



Determination 2016/033

Regarding the code-compliance of a solid fuel fire appliance installed in a three-year-old house at 27 Mo Street, Cambourne, Porirua

Summary

This determination considers the compliance of a fire appliance installed in a single storey dwelling and whether the emissions are disposed of in a way which avoids creating a nuisance or hazard to an adjacent neighbour in a two storey dwelling. The determination discusses the definitions of the terms “nuisance” and “hazard” in terms of compliance with Clause G4.3.4.

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1. The matter to be determined

- 1.1 This is a determination under Part 3 Subpart 1 of the *Building Act 2004*¹ (“the Act”) made under due authorisation by me, John Gardiner, Manager Determinations and Assurance, Ministry of Business, Innovation and Employment (“the Ministry”), for and on behalf of the Chief Executive of the Ministry.
- 1.2 The parties to the determination are
- the applicants, who are the owners of the other property for the purposes of section 176(e)(i), R Roddick and D Lock (“the applicants”)
 - Porirua City Council (“the authority”), carrying out its duties as a territorial authority or building consent authority, acting through a legal advisor
 - the owners of the subject house with the fire appliance installed (“the neighbouring property”), H & N Homan (“the owners”), acting through a legal advisor
 - the Ministry for the Environment (“MfE”) under section 176(g) of the Act.
- 1.3 The application for determination arises from the construction of a house with a fire appliance installed that the applicants consider does not comply with Clause G4.3.4 of the Building Code (First Schedule, Building Regulations 1992)².
- 1.4 The matter to be determined³ is therefore whether the fire appliance as installed complies with Clause G4.3.4 of the Building Code. I have not considered any other aspects of the Act or the Building Code apart from matters relating to the installed fire appliance.

1.5 Matters outside this determination

- 1.5.1 In correspondence with the authority the applicants have also referred to the *Health Act 1956* and the *Resource Management Act 1991* (“the RMA”); this determination considers only matters relating to the Building Act and its regulations, I have no jurisdiction under other enactments that may apply in this case.
- 1.5.2 The RMA is the primary piece of legislation under which odour discharges are regulated in New Zealand, and the Health Act contains provisions relating to nuisances (section 29 of the Health Act) that can be enforced by city and district councils where anyone permits or causes a nuisance. I have no jurisdiction under the RMA or the Health Act.
- 1.5.3 In responding to the second draft determination, the authority submitted that disputes between competing uses of land are better dealt with by the courts as a matter of private nuisance; alternatively where they meet the threshold of constituting a nuisance under the Health Act, it will be open to an authority to exercise its regulatory responsibilities under the Health Act.

¹ The Building Act, Building Code, compliance documents, past determinations and guidance documents issued by the Ministry are all available at www.building.govt.nz or by contacting the Ministry on 0800 242 243.

² In this determination, unless otherwise stated, references to sections are to sections of the Act and references to clauses are to clauses of the Building Code.

³ Under section 177(1)(a) of the Act.

- 1.5.4 In this case however the applicants have made a valid application under the Building Act; whether or not there are other avenues available to the parties to deal with the issue is not a matter for my consideration.
- 1.6 In making my decision, I have considered the submissions of the parties, the reports of the independent expert engaged to assist me in this matter (“the expert”), and the other evidence. The relevant legislation is contained in Appendix A.

2. The building work and background

- 2.1 The building work considered in this determination consists of a solid fuel fire appliance installed in a three-year-old house. The appliance originally installed in the house (“the original wood burner”) was listed on the MfE’s national list of authorised wood burners⁴ and therefore deemed to meet the National Environmental Standards for Air Quality (“NES”).
- 2.2 The two properties are located in a very high wind zone as described in NZS 3604⁵ and the predominant wind is from the north. The properties are sited on the crest of a hill that is near to the west coast; they border farm land to the north and are on level sections relative to each other. There is one other dwelling to the north, but it does not have a fire appliance.
- 2.3 The neighbouring property is located to the north of the applicants’ property and is a single story house. The flue is approximately 11m from the south boundary of the neighbouring property (measured at a right angle to the boundary). Based on a site plan of the neighbouring property and the aerial view of the two houses (refer Appendix D: STNZ report November 2014, Figure 1), I have calculated the distance between the flue and the applicants’ house as ranging from approximately 13m to 25m along the length of the north face of the applicants’ house. The applicants’ house is two-storeys with bedrooms located on the upper floor. Based on my observations at the site visit undertaken during the hearing, it appears that the bedroom windows on the north are at a similar height to the flue of the neighbouring property.
- 2.4 On 11 October 2011 the applicants made a complaint to the authority in respect of the air quality being affected by smoke from the neighbouring property. The applicants then wrote to the authority on 16 August 2012, stating that the smoke from the chimney of the neighbouring property flows directly into the applicants’ house to the extent that the applicants consider it to be a nuisance. The applicants wrote again to the authority on 17 September 2012 and sought information regarding the criteria the authority had applied in deciding that the building consent application adequately demonstrated compliance with Clause G4 of the Building Code, specifically in respect of the roof design and height of the flue in relation to the applicants’ dwelling.
- 2.5 The authority undertook site visits on 7 August 2012, 8 August 2012 and 14 August 2012. The authority observed the smoke discharge and ascertained that the fuel being used at that time was dry *Macrocarpa* and Pine. The owners advised the

⁴ The Ministry for the Environment’s national list of authorised wood burners provides a list of wood burners which have been tested and found to meet the national environmental standards at the date of testing. Specifically, all wood burners on this list have a discharge of less than 1.5 gram of particles for each kilogram of dry wood burned [g/kg] and a thermal efficiency of at least 65%. Burners that meet the national environmental standards (ie, those on this list) may be installed on properties less than two hectares, anywhere in New Zealand, unless more stringent regional rules apply.

⁵ New Zealand Standard NZS 3604: Timber-framed buildings

authority that they had taken advice on the matter from a supplier of wood burners, and had tried three different chimney tops and had raised the chimney height by 800mm.

2.6 The authority wrote to the applicants on 27 September 2012. The authority provided a check-sheet used during the processing of the building consent that indicates that the authority had checked to ensure the nominated make and model of wood burner was an NES compliant appliance and the authority considers that wood burners that meet the requirements of the NES satisfy the requirement of Clause G4.3.4. The flue design and termination point and distance to neighbouring properties were also checked for compliance. The authority also noted:

- Clause G4.3.4 provides no quantitative measures in relation to “contaminated air” nor guidance on what constitutes a “nuisance” or “hazard”, but the requirements of the Acceptable Solution C/AS3 provide a benchmark for what is an acceptable emission level from solid fuel burner.
- AS/NZS 2918:2001⁶ was specified as a means of compliance (which in turn specifies AS/NZS 4012⁷ for requirements for emissions), and the authority considers that solid fuel burning appliances that meet the requirements of those standards are deemed to meet the requirements of Clause G4.3.4 of the Building Code.
- The specified wood burner is listed on the Ministry for the Environment’s list of approved appliances that comply with AS/NZS 4012 and AS/NZS 4013⁸.
- There is no requirement to check the design of the roof in relation to the impact on the disposal of contaminated air, nor is the height of the proposed dwelling in relation to neighbouring properties a consideration.

2.7 The authority concluded from its investigation to date it did not consider the smoke to constitute a health nuisance; the chimney had not been observed emitting smoke in such nature or manner as to be offensive or likely to be injurious to health.

2.8 The applicants wrote to the authority on 2 April 2013 stating that they still considered the smoke to be a nuisance and a hazard and that it had resulted in a loss of amenity. The applicants’ letter stated (in summary):

- The authority had no criteria for assessing the requirements of Clause G4.3.4, and the reliance on Standards and the NES was a proxy; the standards do not have criteria for determining the quality of the air.
- The smoke coming inside and surrounding their house creates a health hazard, nuisance, and loss of amenity and impacts on the ability to regulate moisture and ventilate the house.
- Assessment for building consent should take into account the siting, height and location of windows of a neighbouring house; some sites and locations are not appropriate for wood burning fires and it is not an absolute right to have a wood burning fire in a property.

⁶ Australian/New Zealand Standard AS/NZS 2918:2001 Domestic solid fuel burning appliances – Installation. This standard is cited in the verification method C/VM1, paragraph 1.1.1, as a means of complying with Clause C2.2 and C2.3 of the Building Code for solid fuel burning appliances.

⁷ Australian/New Zealand Standard AS/NZS 4012:1999 Domestic solid fuel burning appliances – Method for determination of power output and efficiency.

⁸ Australian/New Zealand Standard AS/NZS 4013:1999 Domestic solid fuel burning appliances – Method for determination of flue gas emission.

- Proximity to discharge, frequency and duration are relevant factors for consideration.
 - The authority's assessment was subjective, used no equipment, and had no set criteria.
- 2.9 The authority responded to the applicants by way of a letter dated 10 April 2013. The authority reiterated its views that the appliance complies with the relevant requirements of the Building Code and that the building consent was granted in accordance with the Act. The authority noted that the Building Code 'does not provide for the regulation of the environment e.g. for such matters as air quality'. The authority noted that it had not been requested to undertake any further assessment since August 2012 (refer paragraph 2.5) and accordingly, based on its previous investigations, the authority was of the view that it had:
- ... no evidence that a nuisance as defined by the Health Act 1956 is occurring because the chimney of the neighbour's house has not been observed to be sending out smoke in such quantity, or of such nature, or in such a manner, as to be offensive or likely to be injurious to health.
- 2.10 The application for a determination was received by the Ministry on 19 June 2013.
- 2.11 After the application was made the subject house suffered a fire event involving the wood burner, and on 13 October 2013 the applicants opted to withdraw the application for determination.
- 2.12 Repairs to the house were subsequently carried out and a new wood burner ("the fire appliance") was installed and operating by July 2014. The model of fire appliance differs from the original, but is also an NES-compliant model. It is this fire appliance that is the subject of this determination.
- 2.13 On 4 July 2014 the applicants requested the determination application be reopened and a determination be made on the compliance of the installed fire appliance.

3. The initial submissions

- 3.1 The parties have provided a number of submissions, including in response to the application for the determination, the expert's reports, the hearing, and other parties' submissions. In Appendix C I have provided a summary of the content of the submissions received during the determination.
- 3.2 In an attachment to the application the applicants provided copies of correspondence between themselves and the authority, some photographs, and described the background to the dispute.
- 3.3 The authority provided a submission dated 24 June 2013 in response to the original application for determination.
- 3.4 On 8 July 2013 I sought clarification from the authority as to the make and model of the original fire appliance that had been specified in the building consent documentation and confirmation of the fire appliance that was installed after the fire event.
- 3.5 The authority responded on 9 July 2013, providing the details of the appliance that was consented and the model installed; noting that the replacement fire appliance has a slightly different fascia but is also on the list of MfE authorised wood burners. The authority also noted that a code compliance certificate had not yet been issued as no application for one had been made, and a final inspection had not been carried

out for all of the building work carried out under the building consent, but that the authority's 'Health Team' had viewed the completed installation when investigating the initial complaint.

- 3.6 On 22 July 2013 I requested further information from the authority including relevant drawings from the building consent documentation detailing the position of the flue and a site plan, which were duly provided on 23 July 2013.
- 3.7 In response to a request for information regarding the fire appliance installed after the fire event, the authority confirmed in an email on 22 July 2014 the model details of the fire appliance and that the authority had passed the final inspection on the building work associated with BCA0543/10 on 17 July 2014. (No details of the building consent were provided; I assume this consent to be for the construction of the house including the installation of the fire appliance and including any amendments granted in respect of the remedial work carried out after the fire event). The authority went on to note that it considered it was now in a position where a code compliance certificate could be issued.
- 3.8 On 27 July 2014 I asked the applicants to maintain a log of the frequency, duration, and intensity of the smoke odour experienced, along with some basic weather data. The completed log was emailed to the expert on 30 September 2014; I have provided a summary of the odour log in Appendix B and the log is copied in full in the expert's report dated November 2014 attached to this determination as Appendix D.
- 3.9 On 21 August 2014 the applicants forwarded a further submission.
- 3.10 On 30 September 2014 the applicants forwarded an email with four video recordings of smoke emissions from the neighbouring property (see paragraph 4.6).

4. The expert's report

- 4.1 As mentioned in paragraph 1.6, I engaged an independent firm of air quality monitoring specialists to assist me, including an Air Quality Scientist and an Environmental Scientist (herein after referred to as "the expert").
- 4.2 The expert provided a discussion document on 27 August 2014. The discussion document presented general guidance on: the characteristics of wood smoke including key air quality parameters; the New Zealand regulatory requirements for wood burners and the impact of fuel on emissions; odour assessment tools and validation through site specific meteorological data.
- 4.3 The expert undertook monitoring at the two properties during September 2014 and provided a report dated 16 November 2014 (Refer Appendix D). The expert's report, including a copy of the discussion document, was provided to the parties.
- 4.4 The expert's report included an assessment of the site and set out the methodologies used and results of data collected. The report contained:
- the odour log completed by the applicants for the period 26 July to 30 September 2014
 - the discussion document described in paragraph 4.2 above
 - meteorological data for the period of one month
 - the results of ambient particulate monitoring at two representative locations for seven days

- results of a single four-hour sample (“the test fire”) for volatile organic compounds (“VOCs”) and polycyclic aromatic hydrocarbons (“PAH”) collected at two particulate monitoring sites.

4.5 I have appended the expert’s report (Appendix D) in full and have briefly summarised the findings below:

- Under normal conditions an NES-compliant wood burner would be unlikely to result in nuisance smoke odour.
- In addition to meeting the requirements of the NES, the burner has been installed with additional passive under floor ventilation and an induced draft fan to aid in the efficiency of the combustion process and provide better dispersion characteristics.
- For a nuisance smoke odour to occur at the applicants’ property the wind direction would need to be between 320° and 40° (NW to NE) and the wind speed would need to be relatively light. In higher wind speeds the dispersion of the emissions would be greater.
- The applicants’ odour log records smoke odour events occurring relatively frequently and lasting for long periods of time; the events are generally described as strong or very strong, with comments such as ‘thick black smog’ and ‘smoke pollution’ which indicates the applicants are experiencing a significant level of nuisance.
- Frequency analysis of meteorological data indicates that while NW to NE wind flows occurred on average over 35% of the time during winter, light NW to NE wind flows occurred on average less than 3% of the time.
- The results of the particulate matter monitoring indicated that the PM₁₀⁹ concentration was less than 10% of the Ministry for the Environment NES guideline for PM₁₀ of 50 µg/m³ as a 24-hour average; there is unlikely to be any potential adverse health effects associated with exposure to this level of PM₁₀.
- Events where instantaneous PM₁₀ concentration exceeded 50 µg/m³ were examined; none of these could be attributed to the fire appliance.
- It is unlikely that the concentrations of VOCs observed at the applicants’ property would result in any potential adverse health effects.
- Given the low concentrations of PAH, it is unlikely that exposure to these compounds would result in any potential adverse health effects.
- At the time of assessment the burner was fuelled with dry pine cut to uniform size.

4.6 In regards to the video footage taken by the applicants, the expert provided comment in a letter dated 16 November 2014. The expert noted (in summary):

- The video recording taken during the test fire ‘shows minimal visible smoke emissions’.

⁹ Particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀).

- Though the other three videos show visible smoke emissions, with one extending some distance from the point of discharge, lighting conditions in the recording make it difficult to assess those emissions.

4.7 The expert's report was issued to the parties on 19 November 2014.

5. The first draft determination and submissions

5.1 By email on 26 November 2014 the applicants provided a submission dated 23 November on the content of the expert's report. Included in the applicants' submission was comment on 'nuisance' and 'hazard'. I have included that comment in paragraph 9.1.8.

5.2 A first draft of the determination was issued to the parties for comment on 24 November 2014. The first draft recognised there was a disparity between the findings of the expert and the experiences of the applicants and discussed the factors that may have contributed to this. It was noted that the applicants' submitted that the smoke emitted during the monitoring was not typical, and the first draft concluded that the smoke emitted under normal operating conditions was not at a level such that it was causing a nuisance and/or hazard in terms of Clause G4.3.4.

5.3 The authority responded by email on 26 November 2014, accepting the findings of the draft in principle.

5.4 The owners responded by email on 2 December 2014, accepting the draft determination without further comment.

5.5 The applicants' response was received on 5 December 2014. The applicants did not accept the draft determination, and made a submission on the matter. The applicants also requested I hold a hearing.

5.6 MfE responded to the draft by email on 8 December 2014. The Ministry for the Environment monitors the implementation of the National Environmental Standards for Air Quality (the Standards), which has set design standards for wood burners. The draft determination states that the wood burner at the property being assessed is compliant with the Standards. The Ministry is only involved in this aspect of the determination.

5.7 As noted in paragraph 3.1, a summary of submissions received is contained in Appendix C.

6. The hearing, the second draft determination, and further submissions

6.1 The hearing and the applicants' submission

6.1.1 I held a hearing in Porirua on 23 January 2015 at the request of the applicant, and a site visit was carried out at the end of the hearing. I was accompanied by a Referee engaged by the Chief Executive under section 187(2) of the Act, the expert, and a contractor engaged by the Ministry. The applicants were the only party present at the hearing; the authority, the owners, and an officer of MfE elected not to attend.

6.1.2 The information presented at the hearing and the site visit undertaken was of assistance to me in preparing the determination.

- 6.1.3 During the site visit the wind was approximately 2m/s and the applicants lit a paper torch at the northwest of their property, holding it at approximately eave height of the adjacent house to demonstrate the direction and flow of smoke. The ventilation system within the house and where air was being drawn from were also observed during the site visit.
- 6.1.4 The applicants provided a written summary of the submission made at the hearing by email on 26 January 2015, which was copied to the other parties. The audio record of the hearing was forwarded to the other parties on 3 February 2015.
- 6.1.5 Some of the points in the applicants' submission to the hearing were covered in previous submissions received; accordingly I have only noted in Appendix C additional points raised during the hearing and in the summary provided on 26 January 2015.

6.2 The second draft determination and submissions

- 6.2.1 A second draft determination was issued to the parties for comment on 2 March 2015. The second draft of the determination noted a number of factors that could contribute to the behaviour of emissions from the fire appliance, concluding that there was a potentially unique combination of features affecting the dispersion of the discharge from the fire appliance. The determination noted the high frequency of use, frequency of wind direction and wind speed, the topography that may affect wind flow downstream of the flue, the relative alignment of the two properties and the roof design, and the areas of impact on the applicants' property.
- 6.2.2 The second draft of the determination set out that the question as to whether the emissions constituted a "nuisance" must be considered in terms of the experience of an "ordinary reasonable person". The criteria contributing to a person's experience would include the likes of frequency, intensity (perceived strength), duration and the character/offensiveness of the odour. In relation to frequency I took into account that the use of the appliance in this case may be more frequent than a typical household, and that given the discrepancy between the expert's report and the applicants' experiences wind speeds higher than 3.6m/s could not be discounted.
- 6.2.3 The second draft concluded that in wind directions of northeast through to northwest, and at a wide range of wind speeds, the smoke odour from the fire appliance operating correctly with appropriate fuel was not being disposed of in a way that avoids creating a nuisance to the applicants.
- 6.2.4 In response to the second draft determination, the owners' legal adviser provided a submission that was received on 28 April 2015. The submission included a statement from one of the owners which outlined the installation and use of the fire appliance, and commented on the video recordings made by the applicants and the expert's assessment.
- 6.2.5 The authority's legal advisor provided a submission that was received on 28 April 2015, noting that the authority agreed with the owner's submission including that the onus of proof fell to the applicants. The authority made a submission in regards to the assessment of nuisance in the second draft.
- 6.2.6 The authority also provided responses from six other building consent authorities to a questionnaire on assessing compliance with G4.3.4, and a response from the New Zealand Home Heating Association to an industry focussed questionnaire. The

authority considers precedent issues are involved, as the determination will be regarded as providing guidance in practice.

7. The expert's second report

- 7.1 Having considered the submissions received in response to the second draft determination, I concluded that the discrepancy between the frequency of impact recorded in the applicants' log and the frequency of impact calculated by the expert in his report dated November 2014 required further consideration in relation to wind speeds and dispersion. Central to the difference between these is how the emissions from the fire appliance behave in wind speeds greater than 7 m/s. I engaged the expert to undertake an assessment of the emissions from the fire appliance when the wind direction was NW to NE and wind speeds at a range greater than 7m/s to provide evidence on the dispersion characteristics of emissions under elevated wind speeds.
- 7.2 Prior to the testing carried out in November 2015, the owner's legal adviser made two submissions (13 July and 13 August) regarding the conditions of the expert's second assessment, and the owners allowed access for the testing to be carried out with appropriate fuel only.
- 7.3 The expert carried out the assessment on 10 November 2015, providing a report on 13 December 2015 (refer Appendix D) which was copied to the parties on 18 December 2015. I have summarised the findings of that report below:

Particulates

- The background survey (that is without the fire operating) showed an average PM₁₀ concentration to be 3 µg/m³ with an instantaneous peak of 64 µg/m³ – the peak was attributed to a vehicle entering the driveway.
- The maximum instantaneous PM₁₀ peak associated with the operation of the fire appliance was 92 µg/m³, which occurred approximately 20 minutes after operation. This would be expected as peak emissions from the fire normally occur at the beginning of operation as the fire box gets up to temperature. Once at operating temperature, combustion conditions improve, resulting in lower emissions.
- After approximately 30 minutes of operation the PM₁₀ concentrations had decreased to less than 20 µg/m³ and continued to decline thereafter.
- The NES for PM₁₀ is 50 µg/m³ as a 24-hour average. Given the short duration of peak emissions, it is extremely unlikely that this would be exceeded as a result of the operation of the wood burner.

Observations

- Slight white smoke emissions were observed during the initial warm up period, with no further visible emissions observed.
- For the time that emissions were visible, it was observed that the wind was forcing the plume horizontally down the roof line of the house in which the fire appliance is installed.
- Only a slight wood smoke odour was detected intermittently.

7.4 The applicants also discharged a road flare to provide a visual demonstration, and I have summarised the expert's comments on this below:

- The smoke from the flare did exhibit limited downwash due to the design of the building, but the smoke did not appear to accumulate and quickly dissipated at ground level. When the flare was extinguished the smoke disbursed almost instantaneously.
- Care should be taken in interpreting the video recording of the smoke from the flare because:
 - the smoke is highly visible compared to wood smoke emissions from a correctly operated NES compliant wood burner
 - the flare was discharged between the two buildings (i.e. not from the source of the emissions), and
 - the discharge was not at the same temperature or velocity as emissions from the wood burner.

8. The third draft determination and submissions in response

8.1 On 16 December 2015 I issued a third draft determination to the parties for comment. The third draft of the determination held that in terms of the operation of the fire appliance the decision on compliance with Clause G4.3.4 must be in respect of what would be considered "typical" use, rather than how the current owners elect to use the fire appliance, and that the emissions considered are those that would occur when the appliance is operating correctly and with appropriate fuel. It was noted that the emissions from the test fires were relied on in forming a view in the third draft regarding compliance with Clause G4.3.4.

8.2 The determination concluded that there was sufficient evidence to establish that under correct operation and with appropriate fuel the smoke odour from the fire appliance is being disposed of in a way which avoids creating a nuisance to the applicants.

8.3 The submissions

8.3.1 The authority responded on 24 December 2015, accepting the decision in the third draft and noting that it maintained the view put forward in its previous submission (refer paragraphs 6.2.5 and 6.2.6).

8.3.2 The applicants sought an extension on the time given in order to obtain expert opinion before making a further submission in response to the third draft determination and the expert's second report. The extension of time was granted and the applicants' submission was received on 31 March 2016.

8.3.3 In their submission the applicants referred to a number of articles relating to air quality and domestic wood burning appliances (refer Appendix C.2). The applicants also provided copies of those articles, along with:

- an aerial photograph and ground level photograph marked to show the location the applicants considered the testing for the expert's second report should have been carried out
- a series of questions the applicants wanted the owners to answer relating to the fuel and use of the wood burner

- an email from an applied social psychologist
 - an extract from the New South Wales Strata Schemes Management Bill.
- 8.3.4 The applicants also sought through the determination process to have the owners complete a questionnaire regarding the use of the fire appliance, including the types of fuel used and maintenance, noting there was ‘no direct evidence ... as to how they have operated their fire’.
- 8.3.5 In a further submission on 9 May 2016 the applicants reiterated the effects experienced, requested further testing be carried out, and requested the Ministry direct the owners not use the fire appliance while the matter is being determined. I note here that I have no power to make any direction to the owners on the use of the fire appliance.
- 8.3.6 On 18 May 2016 the applicants provided a link to an article on air pollution in Timaru.
- 8.3.7 The owners made no submission in response to the third draft determination, but responded to the applicants’ submission on 20 May 2016 through their legal advisor. The legal advisor considered that little, if any, weight can be placed on the new material produced by the applicants in response to the third draft determination.
- 8.3.8 The owners’ legal advisor disputed that any further steps, such as flare tests and the questionnaire presented by the applicants, were required in order for the matter to be determined.
- 8.3.9 The authority, through its legal advisor, provided a further submission on 20 May 2016. The submission generally echoed that received from the owner’s legal advisor in response to the applicants’ submission, additional points raised are included in the table in Appendix C.
- 8.3.10 On 30 May 2016 one of the applicants contacted the Ministry regarding the determination process, with the outcome being that the applicant advised they would contact an air quality scientist (“the consulting expert”) on the matter and make a further submission.
- 8.3.11 On 1 June 2016 the legal advisors for the owners and the authority objected to any extension of time being granted to the applicants. The applicants responded on 2 June 2016, and made a further submission with regard to their experiences and impact of the emissions from the fire appliance. The applicants provided two photographs of emissions from the flue.
- 8.3.12 On 2 June 2016 the legal advisor for the owners repeated the objection to the applicant’s intention to provide further evidence on the matter. This view was supported by the legal advisor for the authority.
- 8.3.13 On 6 June 2016 the applicants made a further submission and provided a link to video footage of emissions from the flue around 1pm in gusting winds up to 20kph (approximately 5.5m/s).
- 8.3.14 On 13 June 2016 a further submission was received from the legal advisor for the owners in regards to the determination process and responding to the submissions of the applicants. The legal advisor objected to any extension of time and expressed the view that the applicants’ consulting expert ‘will not have a complete picture of this case or the background in reaching his opinion on the narrow question for determination...’

- 8.3.15 The submissions noted above have been summarised in Appendix C.
- 8.3.16 On 14 June 2016 the applicants provided a copy of correspondence from the consulting expert and a further submission. The consulting expert's opinion was provided on the basis of the expert's two reports alone, and I have summarised the points raised by the consulting expert below:
- No particular criticism of the data presented in the 2014, but it fails to answer whether or not the odour/smoke nuisance the applicants report is plausibly related to emissions from the subject fire appliance.
 - 'The monitoring was undertaken in spring when no nuisance odour was reported, rendering [the] data fairly irrelevant.'
 - The consulting expert would challenge some assumptions in the expert's reports, namely meteorological factors, dispersion, and wind frequencies.
 - The measurement of outdoor air quality cannot be used alone; what is pertinent is whether the plumes can strike and enter the home where they will be trapped and expose occupants to higher doses of particulates than outdoor strikes.
- 8.3.17 The consulting expert also provided his advice on any further testing, recommending that the DustTrak monitoring be repeated at times when the fire appliance is commonly in use and simultaneously with an odour log. The consulting expert also noted that the question of what constitutes a hazard depends on an agreed definition, and that he considered a breach of the NES standard for PM₁₀ is not an appropriate metric, noting also that there is no agreed standard for indoor air.
- 8.3.18 The consulting expert stated that there are a number of indoor emissions sources that can give rise to elevated concentrations of airborne particles in the home, and the question in this case would be whether levels are strongly elevated above the normal indoor levels when the fire appliance is being operated.
- 8.3.19 In response to some of the comments made by the consulting expert, I note that the monitoring period in the expert's first report included results from a four hour test fire under suitable conditions, and I consider those results and that of the test fire in the expert's second report are relevant in terms of providing evidence of emissions at the applicant's property when winds are from the northeast to northwest. I acknowledge the consulting expert has presented an alternative testing methodology and I note that it is open to the applicants to consider undertaking this; however, I maintain the view that the methodology used by the expert was valid and I can rely on the data provided for the purpose of this determination.
- 8.3.20 On 6 July 2016 the legal advisor for the authority provided a submission in response to the applicants' submissions of 6 and 14 June, and the consulting expert's opinion (in summary):
- The video footage does not provide any new or compelling evidence as to whether there is a nuisance.
 - The consulting expert's opinion makes a number of observations about the smoke dispersal processes, but does not directly deal with the core conclusions reached in the third draft regarding compliance.
 - The consulting expert has not undertaken any independent measurements.

- 8.3.21 On 18 July 2016 the legal advisor for the owners also provided a submission responding to the consulting expert's opinion (in summary):
- The consulting expert does not reach any conclusions about how the fire appliance impacts the applicants' property or whether it compliance with Clause G4.3.4.
 - The consulting expert did not visit the site or observe the fire appliance other than by video footage supplied by the applicants.
 - The opinion provides no basis for rejecting the expert testing evidence.
- 8.3.22 On 18 July 2016 the applicants made a further submission in response to those received from the legal advisors for the owners and authority; the submission reiterated points raised in earlier submissions (summarised in Appendix C) and stated that the other parties had not provided any proof to refute the evidence submitted by the applicants, nor had they provided scientific expertise contrary to the consulting expert's opinion or any new evidence to support the conclusions of the third draft determination.
- 8.3.23 The applicants also submitted that the consulting expert's opinion supports their view that a nuisance is unable to be avoided as the consulting expert confirmed:
- 'even if [the applicants'] property was only impacted a few percent of the time ... this does not mean the impact would necessarily be negligible'
- Smoke emissions entering a home will 'not be rapidly dispersed, but will more likely be trapped exposing residents to much higher doses of particulate than is measured outdoors'
- The 'pertinent question for this case is whether [smoke] levels are strongly elevated above these normal indoor levels when the [owners'] wood-burner is being operated'.
- 8.3.24 On 18 July 2016 the legal advisors for the owners and the authority objected to the Ministry taking account of the ongoing submissions from the applicants.
- 8.3.25 I note here that under section 186(5) of the Act a submission in respect of an application for a determination received by the Chief Executive before the matter has been determined must be considered.

9. Discussion

9.1 Clause G4.3.4 and interpretations

- 9.1.1 The matter for determination is whether the building work complies with the performance requirements of Clause G4.3.4 of the Building Code in respect of 'other property'.
- 9.1.2 Clause G4.3.4 states:
- G4.3.4 Contaminated air shall be disposed of in a way which avoids creating a nuisance or hazard to people and other property
- 9.1.3 I am of the opinion that the reference to contaminated air in Clause G4.3.4 includes the products of combustion such as smoke, fumes, gases, dust, soot, grit, and other matters produced in the process of combustion.

'people and other property'

9.1.4 Clause A2 – Interpretation defines “other property” for the purposes of the Building Code as:

other property means any land or buildings or part thereof which are—

(a) not held under the same allotment; or

(b) not held under the same ownership—

and includes any road

9.1.5 The owner has submitted that, based on the objective set out in Clause G4.1 and the definition of ‘amenity’, Clause G4.3.4 only relates to the users of the building from which the contaminated air is being emitted. Insofar as G4.3.4 relates to other property it only extends to safeguarding people from illness, not from loss of amenity (refer Appendix C: under the heading “legal test / nuisance”).

9.1.6 I disagree with that interpretation. The objective (G4.1) is:

‘to safeguard people from illness or loss of amenity due to lack of fresh air.’

The objective is the protection of people and it would be inconsistent to interpret G4.3.4 as limited to people on the land where the contaminated air is being emitted. There is nothing in the wording of either clause G4.1 or G4.3.4 that suggests those clauses are to be limited to the land and buildings from which the contaminated air is being emitted. In fact, clause G4.3.4 expressly applies to “other property”.

9.1.7 Further, “amenity” is defined in Clause A2 as:

amenity means an attribute of a building which contributes to the health, physical independence, and well being of the building's users but which is not associated with disease or a specific illness

Amenity is linked to a building and the users within that building, not to a person. The definition of “amenity” requires the reference to “buildings” in the term “other property” in G4.3.4 to include the users of those buildings that are other property. Clause G4.3.4 clearly protects “people” and land and buildings that are “other property” from the effects of contaminated air. It would be contrary to the words of Clause G4.3.4 and the objective in Clause G4.1 to protect land and buildings that are other property from contaminated air but to leave the users of those buildings unprotected.

‘nuisance’ and ‘hazard’

9.1.8 The applicants have submitted that as smoke is a recognised health hazard, the matter falls to whether the emissions avoid the applicants’ property, which will come down to the prevailing wind and relative position of the properties. I disagree with the applicants’ interpretation of Clause G4.3.4 in respect of the matter being whether smoke avoids the applicants’ property. The Building Code allows for the installation of fire appliances in dwellings; the test in Clause G4.3.4 is whether emissions are disposed of in a way which ‘avoids creating a nuisance or hazard to people and other property’; the requirement is not simply that the emissions avoid reaching the applicants’ property but that the emissions avoid creating a nuisance or hazard.

9.1.9 The applicants have submitted that in terms of Clause G4.3.4, it is not required that the nuisance is also a hazard, and that this is supported by case law on the tort of

nuisance and also in a previous determination (2008/38¹⁰). I agree with that view and I have addressed hazard and nuisance aspects separately in this determination.

9.1.10 Hazardous is defined in Clause A2 of the Building Code as

creating an unreasonable risk to people of bodily injury or deterioration of health

(I have considered the compliance of the fire appliance in terms of whether it presents a hazard in paragraphs 9.4.6 and 9.4.7.)

9.1.11 In contrast, the term “nuisance” is not defined in the Act or the Building Code, and it appears only in Clauses E1.3.1 and G4.3.4. The term “nuisance” has a particular common law meaning which is ‘the unreasonable interference with an individual person’s use or enjoyment of land or of some right connected with that land’. The tort of nuisance seeks to strike a balance between the conflicting land use rights of neighbouring occupiers and is described in *The Law of Torts in New Zealand* (5th ed., Thomson Reuters, Wellington, 2009) at [10.2.03] as:

[T]he neighbour’s right to be free from an unreasonable level of interference with his or her protected interest in the use and enjoyment of land, the court asking whether the interference he or she suffers exceeds what a normal occupier in the plaintiff’s position could reasonably be expected to tolerate.

9.1.12 It is the interference to an “unreasonable” degree with a neighbour’s right to use and enjoy their land that is the essential element of the tort of nuisance. It is no defence to claim that the owners’ use of their land and their actions were reasonable. As Hardie Boys J stated in *Bank of New Zealand v Greenwood* [1984] 1 NZLR 525 citing *Salmond on the Law of Torts*:

He who causes a nuisance cannot avail himself of the defence that he is merely making a reasonable use of his own property. No use of property is reasonable which causes substantial discomfort to other persons, or is source of damage to their property.

9.1.13 The position is summed up in *The Law of Torts in New Zealand* at [10.2.03] as follows:

So the critical question in every case is whether the interference complained of is unreasonable in the sense that it exceeds the level that a reasonable occupier, tolerant of the reasonable activities of his or her neighbour, would regard as acceptable.

9.1.14 The question of whether a nuisance is unreasonable is a question of fact and must be considered in relation to factors such as the nature of the harm and the location in which it occurs, and the time, duration and intensity of the interference.

9.1.15 I have also taken into account the definition of nuisance under the Health Act (1956). Section 29 of the Health Act defines nuisance in relation to smoke discharged from a flue as:

(m) where any chimney, including the funnel of any ship and the chimney of a private dwellinghouse, sends out smoke in such quantity, or of such nature, or in such manner, as to be offensive or likely to be injurious to health, or in any manner contrary to any regulation or Act of Parliament:

9.1.16 The owner has submitted that:

¹⁰ *Determination 2008/38: Determination regarding the decisions of the territorial authority regarding an extension to a restaurant*, Department of Building and Housing (20 May 2008).

- The intention of Parliament in contemplating G4.3.4 is more likely to have been to align with the existing regulatory baseline of the Health Act 1956 than with the law of civil nuisance.
 - Nuisance in G4.3.4 is intended to capture situations of obvious harm or offence that fall short of being outright hazardous; it would be wrong to read the clause as importing the entire body of law relating to nuisance.
- 9.1.17 In response, I note that Parliamentary intent is not relevant to the Building Code, which is a regulation. In addition section 29 of the Health Act deems certain matters to be a nuisance, but does so ‘without limiting the meaning of the term nuisance’, so can be seen as importing the common law meaning of the term nuisance and then adding to it. Section 29(m) of the Health Act 1956 does exactly this as it extends the definition of nuisance by introducing the thresholds of “offensive or likely to be injurious”, which are quite distinct from the common law meaning of nuisance.
- 9.1.18 The Building Act and the Building Code use the terms nuisance and injury in distinct ways. It can be taken that the use of nuisance in G4.3.4 is deliberate and should not be fused with the term injury. Nuisance is used in E1.3.1 and G4.3.4; however injury is used extensively throughout many clauses of the Building Code, for example clauses C3.4(c) and G12.3.3.
- 9.1.19 I am of the view that the measure for nuisance must be in terms of the experience of an ‘ordinary reasonable person’, and not that of an individual who may be abnormally sensitive. The position was stated in *Bloodworth v Cormack* [1949] NZLR 1058, at 1062:
- A plaintiff must establish ... *serious* interference with his comfort ... according to the *ordinary* notions prevalent among *reasonable* persons (this excludes reference to standards demanded merely by the supersensitive, or according merely to the ‘elegant or dainty habits of living’ spoken of by Sir James Knight Bruce, V-C in *Walter v Selfe* (1851) 4 De G & Sm 315, 322; 64 ER 849, 852.
- 9.1.20 Whether odour from a neighbouring property constitutes a nuisance in terms of the Building Code will depend on a range of criteria, such as the frequency, intensity (perceived strength), duration, and character/offensiveness of the discharge, and whether an ordinary reasonable person would experience a significant nuisance effect.
- 9.1.21 Character of an odour is a unique, innate quality that does not vary with intensity¹¹. Offensiveness is a subjective or qualitative aspect of an odour relating to its pleasantness or unpleasantness¹²; the character of an odour is a significant aspect of an odour’s offensiveness. The differentiation between an odour being ‘not unpleasant’ (not offensive) or ‘unpleasant’ (offensive) is not incorporated into environmental standards or guidelines in New Zealand.
- 9.1.22 Typically an odour such as that from sewage or rancid grease would be considered by an ordinary reasonable person as highly offensive, whereas odours such as those from coffee roasting or spice packaging may be perceived as not unpleasant.
- 9.1.23 However, an odour that is typically considered as pleasant or not unpleasant by an ordinary reasonable person may be considered offensive when experienced at a high

¹¹ See for example Ministry for Environment Good Practice Guide for Assessing and Managing Odour in New Zealand (Table 4.3: Odour character descriptors)

¹² Also known as “hedonic tone”

intensity and/or frequently and/or for long periods of time. A person's perception of an odour may also change from pleasant to unpleasant with increasing concentration, duration, frequency, and previous experience with a specific odour.

- 9.1.24 Tolerance for an odour and what might be considered a nuisance also changes over time at a societal level. What was considered tolerable in the past, such as cigarette smoke in public buildings or industrial emissions affecting air shed quality, alters as societies' norms and expectations change.
- 9.1.25 The owner has submitted that, in keeping with the views expressed in a previous determination, there must be some significant nuisance effect (refer Appendix C: under the heading "legal test / nuisance"). I am of the view that any nuisance has to be an *unreasonable interference*; calling a nuisance a significant nuisance is simply reflecting the fact that it is not a trivial or minor interference with a person's use and enjoyment. The nuisance must be an unreasonable or significant interference with that person's use or enjoyment.

Operation of the fire appliance

- 9.1.26 In responding to the second draft determination the owner has submitted that how frequently the fire may or may not be used by the owners should not be a factor in the consideration of nuisance in this determination. In addition, the authority submitted that section 177(1)(a) was not meant to enable the Ministry to consider compliance in the context of an operational wood burner and how it is being used by specific owners and that frequency of use or the owners' access to firewood should not inform the decision on compliance. (Refer Appendix C for summary of submissions.)
- 9.1.27 I disagree with the authority's view that the Ministry cannot consider compliance of an operational wood burner under section 177(1)(a). There are a number of clauses in the Building Code that can only be assessed while the relevant building work is being undertaken or after the work is completed, for example clauses F5.2 and G1.3.2(e).
- 9.1.28 How often a fire appliance in a dwelling in this location would typically be used (frequency) and for how long (duration), are relevant factors in establishing whether a nuisance is likely to be caused (see also paragraph 9.1.23). However, in terms of the operation of the fire appliance, in regards to frequency and duration my decision must be in respect of what would be considered "typical" use of a fire appliance rather than how the current owners elect to use the fire appliance: the performance clause of the Building Code is contemplated in terms of typical use of the appliance. I note that the second draft determination erred in this respect.
- 9.1.29 Likewise, emissions from any solid fuel appliance and in particular the character of any odour produced is directly and significantly affected by the fuel used in the fire appliance; there is a causative relationship with the character, intensity, and offensiveness of the odour experienced. How the fire appliance is operated and the fuel used is not a factor that can be enforced by way of the Act and its regulations. Accordingly my decision does not contemplate the fuel used, but rather is based on the emissions from the fire appliance on the presumption that it is operating correctly and with appropriate fuel (see also paragraph 9.4.5).
- 9.1.30 It is important to observe at this point that the Building Code requirement in Clause G4.3.4 does not supplant the common law tort of nuisance in regard to the smoke emissions from solid fuel appliances in buildings. If the applicants have particular

concerns regarding the owners' operation of the fire appliance, the frequency and duration of use, and fuel used, then those matters are better addressed through the common law tort of nuisance.

Granting building consent

- 9.1.31 The authority submitted that in granting building consent the authority cannot take into account how a particular owner may use the building work, or how particular neighbours may experience that use, and that the test for compliance must be one that is capable of being applied by an authority at the time of making its decision whether to grant building consent.
- 9.1.32 I acknowledge the authority's concerns and that previous guidance and the Codewords article referred to in the authority's submission (see Appendix C) did not address the consideration of Clause G4.3.4. However that should not be read as inferring that compliance with that clause should not be considered when a building consent is being sought. Section 49(1) requires an authority 'must grant a building consent if it is satisfied *on reasonable grounds* that the provisions of the building code would be met...' [my emphasis]; and while some Building Code clauses may not be able to be fully assessed until the building work is underway or is completed, I hold the view that the reasonable grounds test, in terms of Clause G4.3.4 would include consideration of whether a hazard or nuisance will be created, and that test would be to the extent of it being an unreasonable interference as would be experienced by an ordinary reasonable person.
- 9.1.33 For example, in making a decision to grant building consent, I consider that in addition to those matters noted above, it would be appropriate for building consent authorities to consider the physical relationship between a proposed dwelling and existing buildings, along with the location and height of the flue in relation to adjacent buildings. Information about elevations and distances between buildings will be available to the building consent authority in the building consent application form and in other information held by the building consent authority about neighbouring buildings.
- 9.1.34 In conclusion, in making a decision on whether the fire appliance as installed complies with Clause G4.3.4 of the Building Code, I have considered:
- the typical use of a fire appliance in terms of frequency and duration of use
 - the emissions from the fire appliance as would occur when the fire appliance is operating correctly and with appropriate fuel being used
 - whether an interference with an individual person's use or enjoyment of the applicants' land or of some right connected with the applicants' land is established
 - whether the interference is unreasonable in the sense that it exceeds the level that an ordinary reasonable person, tolerant of the reasonable activities of his or her neighbour, would regard as acceptable.

9.2 The evidence base

- 9.2.1 In terms of the operation of the fire appliance and resulting emissions, the evidence obtained during the determination includes the following:

- A log completed by the applicants at my request, recording the frequency, duration, and intensity of the smoke odour experienced, along with some basic weather data.
- Various photographs and video footage supplied by the applicants.
- The expert's report dated 16 November 2014, including meteorological data and results of air quality monitoring using two DustTrak monitoring devices (one control device located outside of the 'impact zone' and one device located in one of the upstairs bedrooms of the applicants' house).
- The expert's report dated December 2015, including video recording provided on a data storage device and the results of further monitoring using a portable DustTrak monitor on the applicants' property.

9.2.2 The owner has submitted that the comments in the log completed by the applicants infer the applicants suffer from an abnormal sensitivity. Setting aside the question of any sensitivity indicated in the applicants' comments, I consider the log can be relied on in terms of establishing frequency and duration of the actual use of the fire appliance and the applicants' experiences during that time.

9.2.3 I have also turned my mind to the comments of the Fire and Environmental Health Officers and I acknowledge their experience in this area. The officers concluded that the smoke 'could not be classified as a nuisance within the meaning of the Health Act 1956'. The test under section 29 of the Health Act is 'smoke in such quantity, or of such nature, or in such manner, as to be offensive or likely to be injurious to health'; the officers' conclusion cannot be read as evidence of whether the emissions are a nuisance in terms of Clause G4.3.4. I have however taken into consideration the officers' comments in general, in that the officers observed a small amount of visible smoke, and that the smell could be detected on opening the windows but that it was not a strong smell.

9.2.4 There is a significant difference between the submissions of the owner and that of the applicants regarding the emissions from the fire appliance. The owner has stated that the test fire during both assessments was consistent with the emissions from the fire during its normal operation, whereas the applicants have repeatedly submitted that the emissions from the test fires were unlike those prior to the monitoring undertaken by the expert in terms of quantity, colour, and visibility. I hold the view that reconciliation of the differing views is not necessary in order for me to make a decision on compliance; the test fires were carried out using appropriate fuel with the fire operating correctly, and accordingly I consider the evidence from the test fires in terms of the emissions produced by the fire appliance can be relied on in forming my view on compliance.

9.3 Means of compliance with G4.3.4

9.3.1 Clause G4.3.4 of the Building Code is performance based and sets out the minimum performance requirements. It does not specify how to achieve this performance (there are no detailed requirements for design and construction).

9.3.2 An Acceptable Solution is one way of establishing compliance with a particular clause of the New Zealand Building Code. A design that is in accordance with an Acceptable Solution must be accepted as complying with the related Building Code provisions.

- 9.3.3 The Acceptable Solution G4/AS1 does not include solutions specific to discharges from domestic solid fuel appliances. Paragraph 1 of G4/AS1 deals with ventilation of spaces within buildings; with paragraph 1.5.1(f) requiring that mechanical ventilation must discharge contaminated air in a way that complies with AS 1668.2¹³. (I note here that residential solid fuel fire appliances and flues are not considered mechanical ventilation systems in terms of the cited standard.) Paragraph 2 of G4/AS1 deals with the ventilation of spaces containing gas-fuel appliances; with paragraph 2.4.1 setting out the requirements in respect of the flue location on dwellings.
- 9.3.4 Though the Acceptable Solution does not refer specifically to discharges from domestic solid fuel burners, I am of the view that it provides a useful measure for the physical attributes of the burner and flue, in conjunction with:
- the discharge requirements of the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics) Regulations 2004: Regulation 23 Design Standard (“the RMA Regulation”); and
 - the design parameters set out in AS/NZS 2918.
- 9.3.5 Based on the fact that the model of fire appliance installed is on the Ministry for the Environment’s national list of authorised wood burners, and given the results of the monitoring, the fire appliance as installed appears to be compliant with the requirements of the RMA Regulation.
- 9.3.6 The fire appliance also complies with the design parameters set out in AS/NZS 2918 in terms of the location of the flue relative to the highest point of the roof (paragraph 4.9.1 (b) and (c) and Figure 4.9 – refer Appendix A.3).

9.4 Compliance of the fire appliance

- 9.4.1 The fire appliance must comply with the Building Code and the effect of the discharge in respect of nuisance is not covered by the Acceptable Solution.
- 9.4.2 The fire appliance complies with the NES and the installation of the flue and burner are in accordance with the relevant Standards. The owner has also installed the burner with additional passive under floor ventilation and an induced draft fan which would aid in the efficiency of the combustion process and provide better dispersion characteristics. However, there remains the possibility that due to the particular circumstances the NES compliant fire appliance could still cause a nuisance or hazard to the applicants in terms of Clause G4.3.4.
- 9.4.3 The emissions from the fire appliance are influenced by a number of factors including the type of fuel being burned, whether the burner is functioning correctly, and features of the burner and flue. My decision considers the emissions from the fire appliance when it is functioning correctly and with appropriate fuel (refer paragraph 9.1.34).
- 9.4.4 The roof design, prevailing winds, wind speed and direction, and the surrounding topography and the relative alignment of the flue to the adjacent property, all affect the dispersion of emissions from the flue.

¹³ AS 1668.2-2012: The use of ventilation and air conditioning in buildings - Mechanical ventilation in buildings

- 9.4.5 The question for this determination is whether the emissions from the fire appliance, when operating correctly and with appropriate fuel is at a level such that it is causing a nuisance and/or hazard in terms of Clause G4.3.4 of the Building Code.

Hazard

- 9.4.6 Monitoring undertaken by the expert found that the levels of VOCs, PAH, and PM₁₀ were below the relevant NES and USEPA¹⁴ concentrations, and exposure to the levels being emitted are unlikely to result in any potential health effects. None of the peaks of PM₁₀ concentrations observed by the expert in the first report could be attributed to the fire appliance, and the single peak concentration during the second assessment attributable to the fire appliance was of a short duration and typical of a fire appliance before reaching normal operating temperature.
- 9.4.7 Given the expert's findings, and that the fire appliance is listed on the MfE national list of authorised wood burners and has been installed correctly, I am of the view that when operating correctly and with appropriate fuel the fire appliance is likely to discharge at or under the measure for particulates in accordance with the NES. On that basis, I conclude that the fire appliance is compliant with Clause G4.3.4 of the Building Code in respect of the requirement that it not create a hazard to people or other property.

Nuisance: Frequency and duration

- 9.4.8 The applicants' submissions indicate that they experience smoke odour from April to October, the appliance is used frequently and for long periods of time, and that use of the appliance during monitoring periods has been different from how the owner's typically use it.
- 9.4.9 I reiterate that I must consider frequency and duration in terms of typical domestic use rather than use by the current owners. Domestic fire appliances are likely to be used frequently during winter months, potentially on a daily or twice daily basis, or for the whole of a day, and I consider that this would be typical of the frequency and duration for a fire appliance in use in that location.
- 9.4.10 Where emissions are impacting on an owner of an adjacent property, the use of a fire appliance at a typical frequency and duration can mean the adjacent property owner begins to experience the character of the odour as unpleasant or even offensive.
- 9.4.11 Wind direction and wind speed will impact on how frequently emissions reach the applicants' property and the intensity of the emissions experienced. The expert reviewed meteorological data for the months of June to August in the years 2012, 2013, and 2014, concluding that the wind direction required to cause the smoke odour to impact on the applicants' property (between 320° and 40° – or NW to NE) occurs frequently (35.5%, 49% and 35.5% respectively).
- 9.4.12 In respect of wind speed, the expert concluded that the impact on the applicants' property occurred in light wind conditions, with the frequency of those conditions being much lower (3.8%, 2.5% and 2.3% over 2012 to 2014). The expert noted that higher wind speeds act to dilute any emissions from the wood burner.
- 9.4.13 Given that dispersion modelling has not been carried out, and noting the applicants' experiences as recorded in the log and in their submissions, I concluded that wind

¹⁴ United States Environmental Protection Agency Reference Concentration

speeds higher than 3.6m/s (light) could not be discounted in considering the wind speeds likely to cause the discharge to impact on the applicants' property, particularly given the alignment and the relative heights of the two buildings and the location of the opening windows in the applicants' house. There are a number of factors, such as the roof design of the owners' house and the topographical features influencing air flows that would affect the dispersion, which may mean that the smoke odour is not dispersing in winds greater than 3.6m/s in a typical manner or not dispersing over the roof line of the applicants' house. Accordingly a second assessment was undertaken to confirm the dispersion characteristics of emissions under elevated wind speeds in a range greater than 7m/s.

- 9.4.14 During the expert's second assessment, it was observed for the period of time when emissions were visible that the wind was forcing the plume to travel horizontally down the roof line, and this is consistent with evidence provided by the applicants. I consider that there is some effect on the emissions that is likely to be caused by a combination of topography, the roof design and the relative location of the two buildings. I conclude that the emissions under a range of wind speeds when the wind is from the northwest to northeast will reach the applicants' property. I note here that the requirement under Clause G4.3.4 is not that the emissions avoid the applicants' property, but rather whether emissions are disposed of in a way which 'avoids creating a nuisance or hazard to people and other property'.
- 9.4.15 Taking into account the applicants' log, with regard to frequency and duration I conclude that the use of the fire appliance would be typical of the frequency and duration for a fire appliance in use in a dwelling in that location, and that in a range of wind speeds when the wind is from the northwest to northeast emissions will reach the applicants' property.

Intensity/Offensiveness

- 9.4.16 The intensity of an odour is affected by the contaminants in the discharge such as the VOCs and particularly PAHs (refer to the discussion document included as Appendix A in the expert's report dated November 2014) and the concentration of the odour. I accept the expert's findings in regards the levels of contaminants measured (refer paragraphs 4.5 and 7.3) and that the location of the point at which the sample was taken in the first assessment would be typical of other points along the north face of the house.
- 9.4.17 I have considered the emissions from the fire appliance in terms of an 'ordinary reasonable person'. There are a number of factors that can affect a person's experience of an odour, including:
- the character of the odour
 - the intensity or concentration
 - typical frequency and duration (how often it is occurring and/or the length of time it is occurring)
 - the person's level of sensitivity; individuals have a varying level of sensitivity to odours
 - previous experience with a specific odour (refer paragraph 9.4.10).

- 9.4.18 The applicants' submissions and the log indicate that their experience of the smoke odour has a significant impact on the enjoyment of their property, and are of a nature that the applicants find offensive and are concerned about adverse health effects.
- 9.4.19 In terms of the character of wood smoke odour on a spectrum of offensive odours (refer paragraph 9.1.22), I am of the view that an ordinary person would not generally consider wood smoke to be 'highly offensive' but could consider it to be 'unpleasant'. In addition, the frequency of the experience and the location of impact are factors that may mean an ordinary reasonable person's experience of an unpleasant odour changes their perception of that odour. The odour here affects the applicants' house and the applicants report a loss of amenity and that the smoke has affected their ability to regulate moisture and ventilate their house.
- 9.4.20 In this case I have concluded that the emissions from the fire appliance are likely to reach the applicants' property. Based on the observations of the expert and the Health Officers, I accept that at the beginning of the fire the emissions are likely to be visible and that the level of contaminants will peak during this period. The expert noted a faint smoke odour during start up, which dissipated relatively quickly, and once the appliance was up to temperature, the expert noted a very light odour in the applicants' driveway but not within the house. The Health Officers were able to detect the smell of smoke on opening the windows of the applicants' house but reported that it was not a strong smell.
- 9.4.21 I do not consider this effect for its duration constitutes a nuisance; I might form a different view should the level of contaminants remain high during the operation of a fire appliance when the appliance is operating correctly and with appropriate fuel. Taking into account the evidence of dispersion under greater than light winds, I consider the frequency is not such that wood smoke odour would become offensive to an ordinary reasonable person.
- 9.4.22 I note here that throughout the determination process the applicants have consistently maintained that the emissions from the fire appliance during the period of time in which the emissions were monitored and during the second fire test are 'vastly different' from those that the applicants otherwise experience. The applicants' descriptions of the emissions are of 'large quantities of black smoke' and 'thick black smoke'. As the descriptions of the emissions recorded in the applicants' log and submissions are significantly different to when the fire appliance was operating during the test fires, I consider those records are not representative of the odour caused by the emissions when the fire is operating correctly and with appropriate fuel.
- 9.4.23 I reiterate that how the fire appliance is operated and the fuel used is not a factor that can be enforced by way of the Act and its regulations. Accordingly my decision does not contemplate the fuel used or how the appliance may be being operated, but rather is based on the emissions from the fire appliance on the presumption that it is operating correctly and with appropriate fuel. I am of the view that in this respect I can rely on the evidence in the expert's reports.

9.5 Conclusion

- 9.5.1 I acknowledge that the owners have not only installed a model of fire appliance that is NES compliant, but also that it has been installed with additional under floor ventilation and an induced draft fan, and that the owners' expectation that this would comply with the Building Code is not unreasonable.

- 9.5.2 I have considered whether there is a potentially unique combination of features affecting the dispersion of the emissions from the owner's fire appliance and impacting on the applicant's property to such a degree that it is causing a nuisance. Based on the evidence provided and the observations of the expert, I conclude that the emissions from the flue do not avoid the applicants' property.
- 9.5.3 I hold the view that the experts' reports provide sufficient evidence of typical emissions to establish that under correct operation and with appropriate fuel there is some visible emission evident when the fire is starting, there is an intermittent but light smoke odour detectable at the applicants' property, and the level of particulates is not significant in terms of it being a hazard or a nuisance. I therefore conclude that the smoke odour from the fire appliance, when operating correctly and with appropriate fuel, is being disposed of in a way which avoids creating a nuisance to the applicants and the fire appliance as installed complies with Clause G4.3.4.
- 9.5.4 In response to the authority's submission regarding the issue of the building consent (refer Appendix C: under the heading "general"), I note that the reasonable grounds test does not require absolute surety and contrary to the authority's submission, it is not necessary for building consent authorities to require 'a comprehensive report from an air quality specialist' or some such similar assurance before granting a building consent.

10. The decision

- 10.1 In accordance with section 188 of the Building Act 2004, I hereby determine that the fire appliance as installed at 27 Mo Street complies with Clause G4.3.4 of the Building Code.

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 22 July 2016.

John Gardiner
Manager Determinations and Assurance

Appendix A: The relevant legislation

A.1 The relevant provisions of the Act include:

17 All building work must comply with building code

All building work must comply with the building code to the extent required by this Act, whether or not a building consent is required in respect of that building work.

19 How compliance with building code is established

(1) A building consent authority must accept any or all of the following as establishing compliance with the building code:

(a) compliance with regulations referred to in section 20:

(b) compliance with the provisions of a compliance document:

(c) a determination to that effect made by the chief executive under subpart 1 of Part 3:

A.2 The relevant Clauses of the Building Code

Clause A2 Interpretation

Amenity means an attribute of a building which contributes to the health, physical independence, and well being of the building's users but which is not associated with disease or a specific illness

Contaminant has the meaning ascribed to it by the Resource Management Act 1991

Hazardous creating an unreasonable risk to people of bodily injury or deterioration of health

Other property means any land or buildings or part thereof which are—

(a) not held under the same allotment; or

(b) not held under the same ownership—

and includes any road

Clause G4 Ventilation

Objective

G4.1 The objective of this provision is to safeguard people from illness or loss of amenity due to lack of fresh air.

Functional requirement

G4.2 Spaces within buildings shall be provided with adequate ventilation consistent with their maximum occupancy and their intended use.

Performance

G4.3.3 *Buildings* shall have a means of collecting or otherwise removing the following products from the spaces in which they are generated:

...

(i) products of combustion.

G4.3.4 Contaminated air shall be disposed of in a way which avoids creating a nuisance or hazard to people and other property

A.3 The relevant paragraph of the Standards discussed in this determination:

Australian/New Zealand Standard AS/NZS 2918:2001 Domestic solid fuel burning appliances - Installation

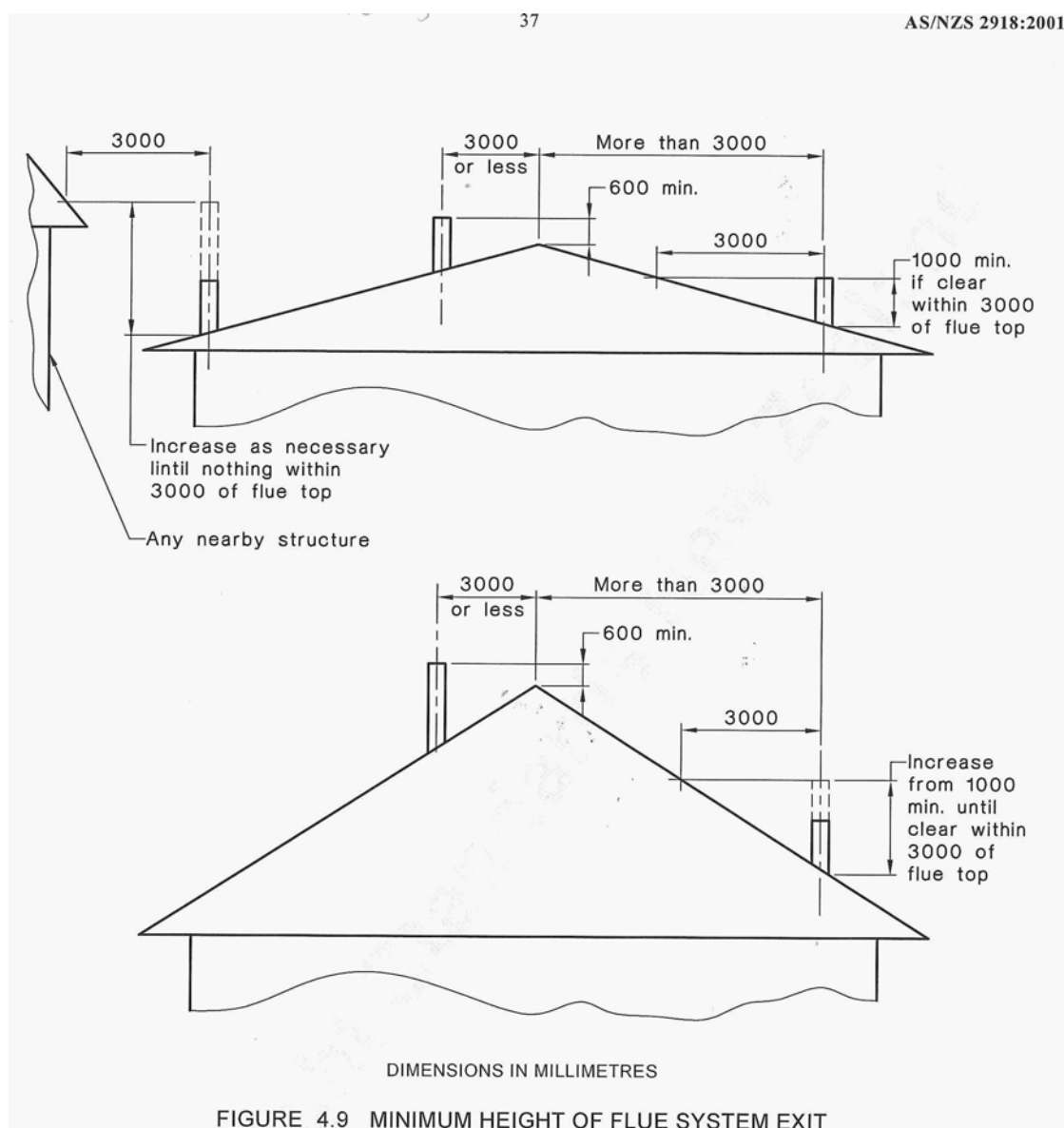
4.9 External requirements

4.9.1 General

...

The flue exit shall be located outside the building (see Figure 4.9) in which the appliance is installed so that –

(f) there is no foreseen (sic) risk of penetration of flue gases through nearby windows or other openings, fresh air inlets, mechanical ventilation inlets or exhausts, or the like.



A.4 The relevant section of the Resource Management Act 1991 discussed in this determination:

2 Interpretation

Contaminant includes any substance (including gases, odorous compounds, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy, or heat—

(a) ...

(b) when discharged onto or into land or into air, changes or is likely to change the physical, chemical, or biological condition of the land or air onto or into which it is discharged

A.5 Section 29 of the Health Act 1956 discussed in this determination:

29 Nuisances defined for purposes of this Act

Without limiting the meaning of the term nuisance, a nuisance shall be deemed to be created in any of the following cases, that is to say:

...

(m) where any chimney, including the funnel of any ship and the chimney of a private dwellinghouse, sends out smoke in such quantity, or of such nature, or in such manner, as to be offensive or likely to be injurious to health, or in any manner contrary to any regulation or Act of Parliament:

Appendix B: Summary of the applicants' odour log.

B.1 The applicant's maintained the odour log from 26 July to 30 September 2014. In the period prior to expert's monitoring equipment being installed (on 5 September 2014), the log shows 25 days where the applicants entered a record.

During the 25 days recorded in the period prior to the expert's monitoring equipment being installed:

- winds were noted as north or northwest on 14 days (including part days)
- the applicants were affected by the smoke emissions (as noted in the comments on the log) on 11 days – wind directions on those days were all north or northwest, with wind conditions recorded as 'light' on 6 of those days 'strong' for the other 5 days
- the intensity of smoke odour recorded ranges from moderate (2 instances¹⁵), strong (7), to very strong (5)
- winds were noted as south or southeast or east on 15 days (including part days)
- the applicants recorded no effect from the smoke emissions on any days where the wind was South or Southeast.

During the period of time the expert's monitoring equipment was installed, the applicants recorded the fire as being lit on 4 occasions; three of these were during a southerly and the applicants recorded no effect on their property. The one instance recorded of the fire lit during a northwest wind was the test fire carried out at the request of the expert; the applicants' comment on the log records 'Non typical smoke colour and odour observed'; no intensity level was recorded.

¹⁵ Recordings on days the applicants were affected by smoke were typically made twice daily; accordingly there may be two 'instances' recorded on one day.

Appendix C: summary of the submissions received from the parties

General	
Ministry for the Environment	The first draft determination stated that the subject wood burner is compliant with the NES. MfE monitors the implementation of the NES and MfE considers it is only involved in this aspect of the determination.
Owner	Some issues raised by the applicants were irrelevant to the matter being determined and should not be considered. A determination is not well suited to identifying and resolving civil nuisance issues.
Applicants	The authority's submissions 'should be excluded' on the basis of self-interest, and the applicants expressed concern regarding the authority 'promoting the views of one industry' through the questionnaire.
Authority	The applicants sought the determination partly on the authority's decision to issue the building consent; this should form part of the matter to be determined. <i>(I note here that the applicants, as owners of other property, could not make an application for determination on the granting of a building consent for building work on adjacent property; however I have included in the discussion some commentary regarding considerations when granting consents for the installation of fire appliances.)</i> Disputes between competing use of land are better dealt with by the courts as a matter of private nuisance; alternatively where they meet the threshold of constituting a nuisance under the Health Act, it will be open to an authority to exercise its regulatory responsibilities under the Health Act. The authority was entitled to be heard and its involvement should not be portrayed as self-interest.
Issue of the building consent	
Applicants	The authority should not have granted building consent and should not issue a code compliance certificate as the building work 'is not compliant with the tenor of the Building Act' in respect of section 3 and Clause G4 of the Building Code. Relevant considerations and information that should have been assessed when the building consent was sought: <ul style="list-style-type: none"> • Location of the sites in a very high wind zone. • Relative siting of the houses; with the neighbouring property upwind, single-storey, and approx 1.5m from boundary, and the applicants' property two-storey with a large number of windows opening to the north. • The pitch of the roof on the neighbouring property, which the applicants consider causes the smoke to be sucked downward by air pressure. Referred to various standards and the relevant district plan, and noted that in times when it was more common for houses to use wood burning fires, the houses were smaller in size and on larger sections with a greater distance between houses, and that there is now a requirement for increased ventilation in homes. If the installation of the fire appliance was part of newly consented works after the fire event, then the new building consent should not have been issued – on the basis that the authority was aware of the matter under consideration and could not be satisfied the newly installed appliance would comply.

Authority	<p>The authority's approach to determining compliance with Clause G4.3.4 is 'reasonable and appropriate'. Previous guidance and a Codewords article from the then Department of Building and Housing¹⁶ did not mention any requirement for information on possible effects of smoke emissions on other property, and the authority's approach is consistent with that guidance. In addition, the authority considers it would not be reasonable to take into account the applicants' expectations of air quality.</p> <p>Before granting the building consent the authority considered the requirements of the Building Code, AS/NZS 2918, the manufacturer's installation instructions, and the NES; the authority has subsequently viewed the completed installation and is satisfied that the work has been completed in accordance with those requirements and the building consent.</p> <p>The original wood burner in the building consent application was identified on the Ministry for the Environment's national list of authorised wood burners, meaning that it had been tested in accordance with AS/NZS 4012 and AS/NZS 4013 and found to meet the NES, including that the discharge is less than 1.5g of particles for each kilogram of dry wood burned.</p> <p>The replacement fire appliance was installed under the first building consent and the consent did not require amendment; the second building consent only covered certain remedial work and did not include the fire appliance.</p>
<i>The fire appliance as installed</i>	
Applicants	<p>After the remedial work, the flue may be lower than it was previously.</p> <p>The expert's first report confirms that the flue height has the potential to impact on the applicants' residence. The flue is directly upwind and the chimney is incapable of dispensing smoke that will avoid the applicants' house.</p> <p>The draft determinations had estimated the distance from the flue to the property to be 20-30m, whereas the applicants calculate the distance to be 10m.</p>
Authority	<p>The fire appliance 'appears to comply with any relevant provisions in G4/AS1; the Verification Method and Acceptable Solution refer to the entire clause and there is nothing to indicate it does not cover G4.3.4</p>
Owners	<p>In regards to the features creating an eddy affecting the dispersion of the smoke, the Health Officers and the expert did not observe this.</p>

¹⁶ Building consent authority update, Department of Building and Housing, January 2011 *How best to certify solid fuel heaters*, and Codewords: Issue 11, Department of Building and Housing, May 2006 *Solid fuel heaters*

Operation of the appliance and frequency of use	
Applicants	<p>They are impacted by the smoke more than 50% of the time, particularly between April to October.</p> <p>The smoke output during the 46 day monitoring period was not typical of that experienced by the applicants prior to the monitoring period beginning. Over the period 26 July 2014 to 20 August 2014 the applicants recorded 19 occasions where they were 'directly impacted by smoke or the wind direction was such that it was likely that we would be impacted by smoke', and the fire was used consistently and regularly during the months of both September and October in prior years.</p> <p>Normal operation of the fire would be the twice-daily use from April to October; "normal conditions" were not observed during monitoring as the fire was not used as normal; the level of "normal" discharge, its frequency and duration could not be measured over the monitoring period.</p> <p>Frequency of use is high compared to what may be assumed for typical use of a fire; from 2011 to 2013 between April through October the fire was generally in use twice daily every day.</p> <p>The fire event proves that the operation of the fire appliance for building inspections and the Ministry's testing versus how the owners operate the fire appliance otherwise 'is vastly different'. The quantity, visibility and amount of smoke in video evidence provided by the applicants is typical for the emissions and contradicts the view that emissions during testing are representative of normal operation. The video and photographic evidence provided demonstrate 'large quantities of black smoke are emitted when no inspection is taking place'.</p> <p>The owners 'cannot and are not willing to avoid creating a nuisance and thereby fail to meet the [performance requirements of the] building code'. The use of the fire appliance on a warm, sunny afternoon at 1pm surpasses the criteria of causing an unreasonable nuisance.</p>
Authority	<p>Any emissions from a solid fuel appliance resulting from any possible unsuitable fuel is outside the control and jurisdiction of a building consent authority, and section 177(1)(a) was not meant to enable the Ministry to consider compliance in the context of an operational woodburner and how it is being used by specific owners.</p> <p>A statement in the second draft that set out the question for the determination suggests that the Ministry cannot have regard to the specific use of the wood burner.</p> <p>It is not appropriate for the Ministry to place reliance on the frequency of use or whether the owners have easy access to firewood when determining compliance.</p>

Owners	<p>The Act is not concerned (or at least much less concerned) with how a building might be used by a particular person at a particular point in time. The Act cannot be determined by the way in which a particular occupier uses a building; how frequently the fire may or may not be used should not be a factor in the consideration of nuisance.</p> <p>The test fire in the expert's first assessment was representative of how the owners use the fire and the fuel used. The owners have stated that the test fire was consistent with the emissions from the fire appliance during its normal operation; emissions are at a greater level for a short period after being lit.</p> <p>Any hypothetical misuse of the fire, including the types of fuel burnt, is irrelevant to making a determination.</p> <p>Video evidence provided by the applicants show smoke emitted shortly after the fire had been lit and over a short period of time. The evidence falls short of that necessary to establish non-compliance with Clause G4.3.4.</p>
<i>Impact of emissions</i>	
Applicants	<p>There is a unique set of circumstances, including the closeness of the dwellings, height and distance of the chimney, and topography that means the applicants' property is impacted by smoke emissions in predominant winds.</p> <p>There has been no analysis of the wind flow between the chimney and the applicants' house. A smoke flare test would show how the smoke travels and whether it avoids the applicants' property, alternatively long term monitoring should be carried out. Video and photographic evidence provided demonstrate the smoke flow, including at higher wind speeds – the smoke does not disperse over the applicants' house but travels along the owners' roofline, falling downward as the roof finishes, along the length of the applicants' house, and through and around the house and section. It is incorrect to say the effect of the roof design and relative location is limited when the fire appliance is operating correctly with appropriate fuel. The contaminated air, whether visible or not, enters the applicants' property.</p> <p>The fire appliance discharges 'thick black smoke across our section'. The photographic and video evidence clearly shows visible smoke emissions that are typical when the appliance is in use. Video evidence shows 'large amounts of visible smoke rolling towards our property rather than the wisps at the time of testing...' and contradicts the owners' claims that the test fire is representative of how the appliance is used.</p> <p>After the fire event there was a marked difference in the air quality in their home, and that it has returned to 'the same poor quality' since the new fire appliance was installed and began operating.</p> <p>The effect of the smoke discharge is impacting on their lives and their ability to enjoy their property. They have sealed window drip trays and have doors and windows closed; this was altering the airflow in the house and there was an increase in moisture levels in their house. They avoid using outside spaces, and a young member of the family has respiratory symptoms that did not present prior to the fire appliance being installed and for which he was hospitalised last winter.</p> <p>The smoke effect has been experienced at the property by others and so is not a nuisance due only to any particular sensitivity of the applicants.</p> <p>Smoke pollution is unreasonable in a new residential area bordering farmland.</p> <p style="text-align: right;"><i>Continued next page</i></p>

Applicants	<p>In regards to loss of amenity, the applicants referred to a recent Environment Court case¹⁷. The applicants consider they cannot enjoy the physical aspects (fresh air) and outdoor spaces on their property due to the emissions. The applicants also considered their circumstances comparable to those in <i>Aitchison v Walmsley</i> in that the owners have not considered avoiding the adverse effects by either installing a different form of heating, relocating the chimney, or using another form of heating already installed as the main source of heat.</p> <p>The applicants provided a number of articles relating to air quality and domestic wood burning appliances in respect of health impacts from smoke pollution (refer Appendix D).</p> <p>The applicants provided an email from an applied social psychologist. The psychologist noted they 'could not identify objective principles' from their discipline that they could use to examine the issue, but 'the basis of the change in outcomes of the draft determinations was unclear given the substantive information was practically identical'. Also the emissions 'might lead to negative psychological effects' on the applicants, and might lead to a loss of amenity. The psychologist referred the applicants to the publications of an Australian environmental psychologist.</p>
Owners	<p>The comments in the applicants' smoke log raise a credible inference that the applicants suffer from an abnormal sensitivity. The second draft of the determination did not address the likelihood that the applicants suffer from an abnormal sensitivity.</p> <p>The applicants could have gathered objective evidence to corroborate their subjective impressions; no testing evidence has been provided.</p> <p>There is a marked difference between the applicants' perception of the smoke produced and that of the Fire and Environmental Health Officers. In a letter from the authority to the applicants on 27 September 2012, the authority noted two of the officers' comments as follows</p> <p style="padding-left: 40px;"><i>...there was a small amount of smoke that was just visible. By opening the upstairs window the smell of smoke could be detected. It was not a strong smell and in the officers' opinion it could not be classified as a nuisance within the meaning of the Health Act 1956.</i></p> <p>The Health Officers have practical experience in this matter; they detected 'not a strong smell' and a 'very light odour'.</p> <p>No weight should be given to the email from the applied social psychologist as the matter is outside the area of their expertise.</p> <p>Statements made by the applicants in their submissions emphasise the emotional significance of this matter to them. The applicants appear to view any use of the fire as unreasonable.</p>

¹⁷ *Aitchison v Walmsley* [2016] NZEnvC 13 (22 January 2016)

Legal test / nuisance	
Applicants	<p>The discharge does not comply with paragraph 4.9.1(f) of AS/NZS 2918; there is a penetration of gases at the windows along the north side of the applicants' house. The Australian Standard AS/1668 also has provisions in regards to nuisance.</p> <p>The conclusion that the particulates are not significant in terms of a hazard is based on a breach of the PM₁₀ levels in the NES standard. The NES is not appropriate to apply to a single household as the standard is for a region; the third draft determination gave the NES compliance too much weight.</p> <p>The applicants referred to the intention of Parliament in establishing legislation for building in New Zealand, and publications from the Ministry for the Environment.</p> <p>The objective Clause G4.1 is 'to safeguard people from illness or <u>loss of amenity</u> [applicants' emphasis] due to a lack of fresh air'; it is a social objective and compliance with the objective clause is mandatory. The third draft incorrectly applied the Building Code; the correct test to be applied is whether the smoke avoids the applicants' property.</p> <p>The common law definition of nuisance is something that interferes with health and comfort, and that includes offensive odours and smoke. An occupier is entitled to enjoyment of their property free from interference. Whether it is unreasonable or not depends on the frequency duration and nature.</p> <p>The measure of nuisance is not a particular level of discharge, but rather an unreasonable interference with the enjoyment of the property; in the absence of data on the "normal use" of the fire the primary evidence is the smoke log completed prior to 5 September 2014 which indicates an unreasonable level of interference and inconvenience is suffered by the applicants. Nuisance considered in Clause E.1 is in terms of a 10% probability; the applicants experience a much greater level of occurrence than 10% and there is no ability for the applicants to mitigate the effect of the smoke odour affecting their property.</p> <p>The action the applicants have had to take in sealing up the house and avoiding opening windows is a loss of amenity and constitutes a nuisance. The level of effect and regularity is a nuisance; this view is supported by case law on the tort of nuisance and also in a previous determination (2008/038).</p> <p>Smoke is a recognised health hazard, and accepting this reduces the issue to the prevailing wind direction and relative position of the properties and whether the smoke avoids the applicants' property. Given the information provided to date and the testing undertaken the applicants consider it is clear that the smoke emissions do not avoid their property.</p> <p>The onus of proof has shifted to the owners to show that the discharge from the fire appliance does not cause a nuisance or hazard; the fire appliance was re-installed after the fire event even though the owners were aware that the original appliance created a nuisance. It is the owners' responsibility to establish compliance with Building Code.</p> <p style="text-align: right;"><i>Continued next page</i></p>

Applicants	<p>Councils in the UK consider smoke from wood burning fires can be a nuisance and in Australia councils are addressing the nuisance arising from cigarette smoke originating from an adjacent apartment. Authorities around the country have banned the use of wood burning fires.</p> <p>The frequency of the nuisance exists for a period of 24 hours per day, being the hours in the day the fire could possibly be in operation and not only those times during which the fire is first being lit or when further fuel is added.</p>
Owners	<p>The objective of Clause G4 is to safeguard people from illness or loss of amenity due to lack of fresh air. As a consequence of how the word amenity is defined, the “loss of amenity” component of this objective only relates to a building’s users; insofar as G4.3.4 relates to other property and people other than the building’s users, its objective is to safeguard from illness. In terms of other property and people other than the building’s users, clause G4.3.4 operates to safeguard from hazard, and the “loss of amenity” component of G4 relates only to a building’s users.</p> <p>The issue is how the word “nuisance” should be correctly interpreted and applied in the context of G4.3.4. Care should be taken when drawing analogies with common law of tort in regards to the intention Parliament was contemplating in G4.3.4. That intention is more likely to have been to align with the existing regulatory baseline of the Health Act 1956 than with the law of civil nuisance.</p> <p>The word nuisance in G4.3.4 is intended to capture situations of obvious harm or offence that fall short of being outright hazardous; it would be wrong to read the clause as importing the entire body of law relating to nuisance.</p> <p>The second draft misinterpreted G4.3.4 by allowing for an approach analogous to the common law tort of nuisance.</p> <p>The application of G4.3.4 in the third draft is legally sound.</p> <p>A previous determination¹⁸ held that the word nuisance in Clause E1.3.1 should not be given a narrow legal meaning and there ‘must be some <u>significant</u> nuisance effect before there can be a breach of Clause E1.3.1’ (emphasis added).</p> <p>Subjective evidence should be treated with caution; the nuisance test is an objective one.</p> <p>The applicants bear the burden of proof, and that this has not been shifted by the existence of the expert’s report. No objectively significant effect has been proved on the balance of probabilities.</p>
Owners	<p>Referring to the applicants’ reliance on <i>Aitchison v Walmsley</i>: the decision in the context of the RMA should not influence the outcome of the determination, and the options suggested by the applicants are unreasonable in the circumstances where the owners have a fire appliance that was installed in accordance with the relevant standards and the requirements of the building consent.</p>

¹⁸ Determination 2010/059 Disposal of surface water collected behind a retaining wall at 336A Beach Road, Mairangi Bay, North Shore City (*Department of Building and Housing*) 12 July 2010

Authority	<p>The approach taken in the second draft determination to assessing nuisance is not consistent with the regime in the Act:</p> <ul style="list-style-type: none"> • The assessment as to whether proposed building work complies must occur at the time an authority is determining whether to grant building consent; it is not open to the authority to take into account how a particular owner may use the building work once constructed or how particular neighbours may experience that use. • The test for compliance must be one that is capable of being applied by an authority at the time of deciding whether to issue a building consent. <p>Appropriate reliance was placed on the NES and the physical attributes of the fire appliance and flue.</p> <p>The applicants are seeking to apply an incorrect test for code compliance.</p> <p>The evidence falls well short of establishing that nuisance exists on an objective approach.</p>
<i>The expert's first assessment and report</i>	
Applicants	<p>In regards to the testing carried out, the applicants held concerns regarding:</p> <ul style="list-style-type: none"> • The test area versus the area of the property impacted by the discharge, being the whole of the north face. • The sampling period, and the conclusions drawn by the expert in regards to wind speed and dispersion. • The frequency that the applicants experience being vastly different to the 3% calculated by the expert; the applicants experience the discharge in all wind conditions (other than southerlies), including stronger winds than that stated in the expert's report and when there is no wind. <p><i>(The expert confirmed at the hearing that the 3.8 % stated in the report includes calm conditions even though it would be normal for smoke discharge to rise straight up when conditions were totally calm.)</i></p> <p>Data from the background monitoring site is invalid; the site was not north of the wood burner and was placed next to the road, it was also within the wood burner impact zone (an annotated site plan was provided by the applicants).</p> <p>The applicants' experience is that more than half the time (conditions where there is wind from the north or no wind at all) the weather conditions mean the applicants' property is, or can be, impacted by smoke from the neighbouring property. There is no scientific reasoning provided in the report to support the assertion that data from stronger wind conditions should be excluded; the smoke travels a matter of metres into the applicants' house. The expert made a statement regarding dispersion under strong wind conditions that was unsupported by evidence.</p> <p>Though the expert's report states that wind direction is northerly 36% of the time, the applicants' experience is that between April to October they could not or would not open the windows due to actual or expected wind conditions causing impact on their property from the smoke discharge and this would be at least 50% of the time. The report does not comment on the times there is no wind, on these occasions the smoke sits around the applicants' house.</p> <p>There was insufficient data from the monitoring carried out to support the conclusion presented in the first draft determination.</p> <p style="text-align: right;"><i>Continued next page</i></p>

Applicants	<p>The owners chose not to use their fire during the period of time in which the testing was being carried out. The wind conditions during the monitoring period were consistent with conditions prior to 5 September 2014 and prior years when the fire would have been in operation twice-daily. The operation of the fire during testing was not usual in terms of both the frequency of use and the discharge; the owners had undermined the determination process. The principles of natural justice have not been achieved in that there was not normal use of the fire during the monitoring period.</p> <p>MfE has previously stated in its compliance strategy for the Regulations ‘some pollutants (eg. PM₁₀) do not have a safe threshold below which no adverse health impacts are experienced’; it was incorrect for the expert to conclude there is unlikely to be any potential adverse health effects associated with the exposure. The conclusion in the expert’s first report regarding what was or was not smoke odour nuisance was beyond the expert’s remit and area of expertise; a conclusion on nuisance or loss of amenity is more suitably considered by the expertise of an environmental psychologist.</p> <p>The applicants had also sought advice from another air quality scientist (“the consulting expert”), and are of the opinion that the results of the first testing was inconclusive, the wrong kind of testing had been performed, the report does not comment on pollutants in smoke other than PM₁₀ levels and PM10 concentrations are not an appropriate measure for air quality.</p> <p>The applicants consider the conclusion in the third draft determination was based on the expert’s reports and that these cannot be relied on.</p>
Owners	<p>The independent expert evidence is persuasive and ought to be given significant weight. The expert’s conclusion is consistent with the findings of the Health Officers.</p> <p>The evidence is that the discharge is not at a level such that it is causing a nuisance.</p> <p>No weight should be placed on the applicants’ hearsay evidence attributed to the air quality scientist the applicants approached.</p>
<i>The expert’s second assessment and report</i>	
Applicants	<p>The testing methodology undertaken by the expert in November 2015 was inadequate because the location of the testing was at ground level, some ‘36m away from the chimney’ and at a height of less than 1m, rather than at the height of the second level where the applicants experience the greatest smoke effect, which is approximately 10m from the chimney at a height of 4-5m.</p> <p>The further testing concluded that the nuisance level increased under stronger wind conditions.</p> <p>Disagreed with the expert’s view regarding the use of a flare.</p> <p>There is no scientific evidence to support the conclusion reached in the third draft.</p>
Authority	<p>It is unclear on what basis the applicants claim the PM₁₀ levels were more than three times the 24-hour average for the NES standard; the expert’s second report indicates it is extremely unlikely that the NES levels would be exceeded as a result of the operation of a wood burner.</p> <p>There is no inherent unfairness in the way the testing has been carried out and the conclusions reached in the expert’s second report.</p> <p>There is sufficient expert evidence to determine the matter; there needs to be finality in the determination process – it does not contemplate indefinite delay to accommodate further investigations and it is unsatisfactory to have further delays when the issue of a code compliance certificate is at large.</p>

Owners	There is sufficient expert evidence to determine compliance; no further testing or additional steps are required. The applicants have not produced objective or expert evidence to support their criticisms of the expert's methodology and findings. It was not accepted that one determinative factor should be how visible smoke plumes or emissions respond to wind conditions greater than 11m/s from the northwest/northeast. (Consent was given for only appropriate fuels to be used in the second assessment.)
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C.2 As noted in paragraph 8.3.3, the applicant's submission included a number of references to various articles. Links to those articles are copied below:

<http://www.ecan.govt.nz/publications/Reports/air-report-emissions-residential-wood-burning-appliances-nz-000805.pdf>

http://www.ehhi.org/woodsmoke/health_effects.shtml

<http://www.epa.nsw.gov.au/woodsmoke/>

<http://www.health.nsw.gov.au/environment/factsheets/Pages/wood-smoke.aspx>

<http://www.mfe.govt.nz/sites/default/files/air-quality-compliance-strategy.pdf>

<http://emissionimpossible.co.nz/wp-content/uploads/2013/12/2013-WHO-review-summary.pdf>

<https://www.mentalhealth.org.nz/assets/ResourceFinder/Healthy-places-healthy-lives-PHAC.pdf>

<http://www.nrc.govt.nz/For-Schools/School-information-packs/Air-quality/>

Appendix D: The expert's first and second reports