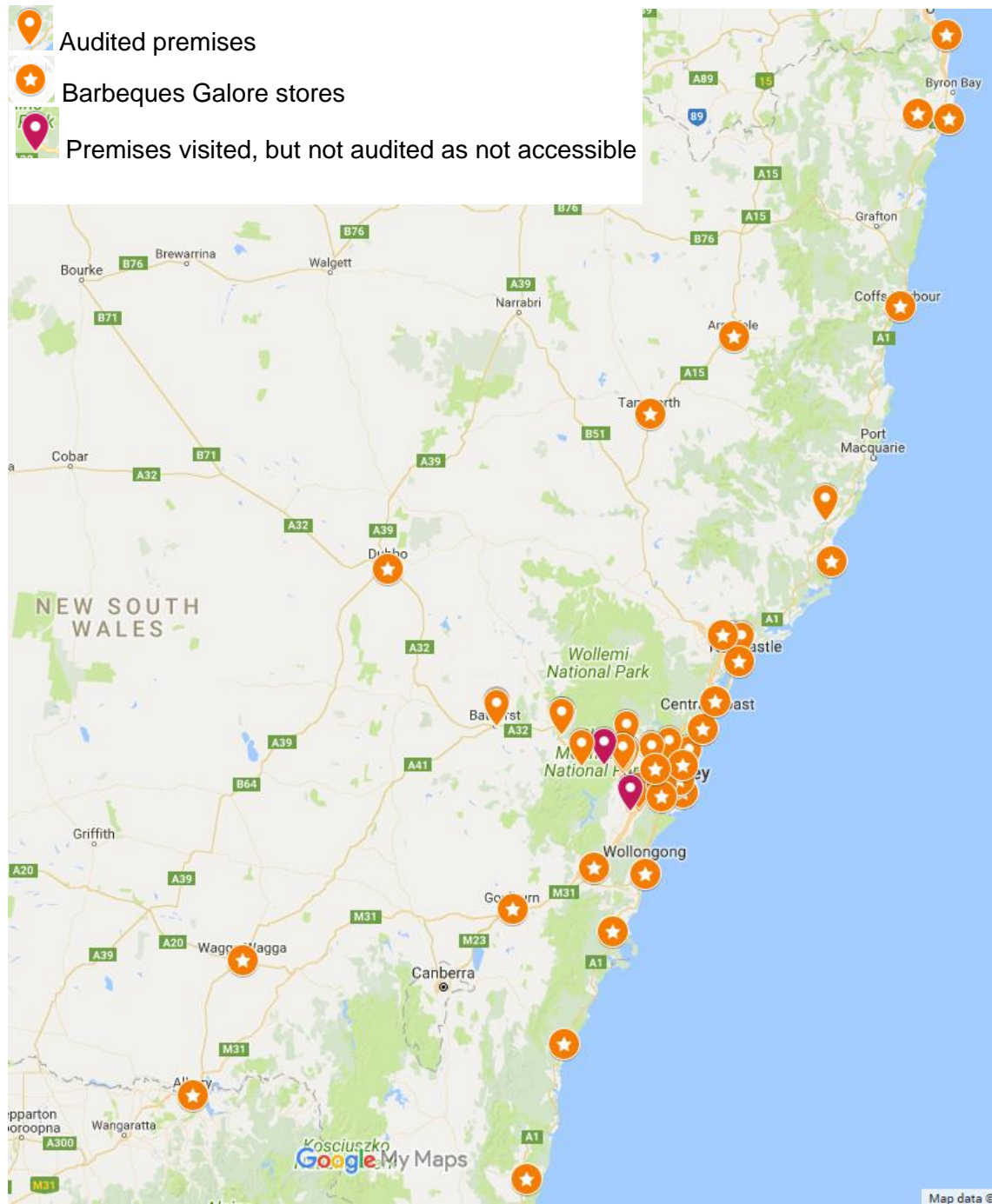


Figure 1: Location of premises

The type of business premises audited were (some premises fall into more than one category):

- manufacturers (5)
- importers/distributors/wholesalers (11)
- specialist retailers (16)
- chain store premises (5)
- non-core businesses (8)

Some audited premises had a large number of wood heater brands and models. At all the premises at least 75% of the models displayed were given an audit inspection.

## 3 Audit findings

### 3.1 Summary of audit findings

Audit results of the 389 appliances audited indicated that whilst most wood heaters currently sold in NSW are certified as compliant with the new, more stringent emission and efficiency standards, several issues were identified that relate to labelling, testing and certification of wood heaters.

- 35% of the appliances did not have a compliance plate (visibly) attached.
- 13% of the appliances did not have particulate emission factors stated on the compliance plate.
- 2 appliances had compliance plates attached that stated the particulate emission factor was above the current limit (see note).
- 7% of the models inspected did not have a current certificate of compliance (were not listed at [www.certifiedwoodheaters.com.au](http://www.certifiedwoodheaters.com.au)).
- 60% of the appliances inspected had a compliance plate that was not considered permanently attached.
- 28% of the appliances had no 'Fuel Type (BURN ONLY HARDWOOD)' plate attached.
- 90% of the appliances had a 'BURN ONLY HARDWOOD' plate attached that did not comply with the current Standards.
- 25 businesses (80% of the businesses inspected) were not able to give the auditors a copy of the certificates of compliance on the day of the audit inspection.

Note: the two appliances that had compliance plates attached, but did not meet the particulate emission limits, were of the same brand and model that is now listed as certified and is meeting the current emission/efficiency limits (according to the new test results).

### 3.2 Wood heater testing

#### Appliance particulate emission factor greater than 2.5 g/kg

The POEO (Clean Air) Regulation 2010 Part 2, Section 4 (a) EPA requirement specifies that all heaters should have an appliance particulate emission factor, as tested and calculated in accordance with Standard 4013:2014, not greater than 2.5 g/kg.

On the day of the audit inspections, one Lopi appliance, model Republic 1250 Freestanding, and one Masport appliance, model Klondike Freestanding, had a label attached stating that the model's 'APPLIANCE EMISSION FACTOR BURNING HARDWOOD' is 3.2 g/kg and 3.3 g/kg respectively.



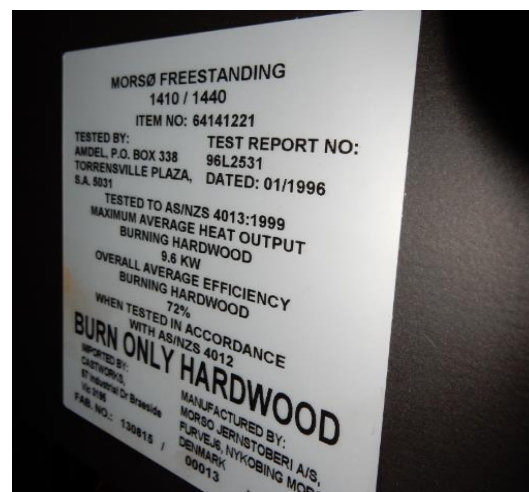
**Figure 2: Wood heater appliances with particulate emission factors greater than 2.5 g/kg (Photo: Karin Schianetz, EPA)**

The EPA is aware that both models have current certificates of compliance in place and have been re-engineered to comply with current particulate emission factor limits. Also, these models were displayed in showrooms and could have been used as display models only (although not labelled as such). The EPA is concerned that the two businesses were offering for sale wood heaters that do not comply with the particulate emission limits of the POEO (Clean Air) Regulation. These wood heaters have been removed from retail.

**Appliance particulate emission factor not tested/stated**

Approximately 13% of the wood heater appliances audited were marked with a compliance plate that did not state the particulate emission factor. It was not possible to determine if these models had been tested for particulate emissions and were compliant with the current limits.

Examples include: Pacific Energy models Summit, T4, T5, T6; Morso models 1410, 1440; Eureka models Duet, Emerald Mk3, Solitaire.



**Figure 3: Compliance plates without particulate emission factors (Photo: Edwina Howard, EPA)**

### Models tested before 2014 to AS/NZS 4012/4013:1999

The EPA Regulation requires heaters now sold in NSW to be tested and marked in accordance with the updated Standards AS/NZS 4012:2014 and requires that the words 'Tested to AS/NZS 4013:2014' be printed on the compliance plate.

More than 60% of the heater models audited had been tested before 2014 to AS/NZS 4012:1999 and 4013:1999. Some of these heater models were marked with plates stating: 'When tested in accordance with AS/NZS 4012:2014 & AS/NZS 4013:2014', which is a misleading statement. An example is Scandia Warmbrite 300 Series 2 Freestanding.

However, having considered that heaters tested in accordance with the 1999 Standards were complying with the requirements of the 2014 Standards (in relation to the particulate emission factor and overall average efficiency), the EPA believes such heaters do not require retesting to the new Standards.

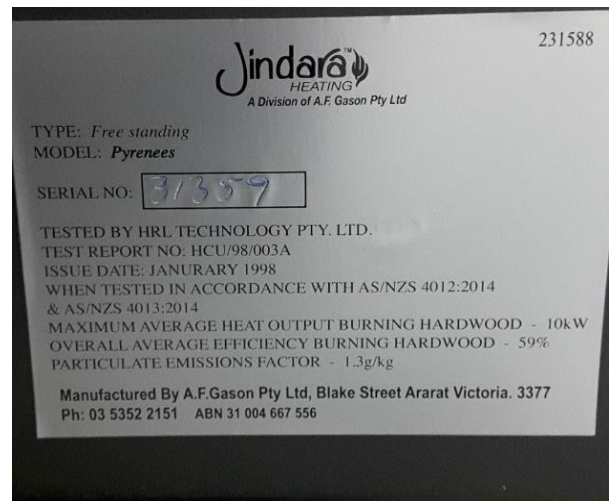


Figure 4: Models tested before 2014 according to 1999 Standards (Photo: Winston Wickremeratne, EPA)

### 3.3 Wood heater marking

#### Compliance plate

Clause 8.1 (General) of AS/NZS 4012:2014 and Section 10 (Marking) of AS/NZS 4013:2014 specify that the appliance 'shall be marked, in a permanent and legible manner and easily visible, on one or more plates permanently attached to the appliance' with the information outlined (see Chapter 1). Clause 8.2 (Compulsory permanent marking) and 8.4 (Additional marking) of AS/NZS 4012:2014 and Section 10 (a) to (g) of AS/NZS 4013:2014 define the information that shall be marked on the plates attached to the appliance (see Chapter 1/Section 'Relevant legislation').

#### Compulsory marking

Thirty-five percent of the appliances audited were not marked with the information as specified in the Standards. The non-compliances encountered were:

- marking that did not include the necessary information, such as:
  - test results
  - date of testing
  - test fuel types
  - clear identification of model
- information that was marked in letters less than 3 mm in height.





Figure 5: Plates with markings that do not include the necessary information (Photo: Karin Schianetz, EPA)

**Visibility**

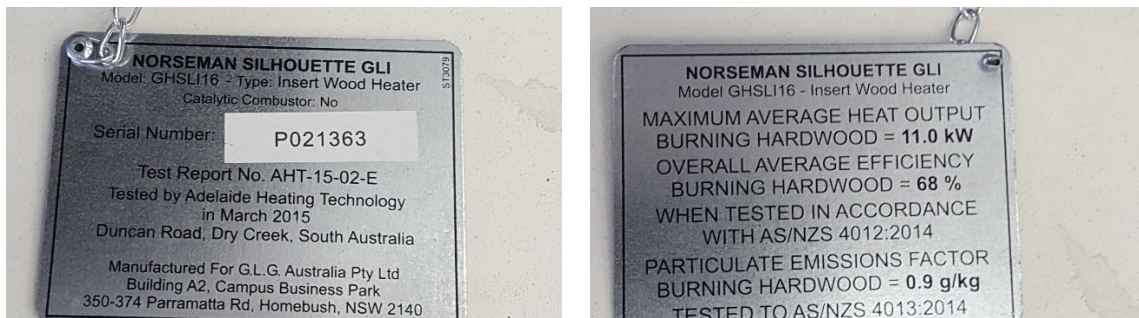
Ten percent of the freestanding wood heater appliance models audited did not have a compliance plate visibly attached. Also, with more than 25% of inbuilt wood heaters it was not possible to see if the appliance had a compliance plate attached, that is, the plate is not visible when the appliance is inserted in the wall.

The visibility of compliance plates is important to:

- help inform potential buyers of wood heaters from retail stores
- help inform potential home owners who are purchasing pre-owned houses with wood heaters
- determine if a wood heater has been modified
- provide sufficient information to provide adequate identification for replacement of parts and necessary servicing
- facilitate auditing of wood heaters.

The EPA believes the compliance plate needs to be visible prior to the sale of the heater and after it has been installed, although neither the Regulation nor the Standards are specific about this requirement.

The EPA is aware of the difficulty of marking inbuilt/insert appliances according to the standard. A good-practice example for an insert heater (Norseman Silhouette GLI) is shown in Figure 6 below. The plate was attached to a chain riveted to the side of the appliance. The plate was stored between the heater wall and the firebox and could easily be pulled out for inspection.



**Figure 6: Visible compliance plate of insert appliance  
(Photo: Lucy Silk, EPA)**

### Permanently attached

Sixty percent of heaters audited were marked with compliance plates that were not considered permanently attached to the appliance. Most of these appliances were marked with labels or stickers that easily peel off, and which are unlikely to be permanently legible and/or heat proof. Approximately 15% of appliances had plates attached with wires or chains. In some cases these had broken off or had been removed (see Figure 7 on the right). Some appliances (e.g. of the brands Saxon and Maxiheat) had the information printed on the back of the heater with ink.

The EPA is aware of the difficulty of marking permanent plates on heaters retrospectively.



Figure 7: Compliance plates that are not considered permanently attached plates (Photo: Cecilia Caselia, EPA)

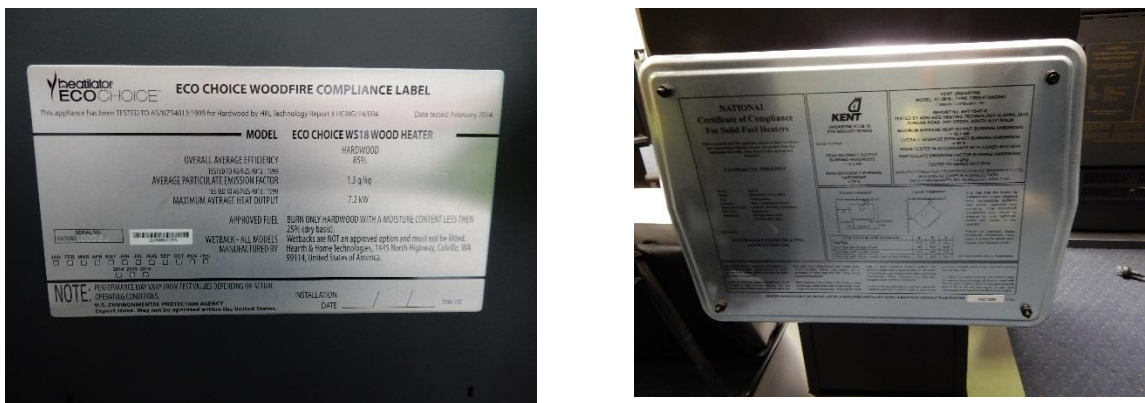


Figure 8: Permanently attached compliance plates (Photo: Marina Hatzakis, EPA)

### Fuel types (BURN ONLY HARDWOOD) plate

The Standard requires that the appliance shall be marked with a permanent plate specifying the fuel types following the words BURN ONLY HARDWOOD. The wording shall be visible to an operator when opening the fuel-loading door.

The audit inspection identified that more than 28% of the wood heaters audited did not have a permanent plate that indicated the fuel type to be burned. Ninety percent of the wood

heaters audited had a BURN ONLY HARDWOOD plate attached that did not comply with the current requirement.

The following issues were identified with the fuel type labels:

- Some appliances did not have a label with the required wording attached on the appliance.
- Some models had a label affixed to the appliance, but it could easily be removed and was not considered a permanent plate (Figure 9).
- Some appliances had permanent plates but with the required wording printed in ink on the plate. In one appliance used for demonstration purposes the ink had faded (see Figure 10, photo on left).
- Some models had fuel type labels attached but they were not easily visible, e.g. to the bottom of the burning chamber which would be covered with wood or ash and also exposed to high temperature (Figure 11, left), or the wording was printed on the compliance plate on the back of the heater (Figure 11, right).



**Figure 9: Fuel type plates not considered permanently attached and legible (Photo: Aleksandra Young, EPA)**



**Figure 10: Fuel type plates where the wording is not visible after short use of wood heaters (Photo: Antonia Curcio, EPA)**



**Figure 11:** Fuel type plates not considered 'easily visible' (the left photo shows plate attached to the inside of heater door; the right plate is attached on the back of the heater) (Photo: Nuwyy Ly, EPA)

Figure 12 shows two good examples for fuel type plates. Both are metal plates, attached to the front of the heater in a position where they are not exposed to high heat and are less likely to be removed.



**Figure 12:** Examples of fuel type plates that comply with Standard 4012:2014 (Photo: Karin Schianetz, EPA)

### 3.4 Certificates of compliance

The POEO (Clean Air) Regulation 2010 requirement specifies that a certificate of compliance is in force, and a copy of the certificate of compliance has been given to the retailer or distributor of wood heaters.

During the audit inspections, only 20% of the businesses could provide the auditors with a copy of the certificates of compliance for some of the wood heaters offered for sale.

The EPA acknowledges that some freestanding models displayed in various stores and showrooms inspected, for example, of the brands Saxon, Norseman and AustWood, had certificates of compliance printed or painted on the back of the heater.

Other issues identified included certificates of compliance being printed beside the compliance plate, which contained information that did not match (differences in model name, test laboratory or standards).

Currently, manufacturers can apply to the AHHA for certificates of compliance for wood heater models tested in accordance with the Australian Standards by NATA/IANZ accredited laboratories.

## 4 After the audits

### 4.1 Follow-up

The EPA has required the audited businesses to rectify any non-compliances identified and will continue to follow up to make sure they are complying with their licence requirements.

Since the individual audit reports were finalised, most of the required actions have been completed by the businesses audited in this program to ensure that compliance is achieved. In many cases the comments received from businesses as part of the audit process indicated that they had already commenced a review of their processes and procedures to address non-compliances identified.

Actions taken include:

- Businesses have agreed to manufacture new BURN ONLY HARDWOOD plates. They will be either stamped or etched and therefore cannot burn off.
- All retail stores that sell wood heaters will be issued with current copies of certificates of compliance, which will be available for viewing.
- Wood heaters that do not comply with legislative requirements relating to emission limits will be removed from retail outlets.

Some businesses that have actions still in progress are waiting on the outcomes of a meeting between the AHHA and EPA. The two organisations met on 28 July 2017 and agreed on the audit findings and on the best ways to address issues relating to the marking and labelling of wood heaters. These include:

- Compliance information needs to be attached to the wood heater in a permanent manner:
  - Stickers are not considered a permanent plate, as audit evidence shows that they can peel off or can be removed easily.
  - Information that is printed on the back of the heater is acceptable if it can be shown to be permanent (e.g. heat-proof), as it is considered to 'meet the intent' of being permanently attached.
  - Metal plates need to be riveted at four points to ensure that they are permanent.
  - Plates attached with chains or cables must be attached in a way that prevents them from being easily removed or lost (e.g. labels hanging on the floor attached to chains and plates that can break off a chain are not acceptable).
- Issues raised in the audit report concerning BURN ONLY HARDWOOD plates:
  - BURN ONLY HARDWOOD will be printed on plates riveted on appliances with permanent wording/ink (engraved or pressed).
  - Printed marking is accepted if it meets the intent.

The AHHA has provided all its members with the information agreed to by the EPA to address the issues identified relating to marking and labelling. Businesses are now in the process of implementing agreed actions.

The EPA expects that any businesses not audited in this program will use this summary report to improve their compliance with environmental legislation relating to wood heaters.

## 5 Appendix A: Premises audited

The following businesses participated in the audit of the wood heater industry sector.

Business name	Type of premises	AHHA member	Premises inspected
Abbey Fireplaces	Large specialised retailer with more than one store	No	Brookvale
Barbeque Factory	Retailer with more than one store	No	Silverwater
Bathurst Mowerland & Heating	Medium-sized retailer	No	Bathurst
Barbeques Galore	Manufacturer, importer, chain store, retailer	Yes	Auburn, Campbelltown
Bunnings	Manufacturer, importer, chain store, retailer	No	Lidcombe, Lismore
Burning Log	Manufacturer	Yes	Kingswood
Chazelles Fireplaces	Importer, distributor with showroom	Yes	St Peters
Cheminee	Importer, distributor with showroom	Yes	Stanmore
Dragon Wholesaling	Importer, wholesaler/distributor with showroom	Yes	The Hills
Glendale Warehouse	Medium-sized retailer	Yes	Glendale
Hawkesbury Heating	Large specialised retailer	Yes	North Richmond
Home Fires – The Fan Man	Medium-sized specialised retailer	Yes	Minto
Inside Outside Bathurst	Medium-sized retailer	Yes	Bathurst

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<b>Business name</b>	<b>Type of premises</b>	<b>AHHA member</b>	<b>Premises inspected</b>
Jetmaster Fireplaces	Distributor with more than one store/showroom	No	Castlecrag; Marrickville
Joe's BBQs and Heating	Medium-sized specialised retailer	No	Silverwater
Laser Plumbing Bathurst	Small retailer	No	Bathurst
Linc's BBQs and Heating	Medium-sized specialised retailer	Yes	Hornsby
Manning Mowers, BBQs and Heating	Medium-sized retailer	No	Taree
Outdoor Furniture and BBQs Taren Point	Small retailer	No	Taren Point
Petrie's Mitre 10	Non-core chain store	No	Bathurst
Penrith Gas Shop	Medium-sized retailer	No	Penrith
Platinum Heating	Small specialised retailer	No	Miranda
Quinlan Heating and BBQ Centre	Medium-sized specialised retailer	No	Broadmeadow
Sydney Heaters and Pizza Ovens	Medium specialised retailer	Yes	Northmead
Sydney Home Energy	Small specialised importer and retailer	No	Penrith
Thornton and Blake	Medium specialised retailer and installer	Yes	Leura
Univenta	Small specialised importer and retailer	No	Narraweena



## 6 Glossary

<b>Appropriate regulatory authority</b>	The EPA, a local authority or a public authority prescribed for the purposes of Section 6(3) of the POEO Act.
<b>Audit</b>	A systematic, independent and documented verification process of objectively obtaining and evaluating audit evidence to determine whether specified criteria are met.
<b>Audit criteria</b>	Defined requirements against which the auditor compares collected audit evidence; they may include regulatory requirements, standards, guidelines or any other specified requirements.
<b>Audit scope</b>	The extent and boundaries of the audit such as locations, organisational units, activities and processes to be audited, and the time period covered by the audit.
<b>Compliance</b>	Sufficient and appropriate evidence to demonstrate the particular requirement has been complied with and is within the scope of the audit.
<b>Non-compliance</b>	Clear evidence has been collected to demonstrate the particular requirement has not been complied with and is within the scope of the audit.

## 7 References / Further reading

Australian Government Department of the Environment and Energy 2005, Woodheaters and woodsmoke – Air quality fact sheet. Available from <http://www.environment.gov.au/resource/woodheaters-and-woodsmoke> .

Australian Government Department of the Environment and Energy 2005, Voluntary code of practice for firewood merchants. Available from <http://environment.gov.au/resource/voluntary-code-practice-firewood-merchants>

Ling B 2004, Targeted Education of Woodheater Users in Launceston. Environmental Health Vol. 4 No. 4.

McGreevy A & Barnes G 2016, *Domestic Wood Smoke Reduction in the Urban Environment*, The Firewood Association of Australia Inc. Available from [www.firewood.asn.au](http://www.firewood.asn.au).

NSW EPA 2013, Reducing Wood Smoke Emissions. Available from <http://www.epa.nsw.gov.au/woodsmoke/index.htm> .

NSW EPA 2013, Upper Hunter Air Particles Action Plan. Available from <http://www.epa.nsw.gov.au/woodsmoke/uhunter-woodsmoke-research-project.htm> on 30 June 2017.

NSW EPA 2015, Upper Hunter Fine Particle Characterisation Study. Available from <http://www.environment.nsw.gov.au/aqms/uhaqmnfpcs.htm>.

NSW EPA 2013, Air emissions in my community web tool. Available from <http://www.epa.nsw.gov.au/air/airemissionsapp/airemissionswebtool.aspx>

NSW EPA 2013, Air Emission Inventory for the Greater Metropolitan Region in NSW. Available from <http://www.epa.nsw.gov.au/air/airinventory.htm>