Determination 2017/072

Dispute about the compliance of the ventilation system and the installation of kitchen appliances to a café kitchen at 387 Tamaki Drive, St Heliers, Auckland

Summary

This determination is about matters associated with the fitout of a café kitchen located on the ground floor of a three-storey building. The determination considers the installation and compliance of solid fuel cooking appliances installed in the café kitchen as part of the consented work, and the compliance of the ventilation system to the kitchen.

Contents

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, Katie Gordon, Manager Determinations, 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 owner of the building, Magellan Investments Ltd ("the applicant")
- Auckland City Council ("the authority"), carrying out its duties as a territorial authority or building consent authority
- HipGroup Ltd and St Heliers Bay Café & Bistro Limited ("the tenant"), as the tenant of the building and the owner of the café where the kitchen fitout took place.

[1] The Building Act, Building Code, Acceptable Solutions and Verification Methods, 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.

1.3 This determination arises from the café tenancy fitout on the ground floor of the applicant's building and is in relation to the kitchen ventilation system and appliances as installed (described in paragraphs 2.3 and 2.4).

1.4 The applicant sought a determination on the following matters:

1. Does the building consent and the code compliance certificate issued permit the following -
   (a) The use of solid fuel appliances in the kitchen
   (b) The installation and/or use of a solid fuel (e.g. charcoal) fired chargrill in the kitchen
   (c) The installation and/or use of a dual fuel (e.g. wood & gas) fired pizza oven[2] in the kitchen
2. Does the kitchen extract system comply with the Building Code for the extract of cooking fumes from -
   (a) A mix of solid and gas fuel appliances, or alternatively
   (b) Gas fuelled appliances only
3. Does the rotisserie grille installation comply with the Building Code

1.5 The matters to be determined[3] are therefore:

- whether the authority was correct to grant building consent No. B/2012/4175
- whether the authority was correct to issue the code compliance certificate
- whether the building consent covered the installation of solid fuel appliances
- whether certain appliances, and the gas system installed as part of the kitchen fitout, complied with Clause C1[4], G11, G12, and G13 of the Building Code that was in force at the time the consent was issued.

1.6 I note a determination must be defined in relation to the matters to be determined under section 177 of the Act. I consider the above matters to be determined encompass the matters raised by the applicant in paragraph 1.4.

1.7 The determination is confined to the compliance of the ventilation system to the kitchen and the compliance of two kitchen appliances (the chargrill and the deck oven). It does not consider matters that are not directly related to this. It does not consider other areas of the café or building, or other clauses of the Building Code.

1.8 In making my decision, I have considered:

- the submissions of the parties
- the reports of the expert commissioned by the Ministry to advise on this dispute ("the expert") and the subsequent supplementary and addenda reports
- the report of a second firm of consultants asked to review the report of the expert ("the review consultant")
- the other evidence in this matter.

The decisions to make this determination under section 184 of the Act and engage a person to assist under section 187 of the Act were made by the previous Manager Determinations.

[2] Herein referred to as the deck oven
[3] Under sections 177(1)(a), 177(1)(b), 177(2)(a) and 177(2)(d)
[4] Clause C1 'Outbreak of fire', that was in force at the time the consent was issued on 2 November 2012.

1.9 NZS 5261: 2003 Gas Installation was the standard cited in the Acceptable Solution for Clause G11 at the time the building consent was issued. In their submissions, the applicant has made extensive reference to the requirements of AS/NZS 5601.1:2013 Gas installations; Part 1 General installations. The requirements for NZS 5261 and AS/NZS 5601.1 are similar, and in many places the requirements are the same (AS/NZS 5601.1 is cited in the current version of G11/AS1).

1.10 I understand separate proceedings have been taking place in the High Court. These proceedings will not be commented on in this determination.

1.11 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.

2. The building work

2.1 The building is a 3-storey building that was constructed in 2011. The building is mixed use, consisting of:

- Ground floor: a commercial tenancy, the café and kitchen, carparking, and a covered plaza
- First floor: five office tenancies
- Second floor: three residential apartments.

2.2 The café and kitchen was constructed on part of the ground floor after the building itself was completed.

2.3 The appliances

2.3.1 The café fitout included a kitchen with the following appliances installed:

- A solid fuel (charcoal) chargrill with a vertical gas-fired rotisserie located above the chargrill. The chargrill and rotisserie were later replaced with a gas fired oven, in or about October 2013.
- A dual fuel (gas and wood) pizza oven ("the deck oven"). The deck oven has electrical and gas connections, and a spigot for direct connection to the ventilation system. The oven has its own filters. The installation instructions for the deck oven provide five options for the management of the exhaust from the oven including; a dedicated flue, discharging to an exhaust hood above, or direct connection to a kitchen exhaust system.
- As installed the deck oven is connected directly to the kitchen exhaust system. The oven has a water spray filter in the exhaust stream and cool make-up air intake downstream of the water spray filter.
- the commercial kitchen also includes other appliances including (but not limited to), a combination oven, gas fryers, gas griddle and a gas top oven.

2.4 The ventilation system

2.4.1 The ventilation system as consented is shown in Appendix B. It consists of the following:

- the extract system: two extract fans serving the main hood, one extract fan serving the secondary hood for the chargrill and one extract fan serving the deck oven. The four fans are ducted into a single exhaust riser duct

- the extract fans installed are centrifugal with open motors, air is drawn through the motor windings for cooling
- the exhaust riser duct runs vertically to an exhaust cowl at roof level with a sound attenuator at the base of the riser. The exhaust duct is under positive pressure.

2.4.2 As originally built, make-up air was supplied via a full height air inlet louvre at ground floor (approximately 3.9m high x 0.59m wide) leading to an air enclosure containing filters and sound attenuation to discharge into the kitchen as make-up air. It is understood that a wall installed as part of the kitchen fitout blocked this entry point. A fan supplying approximately 200[5] l/s, duct and supply grille (300 x 300mm) was installed over the dishwash area. This system supplied insufficient make-up air to the kitchen and the balance would have had to be provided via natural ventilation (open doors/windows). It is noted that the full height inlet louvre was provided as part of the base build and is likely to have provided sufficient make-up air to the kitchen.

2.4.3 In the period since the determination application was received, two additional 600x600 'egg crate' grilles have been installed from the rear lobby into the air plenum behind the 3.9x0.59m louvre: an internal door to the kitchen is required to be kept open to allow fresh air coming from the egg crate grilles to enter the kitchen.

3. Background

3.1 On 2 November 2012, the authority issued building consent No. B/2012/4175 for the café fit-out, including the café kitchen.

3.2 The approved consent included a Producer Statement – Design ("the PS1") for 'Mechanical ventilation to kitchen' that referred to the kitchen ventilation plan dated 19 September 2012 (refer Appendix B). The PS1 said 'The design has been prepared in accordance with: … AS1668.2 2002'. The application for building consent also noted the means of compliance for Clause G4 as G4/AS1.

3.3 A 'Gasfitting certificate of compliance' (No. 712873) for the installation of the gas appliances dated 27 November 2012 was received by the authority on 12 December 2012. On 18 December 2012, the authority issued a code compliance certificate for the café fitout. The café opened shortly after and according to the applicant used solid fuel (wood) in the chargrill and deck oven.

3.4 In late October 2013, the tenant replaced the solid fuel chargrill and rotisserie with a gas-fired oven.

3.5 On 3 March 2014, the Ministry received an initial application for determination. I note that in the interim, between October 2013 and March 2014, various proceedings had taken place between the parties – these are not part of this determination.

3.6 On 17 March 2014, the tenant's legal advisor wrote to the Ministry enclosing the judgement related to the High Court proceedings and a 'deed of settlement' between the applicant and the café, noting the determination application should not proceed for the following reasons:

- The application has not been properly served to the tenant in accordance with section 178 of the Act.

[5] The tenant's engineer says this figure is 580l/s

- The application is not genuine and is vexatious or frivolous under section 179 of the Act. The matters to be determined do not come within section 177 of the Act and the tenant have ceased using solid fuel cooking methods and will not be resuming (if ever) until the court proceedings have concluded.
- The application is inappropriate under section 182 of the Act as there are currently court proceedings between the applicant and the tenant.

3.7 On 20 March 2014, the applicant emailed the Ministry and the authority requesting the application proceed and noting the following points in response:

- The tenant has been properly served a copy of the application. The applicant has no objection to the tenant being 'a party' to the determination.
- The ongoing litigation in the High Court is not directly relevant to the application for determination.
- The application falls within section 177(1)(a) and (b) of the Act in terms of the compliance with the Building Code, and the issue of the code compliance certificate.
- The dispute regarding the solid fuels is still a 'live issue' between the parties.
- Section 182 of the Act does not apply as the High Court proceedings preceded the application.
- The application is not frivolous or vexatious.

3.8 On 24 March 2014, the Ministry sent a letter to the parties indicating that the determination application was to proceed for the following reasons:

- The issues relating to the parties and persons with an interest being provided with a copy of the application under section 18(2) have been resolved.
- The matters to be determined fall within the scope of section 177(1)(a) and 177(1)(b).
- Section 182 of the Act does not stop a party from making an application for determination when current court proceedings are in place, or have been in place in the past.
- The application was not considered frivolous or vexatious under section 179 of the Act.

4. Submissions, reports received, and the draft determinations

4.1 General

4.1.1 Over the course of the determination, numerous detailed submissions were received from the parties, as well as a number of reports. The submissions received are recorded in Appendix C. The parties' submissions on the application for determination, the various reports received, the parties' submissions in response to the reports, and the parties' responses to the draft determinations are summarised in Appendix D.

4.1.2 For clarity, the various parties are repeated here:

- the applicant and the applicant's engineer
- the tenant, acting through a legal advisor and the tenant's engineer

- the authority
- the expert engaged by the Ministry (producing an initial report, two addendum reports and a peer review of the tenant's engineer's report)
- the review consultant engaged by the Ministry.

4.2 The expert's initial and addendum reports

4.2.1 As mentioned in paragraph 1.8, an independent expert[6] was engaged to assist the Ministry. The expert is employed by a consulting firm with mechanical engineering expertise. The expert inspected the building on 11 April 2014 and 17 April 2014, providing a report ("the expert's initial report") dated 26 May 2014 which was provided to the parties on 27 May 2014. The expert's assessment of compliance is based upon the standard against which the design of the mechanical ventilation is completed being AS 1668.2[7] as referenced in the Acceptable Solution to Clause G4 Ventilation, G4/AS1, and in the building consent application.

4.2.2 In addition, the expert was asked to review the as-built work in relation to the provision of make-up air to the kitchen as described on the PS1 and the accompanying plan dated 19 September 2012. The expert's addendum report ("the addendum report") was received on 23 June 2014 and sent to the parties for comment on 25 June 2014. The expert's initial and the addendum reports are summarised in Appendix D.

4.2.3 The expert was later engaged to complete a supplementary report, refer paragraph 4.4.7.

4.3 The first draft determination and submissions received

4.3.1 A draft determination was issued to the parties for comment on 26 June 2014 ("the first draft"). The decision in the first draft considered:

- whether the ventilation system to the kitchen met the Building Code, and
- whether the authority was incorrect to issue the code compliance certificate

4.3.2 The findings in the first draft were based on the submissions and the expert's reports received to that date. In summary, the draft determination concluded that:

- There was a lack of information provided for the building consent regarding the appliances to be used.
- The PS1 calculations show that the extract hood has been designed for gas only. A solid fuel appliance was installed requiring a higher velocity factor than allowed for in the PS1. The PS1 refers to a separate duct to the chargrill that does not appear to have been installed.
- The as-built kitchen extract system has only a single extract duct. The expert considers the installed extract fans are not adequate for their intended use.
- The make-up air supply to the kitchen was not adequate for the extract system to operate correctly.

[6] During the course of the determination, reports were obtained from other personnel within the same consulting firm
[7] AS 1668.2-2002: The use of ventilation and air-conditioning in buildings, Part 2 Ventilation for indoor air contamination control

- The as built ventilation to the kitchen does not comply with Clause G4 and accordingly the authority was incorrect to issue the code compliance certificate.
- Further detailed and invasive investigation is necessary to confirm how the extract system has been installed and is performing.
- There was limited access for the expert to determine what has been installed, and therefore limited access for maintenance of the system. The maintenance does not appear to be adequate.

4.3.3 The applicant responded to the draft determination on 30 June 2014 saying that the draft was not accepted as the draft decision it did not consider all the matters sought by the applicant (refer paragraph 1.4 and Appendix D). A second draft determination was sought that addressed these matters.

4.3.4 On 3 July 2014 the Ministry sought clarification on what the applicant would like to be determined regarding the rotisserie grille as this has been replaced. On the same day, the applicant responded that the rotisserie grille was installed with a vertical burner behind the skewers in close proximity to the grease filter in the hood, noted there was a potential fire risk and the applicant submitted the rotisserie did not comply with AS1668.2 at section C7.1 relating to the minimum distance required between a source of ignition and filter for gas fuels.

The tenant's engineer's report

4.3.5 The tenant engaged a chartered professional mechanical engineer ("the tenant's engineer") to review the ventilation system and respond to the expert's report, producing a report dated 22 July 2014 (refer Appendix D).

4.3.6 The Ministry asked its independent expert to review the tenant's engineer's report. The expert provided a report dated September 2014 ("the peer review"), and this was forwarded to the parties on 3 September 2014.

4.3.7 A draft version of the peer review report was sent to the parties on 27 August 2014 at the request of the applicant. The applicant provided detailed responses to the draft report on 29 August 2014 and 3 September 2014. Comment on the draft report will not be discussed in this determination as the final version supersedes it.

4.3.8 On 15 September 2014, the applicant noted concerns with the expert's peer review report, and requested an independent review from an engineer experienced in this type of work.

4.3.9 On 16 September 2014, the applicant provided a copy of a report (dated 21 March 2013) of a site test of the extraction system witnessed by the applicant and the tenant. The test measured the total airflow from the kitchen extract fans through the common riser duct to outside.

The review consultant

4.3.10 As noted in paragraph 1.8, an independent review consultant ("the review consultant") was engaged to assist the Ministry. The parties' acceptance was sought prior to engaging the review consultant and no objections were raised. The review consultant is a chartered professional engineer. The review consultant visited the site on a number of occasions and held separate meetings with both the applicant and the tenant, providing a final report dated 2 December 2014 which was provided to the parties on 3 December 2014.

4.3.11 The review consultant's report reviewed the kitchen ventilation system as consented and as installed and provides an independent opinion on the compliance of the system with the Building Code. The review consultant also reviewed the expert's reports. The review consultant's findings are summarised in Appendix D.

4.4 The second draft determination and submissions received

4.4.1 A second draft determination was issued to the parties for comment on 14 March 2015 ("the second draft"). The decision in the second draft considered:

- Whether the kitchen ventilation system as consented met the Building Code in respect of Clause G4
- Whether the authority was correct to issue the building consent
- Whether the kitchen ventilation system as-built complied with Clause G4
- Whether the authority was correct to issue the code compliance certificate

4.4.2 The findings in the second draft were based on the submissions and the expert's reports received to that date. In summary, the second determination concluded that:

- The building consent allowed for the use of at least one solid fuel appliance, being the chargrill however, the consent did not detail the deck oven and ventilation sufficiently.
- The kitchen ventilation system as consented, and the as-built work did not comply with Clause G4 with respect to the use of either solid fuel or gas fuelled appliances.
- The rotisserie grill and chargrill have been removed by the tenant. Relying on photographic evidence, the consent documentation does not state only one of the appliances was to be used at the same time, and the extract airflow does not comply with AS1668.2.
- The make-up air was insufficient.
- The PS1 did not correctly identify the means of establishing compliance with Clause G4 of the Building Code.

4.4.3 The parties provided responses to the second draft determination as documented at Appendix C and summarised at Appendix D.

4.4.4 On 28 April 2015, the Ministry sought clarification from the applicant as to why it considered neither the chargrill/rotisserie nor the deck oven complied/complies with Clauses C1[8], G12, and G13 of the Building Code. The applicant provided its reasons why this was the case in a detailed response dated 28 April 2015.

4.4.5 On 1 May 2015, the tenant's engineer responded noting Clauses G12 and G13 are about the water and drainage services to the kitchen equipment. The tenant's engineer does not consider this in dispute and noted the works would have needed to be undertaken or under direction of a registered plumber. There is no evidence Clause C1 was not complied with.

4.4.6 On 9 June 2015, the applicant's engineer responded noting the matters to be determined had not been amended by the applicant or the Ministry.

[8] Clause C1 'Outbreak of fire', that was in force at the time the consent was issued on 2 November 2012.

The expert's supplementary report

4.4.7 The expert was re-engaged to produce a supplementary report at the request of the applicant. The expert visited the site on 31 July 2015 and produced a report dated 4 September 2015 which was provided to the parties on 8 September 2015. The report covered the following:

- Compliance of the (removed) rotisserie/char grille with Clause C1
- Deck oven compliance with Clause C1, G12, and G13
- Gas system compliance with Clause G11

4.4.8 The expert concluded the items listed above complied with their respective Building Code Clauses.

4.4.9 I have summarised the expert's supplementary report, and the party's further submissions, in Appendix D.

4.5 The third draft determination and submissions received

4.5.1 A third draft determination was issued to the parties for comment on 8 March 2016 ("the third draft"). The decision in the third draft was similar to that in the second draft, but the third draft also considered:

- the likely compliance of the altered make-up air system
- the compliance of the two kitchen appliances in relation to Clauses C1, G11, G12, and G13.

4.5.2 The submissions of the parties have been considered in full. A significant amount of information has been provided which, in part, reiterates previous submissions. I have summarised only additional information in Appendix D.

4.5.3 The Ministry received multiple submissions from the applicant in response to the third draft. The applicant's submission dated 22 April 2016 reiterates points made in earlier submissions and some additional material. The applicant asked whether or not the tenant is permitted to use solid fuels in the future. As stated in earlier drafts, I have presented the matters to be determined that are within the scope of my powers in paragraph 1.4; this does not include the possible future use of solid fuels.

4.5.4 In summary, the applicant presented the following position in response to the decisions presented by the Ministry in the third draft:

- agrees that the authority incorrectly exercised its powers in issuing the Building Consent
- agrees that the ventilation system to the kitchen at the time the code compliance certificate was issued did not meet the requirements of Clause G4, and accordingly the authority incorrectly exercised its powers in issuing the code compliance certificate for the kitchen fitout
- disagrees that the chargrill and rotisserie complied with Clauses C1 and G11 of the Building Code
- disagrees that the deck oven complies with Clauses C1, G12, and G13 of the Building Code
- disagrees that the deck oven now complies with Clause G11.

4.5.5 On 21 October 2016, the applicant confirmed the matters to be determined were as stated in paragraph 1.4 of this determination.

4.5.6 The Ministry received multiple submissions from the tenant in response to the third draft. In its submission dated 25 August 2016, the tenant submits that the determination process is being used for purposes other than for which it is intended. The tenant considers that there are no outstanding issues, given:

- The chargrill and rotisserie were removed in 2013
- The tenant is not and does not intend to use solid fuels in the future
- Additional ventilation has been provided in the form of two fresh air make up grills.

4.6 The expert's second supplementary report

4.6.1 The expert was re-engaged to produce a second supplementary report. The expert produced a report dated 13 December 2016 which was provided to the parties on 15 December 2016. The report considered the following:

- whether the exhaust from the chargrill and the deck oven (as solid fuel appliances) can be safely discharged into the extract system to satisfy Clause G4
- the adequacy of the makeup air as it is now
- the electrical safety of the exhaust fan motors
- the impact of the electrical switchboards on egress from the kitchen.

4.6.2 The expert concluded that:

- The exhaust system can leak under positive pressure which can create a nuisance to people by leaking the products of cooking and combustion to other spaces in the building.
- The provision of a water mist (as provided to the deck oven) or spark arrestor (as provided to the rotisserie/chargrill), if interlocked to the fuel source or to an alarm, would form the basis of an alternative solution proposal to Clause G4 subject to peer review.
- The current installation does not comply with the maximum pressure drop limits of G4/AS1. The make-up air could operate at a higher pressure drop than allowed by G4/AS1 but still provide a compliant solution that met Clause G4.
- The extract fans should be protected by overload thermal protection.
- Unimpeded space of at least 600mm was required around the electrical switchboard with the switchboard doors in any position.

I have summarised the expert's second supplementary report in Appendix D.

4.7 The fourth draft determination and submissions received

4.7.1 A fourth draft determination ("the fourth draft") was issued to the parties for comment on 26 February 2017. The decision in the fourth draft was similar to that in the third draft, but the fourth draft:

- confirmed the decision to grant building consent No. B/2012/4175

- reversed the code compliance certificate issued in respect of the building consent
- considered the compliance of the ventilation system to the kitchen, and the chargrill / rotisserie and deck oven.

4.7.2 The authority responded to the draft determination on 14 March 2017. The authority did not accept the draft saying it does not accept the statutory criteria for the issue of the building consent and the code compliance certificate were not satisfied, and it referred to submissions it had already made on this matter.

4.7.3 The applicant made a submission on 8 June 2017. The applicant's position (in summary) was that:

- The applicant 'disagrees with the Ministry's decision in all respects except for agreeing that the code compliance certificate should be revoked'.
- The Ministry had 'failed to have regard to the Gas Act 1992' and in particular the matters raised by the applicant with respect to the 'mandatory requirements of the Gas Act 1992 and regulations passed under that Act'.
- The applicant 'does not wish to receive any further draft determinations and it respectfully requests the Chief Executive to deliver his determination without further delay.'

The submission is further summarised in Appendix D.

4.7.4 The tenant made a submission on 24 July 2017. The tenant's position (in summary) was that:

- Much of the determination and submissions received relate to the chargrill and rotisserie; this appliance was removed in October 2013.
- The tenant had 'made it clear that it does not and will not use solid fuels in the deck oven' and provided four letters where this had been previously stated.
- The draft determination incorrectly records that the tenant may use solid fuel in the deck oven in future. The deck oven will be removed 'within the month'. 'This is not to be taken as an acceptance that there is, or ever was, any problem with the deck oven …' and was done 'as a matter of pragmatism'
- 'Further ventilation' has been added, … it will also replace the solid door at the rear of the kitchen with a screen door.

The submission, which included a detailed response from the tenant's engineer, is summarised in Appendix D.

4.7.5 The applicant made a submission on 4 August 2017. The applicant reiterated matters raised in earlier submissions including specific response to comments made by the tenant. The applicant's position (in summary) was that:

- There have 'been no changes whatsoever to the matters raised in the [owner's] application'
- The applicant did not accept the assurance that the tenant 'would never again use solid fuels in the deck oven'.
- 'The determination is not concerned with what [the tenant] has done since the building consent was granted and the code compliance certificate was issued.'

The submission, which included a detailed response from the applicant's engineer plus annexures, is summarised in Appendix D.

4.7.6 The tenant and applicant each made a submission on 22 and 29 August 2017 respectively. These submissions reiterated matters raised previously.

5. Discussion: the building consent

5.1 General

5.1.1 Under section 49 of the Act an authority must grant a building consent if it is satisfied on reasonable grounds that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications that accompanied that application. Section 19(1)(b) states an authority must accept compliance with an Acceptable Solution as establishing compliance with the Building Code.

5.1.2 In this case, the PS1 accompanying the approved building consent stated that the ventilation system has been designed in accordance with AS 1668.2 which is cited in the Acceptable Solution for Clause G4, being G4/AS1. No alternative means of establishing compliance was provided to support the application for building consent.

5.1.3 In order to determine whether the building consent was correctly issued in this case, I will look at the consented information provided for the following:

- The solid-fuel appliances
- The discharge from solid fuel appliances into the extract system
- The air flow calculations
- The make-up air supply

5.2 The solid fuel appliances

5.2.1 It is unclear from the kitchen equipment list whether solid fuel appliances are identified. The kitchen equipment list included with the approved building consent included an unspecified "chargrill" and "deck oven", and in respect of these two appliances says, 'All services TBC by supplier'. Services required for both appliances (gas or electricity) are not stated.

5.2.2 The term "deck oven" is applied to ovens where conduction is used for cooking from the flat deck below the item being baked. A deck oven can include the oven as installed but it cannot be inferred from this that it is to be a solid fuel appliance. A chargrill can run solely on gas or electricity, but it can use charcoal as is the case here (this was not clear from the approved building consent documentation).

5.2.3 The PS1 (and the associated plan) refers to the deck oven as a "Beech oven" but only states how much air it requires ('700l/s'). Beech ovens are made by an Australian manufacturer who provides a wide variety of ovens for commercial kitchens, including wood-fired pizza ovens. (I note that this oven is described in later correspondence as a "pizza oven" which is more likely to mean a solid fuel appliance.)

5.2.4 The PS1 submitted states 'chargrill hood requires 1.5m x 1.5m hood with spark arrestor filters…via a separate duct'. The review consultant is of the opinion that the designer was aware that a solid fuel appliance (the chargrill) was proposed for use in the kitchen.

5.2.5 The PS1 states that the deck oven exhaust is to be fitted with a 'waterwash system per manufacturer' which the tenant submits indicates that the deck oven was to be used with solid fuel.

5.2.6 The applicant refers to the drawing accompanying the PS1 to support the view that the consent included solid fuel appliances saying that this 'clearly shows that the gas fuelled and solid fuel appliances are combined into a single duct riser'. It is noted that the drawing accompanying the PS1 (refer Appendix B) shows single ducts running from each of the four extract hoods to the exhaust riser; no separate duct is shown to the chargrill hood. It is not known why a separate duct was not provided.

5.2.7 The tenant submits the PS1 does not refer to a 'separate duct' but instead a 'separate duct fan'. I note the PS1 is hand-written and lacks clarity; the work it describes is open to interpretation in some respects.

5.2.8 The applicant alleges the building consents were 'obtained dishonestly' and the author of the PS1 made false statements in the PS1 that a separate duct would be provided when the plan accompanying the PS1 showed only one exhaust duct. In response to the statement in the third draft determination that the PS1 was wrongly issued because it incorrectly identified the means of establishing compliance with Clause G4, the applicant has alleged that the conduct of the tenant's engineer was 'much more serious and sinister' than incorrectly citing the means of compliance. However, the applicant's allegations are all based on inferences from the documentation and the determination process is not the appropriate forum for investigating such allegations.

5.2.9 There is no other information in the approved building consent that describes the kitchen equipment to be installed. The rotisserie, included in the same appliance containing the chargrill, was not noted on the kitchen equipment list.

5.2.10 The building consent does not clearly describe the kitchen equipment to be installed. It is likely that the chargrill would be run on a solid fuel (charcoal) and in my view, this is confirmed by the PS1 requiring a separate duct to this appliance along with the spark arrestors. I consider the building consent included the use of at least one solid fuel appliance, being the chargrill.

5.2.11 The applicant contends that the gas appliances used must be listed on the register of compliant appliances managed by Worksafe New Zealand[9]. I note this requirement does not apply to appliances that are imported by the end-user, or where 11 or fewer items are imported. It is not known whether either circumstance applied in this case.

5.3 The discharge from the solid fuel appliances

5.3.1 As originally installed, the discharge of the solid fuel appliance into the extract system did not satisfy Clause G4. In principle, the use of a water mist and spark arrestor could form the basis of a compliant alternative solution but none of the attendant safety features were installed, nor does it appear the extract system as a whole was reviewed to ensure its compliance; particularly with respect to fire safety and the prevention of nuisance to other people in the building.

5.3.2 The expert is of the opinion that the provision of the water mist to the deck oven and the spark arrestor to the rotisserie, if interlocked to the fuel source or to an alarm, could form the basis of a compliant alternative solution to Clause G4 (neither alarms

[9] WorkSafe New Zealand is responsible for monitoring, and enforcing compliance with the legislation related to electricity and gas supply.

nor interlocks were installed as part of the original kitchen fitout). However, the expert considers the proposal to use solid fuel appliances should have been the subject of peer review, but there was no evidence such a review had been completed. A peer review would have considered, amongst other things, the ventilation system in total, fire safety aspects, the use of the exhaust riser duct, and the potential to discharge the products of combustion and cooking fumes into other parts of the building. The expert referred to a previous report which said that evidence from the owner showed that that grease-laden extract air was leaking from the extract duct.

5.3.3 I note that the prevention of a nuisance to other people in the building under Clause G4.3.4 is a Building Code requirement that arises irrespective of whether or not solid fuel appliances are used. The applicant, in its most recent submission on 4 August 2017, referred to concerns about odours from the kitchen exhaust duct escaping to other parts of the building. The evidence provided by the applicant comprised a work order from a building tenant to investigate a 'strong cooking smell' (but no information was provided about the outcome of the investigation), a letter from a previous tenant, and a brief statement from a property manager. The concerns date from over 4 years ago and were investigated at the time but no further actions are recorded. For these reasons I do not intend to investigate these concerns further.

5.4 The air flow calculations

5.4.1 Air flow rate is described in AS1668.2 as the 'volumetric flow rate of air derived from the mass flow rate by dividing it by the density, normalised to 1.2g/L'. In simple terms, it is a measure of the amount of air per unit of time (in this case litres per second) that flows through a device (for example the main hood).

5.4.2 The PS1 provided with the building consent listed the total flow rate for the ventilation system as 3,490 l/s. Air flow tests of the installed system listed the total flow rate for ventilation system as 3,590 l/s. The review consultant found the two air flow tests carried out (22 and 27 March 2013) were likely to be inaccurate and recommended that new tests are carried out. In respect of the tests carried out it is not known how the make-up air was supplied to the kitchen during these tests, nor is the current performance of the system known given the presence of the new 'egg crate' inlet grilles (refer paragraph 2.4.3).

5.4.3 As noted in paragraph 5.5.4 I consider the airflow calculations for the extract hood to the chargrill and rotisserie needed only to consider worst case use for either appliance, and not allow for both operating at the same time. When determining the airflow calculations using AS1668.2, the hood dimensions used are inconsistent between that required by the appliance (1.5x1.5m), the dimension in the PS1 used for the airflow calculation (1.2x1.2m), and what was installed on site (1.35x1.35m).

5.4.4 The review consultant found the main hood's design volume should have been 2,310 l/s and not 1,800 l/s as stated on the PS1. The air flow calculations stated in the building consent were inadequate because they were not consistent with the means of compliance cited in the PS1, being AS1668.2. I have seen no evidence to support the view that the installation would comply as an alternative solution.

5.5 The chargrill and rotisserie

5.5.1 The chargrill and rotisserie was manufactured and installed as one appliance that provides two distinct cooking functions. The question whether the chargrill and rotisserie are to be treated as two separate appliances that can operated at the same time is disputed between the parties: this question has a direct impact on the airflow

calculations for the extract air (refer paragraph 5.4), and satisfying paragraph 2.6.3.7 of NZS 5261 (refer paragraph 6.3.3).

5.5.2 The tenant contends that the chargrill and rotisserie were not able to be operated at the same time: a drip tray[10] is located on the chargrill grates under the rotisserie when it is in use, preventing the chargrill being used. The tenant says that 'While it is possible to have the chargrill and rotisserie alight simultaneously it is operationally impractical and unsafe to do so…'. It is contended that if the chargrill was in use, the rotisserie skewers would become be too hot to handle.

5.5.3 The applicant contends that it was possible for the chargrill and rotisserie to be operated at the same time: the manufacturer does not state the chargrill and rotisserie should not be used simultaneously, and the spit tray under the rotisserie only covers a portion of the chargrill. The expert and the review consultant have considered the chargrill and rotisserie both in operation when calculating the extract airflow. The tenant says the PS1 calculated the 'worst case operation scenario' of the airflow required for the chargrill.

5.5.4 I acknowledge that the manufacturer's instructions make specific reference to the operation of the chargrill and rotisserie at the same time, however, it would not be reasonable to ignore the practical difficulties of doing so as outlined by the tenant. I consider it unlikely that the chargrill and rotisserie would be used at the same time. I consider the airflow calculations need only to consider worst case use of either the chargrill or the rotisserie.

5.6 The make-up air supply

5.6.1 The PS1 stated 'fresh air to be provided at rear of full height louvered plenum by means of vertical row of hinged filter grilles to suit.' In my view, the make-up air as shown in the drawing accompanying the PS1 submitted with the building consent (dated 19 September 2012) with the full height supply air inlet and air enclosure described in paragraph 2.4.2 may have provided an adequate supply, but the drawing does not provide a detailed description of what was intended to be built. Opinions between the applicant and the tenant vary significantly as to what the drawing accompanying the PS1 showed was to be installed.

5.6.2 The air plenum shown in the drawing accompanying the PS1 was enclosed behind an internal wall as part of the original building consent, and kitchen equipment is located where the air enclosure containing filters and sound attenuation is shown. The building consent failed to specify the means by which adequate make-up air was to be supplied to the kitchen.

5.7 Conclusions

5.7.1 I consider the building consent documentation was inadequate with respect to the kitchen ventilation. The building consent application did not adequately describe how compliance was to be achieved. The PS1 supporting the application for consent was wrongly issued because it incorrectly identified the means of establishing compliance with Clause G4 of the Building Code (being compliance with AS1668.2), and said that a separate duct was required to the chargrill but the plan accompanying the PS1 omitted to include a separate duct.

[10] When the rotisserie is in operation the drip tray is located on the rear portion of the chargrill branding grates. The drip tray is at least half the depth of the chargrill grates.

5.7.2 The authority has advised that it relied on the PS1 to confirm that the work was compliant, stating it is established law that an authority can rely on producer statements and by 'logical implication' the author's integrity and competence in the absence of evidence to the contrary. However, this does not relieve the authority from satisfying itself that the statements are reasonably made, that the information presented in a PS1 is clear, and the information is properly translated onto the approved consent drawings.[11]

5.7.3 The installation of separate ducts by combining into one at the exhaust riser does not satisfy paragraph 5.4.5 of AS 1668.2 which states:

> All hoods and associated exhaust systems for use over charcoal and solid fuel appliances shall be provided with separate systems, and shall not be combined with a system serving grease or oil generating or oil heating appliances

The use of a combination exhaust duct does not meet AS 1668.2 yet this was stated at the means of compliance cited in the PS1 as above.

5.7.4 The tenant's engineer has stated that 'AS1668 precludes the discharge of …solid fuel appliances into a common system with a system serving grease or oil generating or oil heating appliances. The kitchen extract designer … provided an engineered solution to overcome the concerns of the standard.' This also indicates that AS1668.2 was not followed in its entirely in designing the kitchen ventilation system.

5.7.5 Determination 2006/052[12] discussed the approach to accepting alternative solutions, saying:

> (a) Some Acceptable Solutions cover the worst case of a building closely similar to the building concerned. If the building concerned presents a less extreme case, then some provisions of the Acceptable Solution may be waived or modified (because they are excessive for the building concerned) and the resulting alternative solution will still comply with the Building Code.
>
> (b) Usually, however, when there is non-compliance with one provision of an Acceptable Solution it will be necessary to add some other provision or provisions in order to comply with the Building Code.

5.7.6 That approach is equally applicable in this instance. If the extract system does not fully meet the requirements of an Acceptable Solution, then the design engineer must demonstrate how any shortfalls in the design are to be compensated for. The design may be compared with AS18668.2, with the designer showing how compliance will be achieved with respect to any departures from that standard.

5.7.7 It is noted that while the consent documentation incorrectly cited AS1668.2 as the means of compliance in this case, there is no reason why an alternative solution proposal could not have been put to the authority for its approval for an extract ventilation system for solid fuel appliances that met the requirements of Clause G4.

5.7.8 It is also noted that the ventilation system is required to comply with the provisions of the Building Code: the Building Code itself does not require the provision of separate extract ducts for single and dual fuel appliances in order to achieve compliance.

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[11] Refer Determination 2010/96 Refusal to issue a code compliance certificate for fire repairs to a house at 2/29 Maxine Place, St Heliers, Auckland, *Department of Building and Housing*, 18 October 2010; and Determination 2013/53 Regarding the refusal to issue a code compliance certificate due to the lack of a producer statement for drainage work to a house at 126 Abbot Street, Invercargill, *Ministry of Business, Innovation and Employment*, 17 September 2013

[12] Determination 2006/52: Single means of escape from a high-rise apartment building, at 18 Turner Street and 17-19 Waverley Street, Auckland City, *Building Industry Authority*, 1 June 2006

5.7.9 The applicant contends that the basis for a possible alternative solution described in paragraph 5.3.2 will result in an air extract system with 'a lower fire integrity than the separate extract systems for solid fuels'. The Building Code is a performance-based document and any method of compliance can be used so long as the minimum performance requirements of the Code are met. An alternative solution proposal is presented to an authority for its consideration, and can only be approved as acceptable if it is considered to be fully compliant.

6. Discussion: the as-built work at the time the code compliance certificate was issued

6.1 The make-up air

6.1.1 The PS1 makes specific reference to the make-up air ('fresh air to kitchen') being supplied via a full height louvre that may have been adequate; the louvre is shown on the drawing accompanying the PS1 as being connected to an air enclosure providing filters and acoustic attenuation. The consented drawings show a solid wall in this location and the equipment list that formed part of the approved consent also shows items in front of this wall in the same location as the air enclosure.

6.1.2 In respect of the make-up air supply as originally built, the expert noted that the wall in front of the fresh air plenum was fully sealed and the only means by which the make-up air was entering the kitchen was via a ceiling grille of approximately 300x300mm, that would only provide 'some' of the required make-up air.

6.1.3 The additional eggcrate make-up grilles (refer paragraph 2.4.3) had not been installed at the time the code compliance certificate was issued, and I consider the make-up air in the extract system was not adequate at that time. The as-built ventilation system to the kitchen at the time code compliance certificate was issued did not comply with Clause G4, and the code compliance certificate was incorrectly issued in respect of that work.

6.1.4 The fact that two additional make-up grilles have been installed after the code compliance certificate was issued lends weight to the argument that the make-up air system as originally installed was not adequate.

6.2 The exhaust discharge location and the extract fans

6.2.1 Although not part of the consented work, I note the exhaust discharge location on the roof and the cowl discharge velocity meet the requirements of AS1668.2 but that odours may enter the building in certain weather conditions.

6.2.2 The review consultant is of the opinion that, although not best practice, the extract fans comply with AS/NZS1668.1, although the standard is not cited as a means of compliance for Clause G4. (AS/NZS1668.1 1998 is referenced in the Acceptable Solution for the Fire safety clauses in relation to smoke control).

6.3 The chargrill, rotisserie, and the deck oven

Compliance with Clause C1

6.3.1 The relevant performance requirement (Clause C1.3.2) that was in force at the time the consent was issued said:

> Fixed appliances shall be installed in a manner that does not raise the temperature of any building element by heat transfer or concentration to a level that would adversely affect its physical or mechanical properties or function.

6.3.2 The chargrill and rotisserie have been removed. I accept the expert's opinion that the chargrill and rotisserie complied with Clause C1, and the deck oven complies with Clause C1. These appliances are (or were) not located near building elements adversely affected by heat transfer or concentration.

The rotisserie and chargrill (Clause G11)

6.3.3 The applicant contends that the rotisserie and chargrill do not met the requirements of paragraph 2.6.3.7[13] of NZS 5261[14], in that 'a gas appliance shall not be located vertically above …a chargrill'.

6.3.4 The rotisserie and chargrill is one cooking appliance produced by an established manufacturer of commercial kitchen equipment in the Australian marketplace. NZS 5261 does not apply to the manufacture of gas appliances. In my view paragraph 2.6.3.7 of NZS 5261 applies to the installation of two discrete appliances, and not to the installation of one purpose-made appliance with two cooking functions as is the case here.

Protection of the potable water supply to the deck oven (Clause G12)

6.3.5 Clause G12.3.2 requires potable water supplies to be protected from contamination. Acceptable Solution G12/AS1 says that suitable protection is provided by an airgap between a potable water supply outlet and overflow water, but that airgaps are not to be used in a toxic environment. G12/AS1 says any airgap is to be the greater of 25mm or twice the diameter of the outlet.

6.3.6 In this instance water is sprayed through spray nozzles into the exhaust air stream to cool exhaust coming from the deck oven. The nozzles spray into the top of a semi-enclosed chamber which is in excess of 400mm high with a waste water connection outlet at the bottom of the chamber: the chamber has exhaust air drawn through it and is under negative pressure.

6.3.7 The expert considered the spray nozzles provide an airgap and the outlets could not be immersed in contaminated water collecting at the bottom of the chamber. I consider this eventuality is very unlikely and does not amount to a breach of Clause G12.3.2. While the nozzles supply water into the exhaust stream, the area of the apertures through which any contamination might be drawn is very small, and the chamber itself is under negative pressure during normal operation. Contaminated water will be drawn from the point of least resistance – the limited size of the nozzle apertures also suggests contamination at this point is very unlikely.

6.3.8 The applicant contends that the exhaust chamber contains toxic materials that will contaminate the potable supply in the event of a backflow event. The applicant has referred to the protection of potable water as described in the Acceptable Solution for Clause G12, being G12/AS1. G12/AS1 describes 'High' 'Medium', and 'Low' cross-connection hazards and the features required to protect the potable water supply for each hazard level; examples are given for each hazard level but combustion products from a wood fire is not listed.

[13] Paragraph 2.6.3.7 of NZS 5261 is equivalent to paragraph 6.3.7 of AS/NZS 5601 refer to by the applicant
[14] NZS 5261: 2003 Gas Installation was standard cited in the Acceptable Solution for Clause G11 at the time the building consent was issued.

The trap to the deck oven waste water pipe (Clause G13)

6.3.9 The deck oven has a copper trap installed on the waste water pipe running from the oven to prevent foul air entering the building. The applicant contends that the trap was installed after a request that this be done, and the applicant provided an email from the tenant to support this position. The email says, 'a trap has been installed': the email does not say the trap was installed in response to the request.

6.3.10 The trap is installed in a concealed location (i.e. installed behind wall linings) and it is reasonable to conclude that the trap was installed as part of the original installation, and not at some point afterwards as contended by the applicant. While the trap is installed in a concealed location, it is able to be accessed for maintenance, i.e., rodded from one end of the waste pipe.

6.4 The electrical installation (Clause G9)

The electrical safety of the extract fan motors

6.4.1 The applicant contends that exhaust fans with enclosed fan motors should have been installed, but motors with windings open to the exhaust stream have been used instead. A spark caused by a short circuit may ignite the fat/grease on the motor's windings. The fan motor is fitted with a thermal overload that acts on the current drawn, but not on the fan motor temperature. The applicant contends the fan motors do not comply with the Electricity (Safety) Regulations.

6.4.2 The standard that was in force at the time was AS/NZS 3000:2007[15]. Paragraph 4.13.3.1 of AS/NZS 3000 requires protection against over-temperature 'to be provided where motors may be required to run unattended (where no person is normally in attendance in the vicinity of the motor) – such as refrigerator motor.'

6.4.3 The expert considers a motor driving an extract fan that is usually in operation when someone is in attendance, needs overload protection, but does not need over-temperature protection. Depending on the size of the motor, the overload protection is usually a contactor with an associated thermal protection relay fed from a circuit breaker either located on the fan motor itself or at the electrical distribution board. This matter can be verified onsite.

The location of the electrical distribution board on an egress route

6.4.4 The applicant contends that an electrical distribution board in the kitchen was 'relocated … in the fire escape' and is a safety issue.

6.4.5 AS/NZS 3000 requires an 'unimpeded space of at least 0.6 m around the switchboards with the switchgear doors in any position and large circuit breakers racked out'

6.4.6 If the required clearance is maintained then the egress is considered compliant. The tenant's engineer has measured this clearance at 655mm but this is disputed by the applicant. As for the overload protection to the fan motors, this matter can be verified onsite: compliance with Clause G9 Electricity is outside the scope of this determination.

[15] AS/NZS 3000:2007 Electrical installations

6.5 The gas installation (Clause G11)

Gas cut-off in the event of the failure of the ventilation system (Clause C11.3.2)

6.5.1 The relevant performance requirement (Clause C11.3.2) that was in force at the time the consent was issued, said:

> The gas supply to all appliances in a single ventilated space, shall be fitted with an automatic cut-off activated by a failure of any continuous forced ventilation system used for combustion, ventilation or safe operation of a fixed gas appliance.

6.5.2 I accept the opinion of the expert in that:

- The ventilation system is not a forced ventilation system used for combustion: the burners are all atmospheric type and do not reply on forced ventilation to achieve proper combustion. The make-up air is supplied by passive means.
- Heat from gas appliances, other than the deck oven, would be able to dissipate should the extract system fail. There is adequate ventilation in the space to prevent flames on the kitchen appliances extinguishing. It is reasonable to assume that staff would disable an appliance if the extract fan serving the hood above the appliance failed.

6.5.3 The expert noted that the deck oven itself had been damaged through overheating when the fan taking exhaust air from the oven had failed. The deck oven was now fitted with a cut-off valve that cut the gas supply in the event of the extract fan failing. While no damage appears to have been caused to the surrounding building elements, the safe operation of the deck oven is reliant on the continuous operation of the extract system: this is not the case for remaining gas appliances. A cut-off valve should have been fitted as part of the original installation of the deck oven.

Gas cut-off in the event of the failure of the ventilation system (Paragraph 2.6.6.5 of NZS 5261)

6.5.4 Paragraph 2.6.6.5 of NZS 5261 says (emphasis added):

> Where the required air <u>supply</u> relies on a mechanical system that is not part of the appliance, the interlock that causes the gas supply to the appliance to be shut off upon failure of the mechanical air supply shall sense the actual air movement and fail safe.

6.5.5 The air supply to the kitchen does not rely on a mechanical system. The burners are all atmospheric type and do not rely on forced ventilation (refer paragraph 6.5.2).

6.5.6 An interlock between the gas supply and the exhaust air is required for safe operation of the deck oven under Clause C11.3.2 as above. However, heat from the remaining appliances will dissipate safely into the kitchen until manual intervention may become necessary. In my view paragraph 2.6.6.5 of NZS 5261 is not applicable to this case.

Paragraph 2.5.7 of NZS 5261[16]

6.5.7 The applicant contends that paragraph 2.5.7 of NZS 5261 is not satisfied in that equipment in the café kitchen is not adequately ventilated: the equipment to which paragraph 2.5.7 applies is defined as ‘meter, regulator, or gas pressure-raising device’.

[16] Paragraph 2.5.7 of NZS 5261: 2003 is equivalent to paragraph 5.13.1 of AS/NZS 5601 referred to by applicant

6.5.8 Ventilation is required by paragraph 2.5.7.2 of NZS 5261 in respect of 'enclosures' that house gas equipment. "Enclosure" is defined NZS 5261 as 'A compartment, an enclosed area or a partitioned-off space primarily used for the installing of a gas appliance, gas cylinder, meter, gas pressure regulator, or other associated equipment.'

6.5.9 I do not consider this requirement applies in respect of the café kitchen as the kitchen cannot be described as an "enclosure" that is used primarily for installing gas equipment. The kitchen is a fully occupied space with its own attendant ventilation requirements; an unoccupied enclosure would not need to be ventilated other than to comply with the requirements of paragraph 2.5.7. The provision of remote alarms that sound in the event of failure of a mechanical system that can only be reset from the enclosure itself (refer Table 12 of NZS 5261) further suggests any enclosure is unoccupied.

Provision of flues to the dual (solid) fuel appliances (Paragraph 2.5 of AS/NZS 5601.1[17])

6.5.10 The applicant contends that the chargrill and deck oven, as solid fuel appliances, were required to be installed with a flue because this is mandated by paragraph 2.5 of AS/NZS 5601.1. Paragraph 2.5 says that 'Every gas appliance that requires a flue for safe operation shall be fitted with a flue'.

6.5.11 The installation instructions for the chargrill / rotisserie does not require a separate dedicated flue (the appliance discharges to the atmosphere under an extract hood).

6.5.12 The installation instructions for the deck oven provides five installation options for capturing the oven's exhaust; only two methods require a separate dedicated flue. The two methods for direct connection to a kitchen extract system require a water spray filter and/or a cool air make up unit (both items have been installed).

6.5.13 I do not consider either solid fuel appliance requires a separate dedicated flue in order to operate safely and satisfy paragraph 2.5 of AS/NZS 5601.1.

Common flues (Paragraph 2.5.8 of AS/NZS 5601.1[18])

6.5.14 The applicant contends that the kitchen extract system that served both the chargrill and deck oven contravened paragraph 2.5.8 of AS/NZS 5601.1, which states "Common flues serving gas appliances shall not be used to serve any appliance that uses a fuel other than gas". Regulation 44 of the Gas (Safety and Measurement) Regulations 2010 requires gas installations to comply with AS/NZS5601.1 and the applicant submits the Regulations and AS/NZS5601.1 must be complied with under the Act and the Building Code.

6.5.15 The applicant supports this by referring to section 19(1)(e) of the Act claiming it establishes the Gas Act 1992 is part of the Building Code, and the Gas (Safety and Measurement) Regulations 2010 are a mandatory means of compliance under sections 20 and 21 of the Act. However, section 19(1)(e) is a 'deemed to comply' provision, which provides that if compliance with the Gas Act 1992 is also compliance with a provision of the Building Code, then a certificate under the Gas Act 1992 is evidence of compliance with that provision of the Building Code and must be accepted as evidence of such compliance. Section 19(1)(e) of the Act says nothing about building work having to comply with the Gas Act 1992. Further, no

[17] Paragraph 2.5 of AS/NZS 5601.1 is equivalent to Paragraph 1.5 of NZS 5261: 2003
[18] Paragraph 2.5.8 of AS/NZS 5601.1 is equivalent to Paragraph 1.5.8 of NZS 5261: 2003

such mandatory means of compliance regulations have been made in relation to sections 20, 21, and 401 of the Act.

6.5.16 The applicant also submits that G11/AS1 contravenes section 25(3)(c) of the Act because it is inconsistent with the Gas (Safety and Measurement) Regulations 2010 as it cites NZS5261:2003 and not AS/NZS 5601.1. However, the reference to "inconsistent with … the regulations" in section 25(3)(c) does not include regulations under the Gas Act 1992: "regulations" is defined in section 7 of the Act as "regulations in force under this Act". Further, it is noted that section 25(3)(c) has been repealed[19]: the equivalent provision is section 25(2)(c).

6.5.17 Finally, the applicant's submission that paragraph 2.5.8 of AS/NZS 5601.1 applies to a kitchen exhaust duct is not accepted; the duct as installed serves multiple purposes such as providing ventilation, removing odours, as well as removing combustion products. The multiple purposes of the duct gives rise to more complex features intended to ensure compliance. Clause G11.3.3 of the Building Code also supports this broader approach to the use of exhaust ducts as it doesn't prohibit a single duct being used for different appliances but states: "A flued fixed gas appliance shall have no adverse interaction with any other flued appliance."

Paragraph 2.6.5 of AS/NZS 5601.1[20]

6.5.18 The applicant contends that the make-up air system results in a negative air pressure in the kitchen that does not satisfy paragraph 2.6.5 of AS/NZS 5601.1. The relevant provisions of paragraph 2.6.5 include:

> Negative air pressures shall be avoided except for industrial appliances, gas engines and gas turbines specifically designed for negative air pressure.
>
> The air supply to gas appliances shall be adequate to provide complete combustion of the gas.
>
> Where the required air supply relies on a mechanical system, the gas installation shall include a suitable interlock to prevent the operation of the gas appliance if the mechanical air supply system fails.

6.5.19 In my view, the requirements of paragraph 2.6.5 are there to ensure the complete combustion of the gas. For the extract system to work as intended the air pressure inside must always be lower than the outside air pressure. I do not consider the limited negative pressures that kitchen may experience will be significant enough to adversely affect the ability of the gas to combust properly. It is noted that negative air pressures in the kitchen will assist in preventing odours escaping the kitchen and café.

7. Discussion: the issue of the code compliance certificate and work completed after its issue

7.1 General

7.1.1 There have been several changes made onsite to the work for which the code compliance certificate was issued. These changes include:

- the removal of the chargrill/rotisserie

[19] Section 25 was replaced, on 28 November 2013
[20] Paragraph 2.6.5 of AS/NZS 5601.1 is equivalent to Paragraph 1.6.4 of NZS 5261: 2003

- the installation of two fresh air make-up grilles which require the rear door to the kitchen to be kept open. (The review consultant noted the door is a fire escape route and considered confirmation is required that this is compliant.)

7.2 The additional make-up grilles

7.2.1 The applicant contends that the installation of two fresh air make-up grilles is not compliant because the pressure drop across the grilles exceeds that provided for in G4/AS1 with only 50% of the required air being provided. The applicant also states that the determination is not sought on the make-up air as it is now, but as it was at the time the code compliance certificate was issued.

7.2.2 The tenant says that measured pressure drop exceeds the 12 Pa maximum stated in AS1668.2 with all doors and windows closed including the internal door to the additional grilles, but that under normal conditions the door is open and the pressure drop is significantly below 12 Pa (no measured pressure drop was provided with the internal rear door open). I do not consider it reasonable that the make-up air system should rely on café doors, and the like, being kept open in order that the make-up air system works as intended.

7.2.3 The expert considers the pressure drop is higher than that stated in AS1668.2 and that additional grilles should be provided, however, the expert considered the current set-up provides a workable solution to Clause G4.

7.2.4 As the make-up air grilles rely on the internal rear door to be kept open to be effective, in my view some form of interlock connection is required so the extract fans do not run unless the internal rear door is open. However, as noted in paragraph 4.7.4, the tenant says a screen door will be provided in place of the solid rear door.

7.3 Work done without consent

7.3.1 Statements have been made to the effect that building consent is required for the changes made to the consented work. A building consent is not able to be sought retrospectively for work that is now complete. However, a certificate of acceptance can be sought for work that did require consent but where one was not obtained.

7.3.2 The required regulatory steps may include application for a certificate of acceptance for the work completed to date, and a consent amendment sought for any alterations to the present ventilation system, or similar.

7.4 Possible future work

7.4.1 I note the applicant contends that the tenant or any future party can re-install the solid fuel appliances in reliance on the building consent and code compliance certificate. This position is not correct; the issue of the code compliance certificate means the consented work is complete, and does not give a party the ability to undertake additional work in future or to redo work that has been removed. The exception to this is work for which consent is not required under section 42A of the Act as described in Schedule 1 to the Act. Irrespective of whether consent is required or not, all work is required to comply with the Building Code to the extent required by the Act.

7.5 The reversal of the building consent

7.5.1 The applicant has requested the building consent be reversed. This Determination has concluded the authority was wrong to grant the building consent as the ventilation system for the kitchen did not comply with Clause G4 of the Building Code. However, while the building consent was flawed, the ventilation system can be brought into compliance with the Building Code with some additional work. Applying the considerations set out in *Cooper v Tasman District Council* DC Nelson CIV-2009-042-000116, 21 July 2010, I conclude the building consent should not be reversed.

7.6 The reversal of the code compliance certificate

7.6.1 Remedial work (see paragraphs 7.1and 7.2) has been undertaken since the code compliance certificate was issued which has resulted in some improvements to the compliance of the ventilation system, although there are still compliance matters that need to be addressed as noted in those paragraphs. In addition, there are other minor matters that need to be addressed such as those noted at paragraphs 6.4.3 and 6.4.6.

7.6.2 The code compliance certificate will be reversed and the tenant should apply for an amendment to the building consent to bring the ventilation system into compliance with the provisions of the Building Code taking account of proposed changes to kitchen equipment, and the like.

7.6.3 The tenant advises that the deck oven is soon to be removed and a screen door installed at the rear entry to the kitchen. The compliance of the work as it is at present and the extent of the further work that will be required will rest on what the tenant intends to install in place of the deck oven, the type of screen door the tenant intends to install, as well as how the tenant intends to address the outstanding matters of compliance.

7.6.4 A code compliance certificate can be issued once the amendment has been granted by the authority, and the work has been completed by the tenant in accordance with the amended building consent.

8. The decision

8.1 In accordance with section 188 of the Building Act 2004, I hereby:

- determine that building consent No. B/2012/4175 granted by the authority should not be reversed;
- reverse the code compliance certificate issued in respect of building consent No. B/2012/4175.

8.2 I also determine that:

- The building consent granted by the authority covered the installation of at least one solid fuel appliance, being the chargrill, but did not include the installation of the deck oven and the ventilation it required because it did not adequately detail the requirements for that appliance;
- The chargrill and rotisserie complied with Clauses C1 and G11 of the Building Code;

- The deck oven complied with Clauses C1, G12, and G13 of the Building Code and, while it did not comply with Clause G11 at the time the code compliance certificate was issued, it complies now;
- The ventilation system as consented, and the work for which the code compliance certificate was issued, did not comply with Clause G4 in respect of the solid fuel and/or gas/electrically-fuelled appliances. The aspects of the system that did not comply are:
    a. the means of compliance being wrongly stated as AS1668.2 (paragraph 5.7);
    b. the air-flow calculations (paragraph 5.4);
    c. the make-up air supply (paragraphs 5.6, 6.1 and 7.2);
    d. the absence of a gas cut-off valve to the deck oven (paragraph 6.5.3).

Signed for and on behalf of the Chief Executive of the Ministry of Business, Innovation and Employment on 12 September 2017.

Katie Gordon
Manager Determinations

Appendix A

A1 The relevant clauses of the Building Code in force at the time the consent was issued include:

C1 – Outbreak of fire

C1.3.2 Fixed appliances shall be installed in a manner that does not raise the temperature of any building element by heat transfer or concentration to a level that would adversely affect its physical of mechanical properties or function.

G4 – Ventilation

G4.3.1 Spaces within *buildings* shall have means of ventilation with *outdoor air* that will provide an *adequate* number of air changes to maintain air purity.

G4.3.2 Mechanical air-handling systems shall be constructed and maintained in a manner that prevents harmful bacteria, pathogens and allergens from multiplying within them.

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

(a) Cooking fumes and odours

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

G11 – Gas as an energy source

G11.3.2 The gas supply to all appliances in a single ventilated space, shall be fitted with an automatic cut-off activated by failure of any continuous forced ventilation system used for combustion, ventilation or safe operation of a fixed gas appliance.

G11.3.3 A flued fixed gas appliance shall have no adverse interaction with any other flued appliance.

Appendix B

B1: The PS1 'Producer statement – Design review' (page 2), and the drawing of the kitchen ventilation that accompanied the PS1.

Construction monitoring is: ☐ Not required ☑ Required (if required please list below)

(Agreement must be attached)

Signed by: [signature] Date: 24/9/2012

☐ ACENZ ☐ IPENZ ☐ CPENG ☐ NZIA ☑ Other (specify) IHYACENZ 1094 (Membership number)

Address: Postcode:

Phone: Fax:

Mobile: Email:

COUNCIL USE ONLY

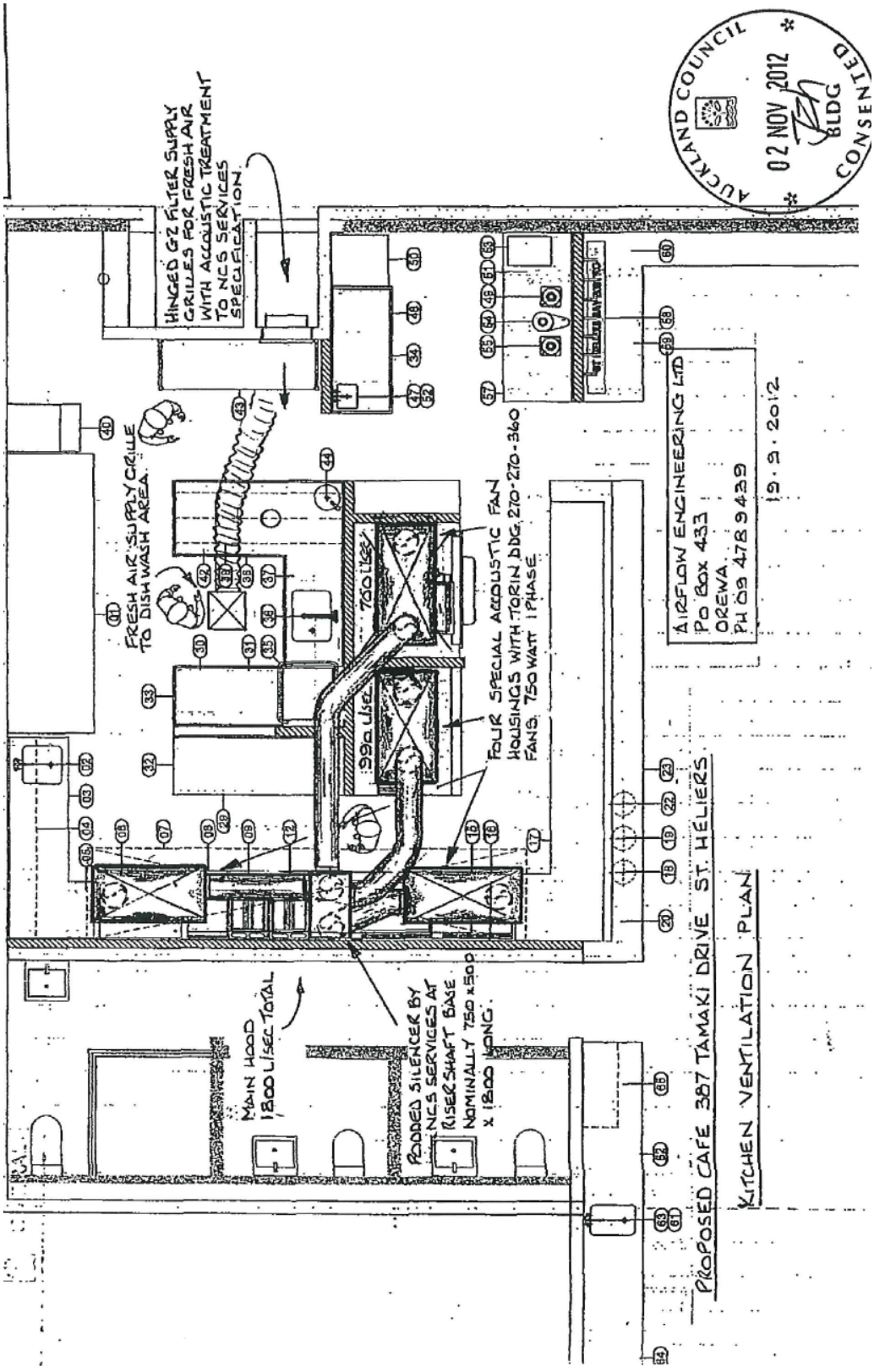
☐ Central ☐ Henderson ☐ Manukau ☐ Orewa ☐ Papakura ☐ Pukekohe ☐ Takapuna

Received by:	Register checked:	YES / NO
Signature:	Registration current:	YES / NO
Producer statement accepted as establishing compliance with the Building Code:		YES / NO

COMMENTS

MAIN EXTRACTION HOOD ABOVE COOKING LINE - AIRFLOW TO AS1668.2.2012
Q = VF x PA x H. COMBI OVEN 495 L/S, INFIL BENCH 82 L/S, RAYHL 371 L/S,
INFIL BENCH 82 L/S, GRIDDLE 275 L/S, TARGET TOP 495 L/S TOTAL 1,800 L/S
EXTRACTIONS TO BE 2 TORIN DDG 270-270-360, SPEEDS SET TO AIRFLOW
CHARGIN HOOD REQUIRES 1.5x1.5m HOOD WITH SPARK ARRESTOR FILTERS
Q = VF x PA x H = (1.2+1.2) x 375 x 1.1 = 990 L/S VIA SEPARATE DUCT
FAN TO BE 1 TORIN DDG 270-270-310, SPEEDS SET TO AIRFLOW
BENCH OVEN TO HAVE 700 L/S FROM WATERWASH SYSTEM PER MANUFACTURER
FAN TO BE 1 TORIN DDG 270-270-360, SPEEDS SET TO AIRFLOW
SYSTEMS ALL DUCTED TO VERTICAL DISCHARGE COWL ABOVE ROOF LINE
FRESH AIR TO BE PROVIDED AT REAR OF FULL HEIGHT LOUVRED PLENUM
BY MEANS OF VERTICAL ROW OF HINGED FILTER GRILLES TO SUIT.
AIR INDUCED WILL CONSIDERABLY EXCEED MINIMUM FLOW RATES
FOR FRESH AIR TO KITCHEN [signature]

Page 2 of 2 October 2011 AC2304 (v.2)


AUCKLAND COUNCIL
02 NOV 2012
BLDG CONSENTED
HINGED G2 FILTER SUPPLY GRILLES FOR FRESH AIR WITH ACOUSTIC TREATMENT TO NCS SERVICES SPECIFICATION
FRESH AIR SUPPLY GRILLE TO DISH WASH AREA
700 Liter
99a Liter
FOUR SPECIAL ACOUSTIC FAN HOUSINGS WITH TORIN DDG 270-270-360 FANS 750 WATT 1 PHASE
AIRFLOW ENGINEERING LTD
PO Box 433
OREWA
PH 09 478 9439
19.9.2012
MAIN HOOD 1800 Liter TOTAL
RODDED SILENCER BY NCS SERVICES AT RISER SHAFT BASE NOMINALLY 750 x 500 x 1800 LONG
PROPOSED CAFE 387 TAMAKI DRIVE ST. HELIERS
KITCHEN VENTILATION PLAN

Appendix C: Submissions and documentation received

The application		
Applicant	3 March 2014	Written submission, along with copies of: o a google map image showing the location of the building o various photographs of the deck oven, filters o the building consent application documents including the gas fitting certificate of compliance o installation documents including drawings for the deck oven o an equipment list and drawing of the location of the kitchen equipment o PS1 Producer Statement - Design Review
Authority		A copy of the property file for the café fit out work
In response to the expert's initial report		
Applicant	27 May 2014	Technical questions, photograph of fans provided
Authority	19 June 2014	Submission
The first draft determination		
Applicant	30 June 2014	The matters for consideration
Authority	21 July 2014	Submission
Tenant	28 July 2014	Submission
In response to the tenant's engineer's report		
Applicant	30 July 2014	Submission
Applicant	31 July 2014	Submission
Submissions on legal basis for establishing compliance		
Tenant	6 August 2014	Submission
Applicant	8 August 2014	Submission
In response to the expert's peer review of the tenant's engineer's report		
Applicant	9 September 2014	Submission
Tenant	10 September 2014	Submission
Site test		
Applicant	16 September 2014	Report of a site test measuring the total airflow form the kitchen extract fans through the common riser duct to outside when the filters were clean and dirty
In response to review consultant		
Tenant	18 December 2014	Submission
Applicant	18 December 2014	Submission
Applicant	8 January 2015	Submission
The second draft determination		
Authority	30 March 2015	Submission
Tenant	31 March 2015	Submission from the tenant's engineers
Applicant	10 April 2015	Submission through the applicant's engineer
Tenant	1 May 2015	Submission
Applicant	9 June 2015	Submission through the applicant's engineer and documentation
Tenant	15 June 2015	Letter seeking status of the determination

Applicant	18 June 2015	Submission through the applicant's engineer
Tenant	17 August 2015	Submission through the applicant's engineer in response to the applicant's engineer's further information
Tenant	25 August 2015	Copy of letter to the owner confirming the tenant's abandonment of the use of solid fuels. Further noted concerns that the owner's engineer is not an independent consultant
In response to the expert's supplementary report and further submissions		
Applicant	25 September 2015	Submission
Tenant's engineer	12 October 2015	Submission
Applicant	23 October 2015	Submission in response to Tenant
Tenant's engineer	2 November 2015	Submission in response to Applicant
Applicant	4 November 2015	Submission in response to Tenant
Tenant	6 November 2015	Submission in response to Applicant
Applicant	9 November 2015	Submission in response to Tenant
Applicant	10 November 2015	Submission on chargrill/rotisserie
Tenant	12 November 2015	Submission in response to Applicant Copy of installation and service instructions for the chargrill/rotisserie appliance
Applicant	17 November 2015	Submission in response to Applicant
The third draft determination		
Tenant	24 March 2016	Submission
Authority	29 March 2016	Submission
Applicant	22 April 2016	Submission
Applicant	1 August 2016	Submission in response to Ministry letter
Tenant	25 August 2016	Submission
Applicant	22 September 2016	Submission
Applicant	3 October 2016	Submission in response to Ministry letter
Applicant	21 October 2016	Submission confirming matters to be determined
Tenant	21 October 2016	Submission
Tenant's engineer	8 November 2016	Submission
Applicant	10 November 2016	Submission in response to Tenant's 24 March 2016 submission
Applicant	18 November 2016	Submission in relation to matter to be determined
Tenant	22 November 2016	Submission
In response to the expert's second supplementary report		
Tenant	25 January 2017	Submission
The fourth draft determination		
Authority	14 March 2017	Submission
Applicant	8 June 2017	Submission
Applicant	5 July 2017	Attachment referenced in the 8 June 2017 submission

Tenant	26 July 2017	Submission
Applicant	4 August 2017	Submission
Tenant	22 August 2017	Submission
Applicant	29 August 2017	Submission
Tenant	8 September 2017	Submission

Appendix D: Summary of submissions and reports

D1 The building consent and its documentation	
Applicant	o The building consent: ▪ makes no reference to solid fuel appliances ▪ shows a chargrill on the kitchen equipment list and plans but no equipment details or reference as to what fuel is used ▪ shows a deck oven on the kitchen equipment list but no further details ▪ has no reference to a make-up air fan (although a fan has been installed with unknown performance) ▪ has no reference to chargrill other than a 'freestanding cooker' gas connection on the gas-fitting certificate of compliance.
Expert	o There were no equipment specifications regarding the chargrill or deck oven able to be identified as provided with the consent documents, no reference to solid fuel equipment was identified in the drawings. o The secondary hood serving the chargrill was calculated using section 5.5 of AS1668.2 where the extract hood serves a single cooking process. The calculations show the chargrill was designed for gas only and not solid fuel. o The make-up air supply is not fully detailed in the plans. o The drawings do not show the remainder of the extract system beyond the café on the ground level. No specifications of the mechanical equipment listed in the plans could be identified as being provided with the café fitout building consent documents.
Authority	o It is established law that the authority can rely on producer statements in establishing if it is satisfied on reasonable grounds that the provisions of the Building Code would be met if the building work were properly completed in accordance with the building consent. o The authority has public policy reasons for being able to place reliance on producer statements; to reduce building control regulatory costs. o The producer statement author should expressly draw the authority's attention to any aspects of the building consent or building work which may not be or is not compliant with the Building Code and/or building consent. o The authority acted reasonably to rely on the producer statement and therefore the building consent and code compliance certificate were appropriately issued in this case.
Tenant's engineer	o The PS1 indicates the means of compliance with AS1668.2-2002 and that the design is compliant with the Act, Building Regulations and Building Code.
Applicant	o It is incorrect to state that minimal compliance with AS1668.2 is likely to significantly exceed the minimal requirements of Clause G4. o Engineered solutions are called alternative solutions and require that building consent be applied for as an alternative solution. The expert's report correctly identified the kitchen extract system as an Acceptable Solution, confirmed by the PS1 and building consent.
Review consultant	o The design contained in the PS1 did not comply with a number of aspects of the Acceptable Solution G4/AS1 (refer use of a solid fuel appliance, and air flows below).
Applicant's engineer	o The authority issued a building consent based on the PS1 however the authority did not check the design and calculations on the PS1. The authority relied on the producer statement author to comply with the Building Code. o The PS1 does not comply with AS1668.2:2002 and therefore the Building Code.
Applicant	o There are no building consent documents for a solid fuel chargrill/rotisserie combination or for a wood/gas fired pizza oven; the installation occurred without consent being obtained.
Tenant	o The authority must accept an Acceptable Solution as a means of compliance. o If an Acceptable Solution is referenced in the PS1, it does not become the only means for compliance.

Authority	o The threshold criteria for issuing a building consent and code compliance for the kitchen fit-out, the ventilation system and the deck oven were met at the time of issue.
Applicant	o The authority incorrectly exercised its powers in issuing the building consent. o The ventilation system to the kitchen at the time the code compliance certificate was issued did not meet the requirements of Clause G4, and the authority incorrectly exercised its powers in issuing the code compliance certificate. o Seeks further clarification of the details upon which the Ministry concludes that the consent documentation was inadequate with respect to kitchen ventilation. o Disagrees with the review consultant that the building consent included the use of solid fuel appliances based on the words 'spark arrester' and 'via separate duct' in the PS1. o The PS1 is intentionally misleading. o There is no evidence that the tenant has sought review and approval of an alternative solution in accordance with the Department of Building and Housing guidelines 'Means of establishing compliance: alternative solutions'.
Applicant	o Does not accept the tenant's assertion that there are no outstanding issues. Having incorrectly been granted a building consent and code compliance that, according to the draft determination, includes the use of solid fuel appliances, enables such appliances to be reinstated in future unless the consent is revoked by the Ministry.
Tenant	o There was no agreement reached to undertake the necessary work to enable the use of both gas and solid fuels. The tenant ceasing to use solid fuels, and will not use them in future.
Tenant's engineer	o Section 14F(a)(i) of the Act only requires that a building consent authority is responsible for ensuring a building consent describes work that will comply with the Building Code. o Producer statements can be accepted at the discretion of the building consent authority to help them assess whether the provisions of the Building Code will be met if the building work is completed in accordance with the plans and specifications.
Applicant	o It was suggested that 'AS1668.2 was correctly cited [in the consent documents] and the solid fuel appliances were hidden from the [authority] and the building owner'. o 'The words solid fuels, charcoal or wood do not appear in the … building consent documents nor did the extract system as consented or installed allow the use of solid fuels'. o It was submitted that the authority 'did not have reasonable grounds on which to be satisfied that the provisions of the Building Code would be met if the building work were properly completed in accordance with the plans and specifications accompanying the building consent application'. o the authority was 'not solely responsible for the building consent's compliance as they rely on designers/producer statement'. o 'The building consent and the code compliance [certificate] should be cancelled…'
Applicant's engineer	o There is no evidence … that the consent documentation incorrectly cited AS1668.2 as a means of compliance. o 'Compliance with the Building Code is achieved either via acceptable or alternative solutions and this is decision is made by the applicant when they applied for building consent.'
D2 Variations in as-built work from approved consent	
Applicant	o The chargrill is in close proximity to the extract hood's filter that contains fat and is a fire risk. o There is no as-built documentation (apart from the PS3) or maintenance and operating manuals to verify what has been built or instructions to operate, test and maintain the extract system.
Expert	o There are no as-built drawings available and the following observations are from the site visits:

	o The kitchen equipment under the main hood matches that provided by the building consent drawings. o The chargrill has been replaced with a gas target top and oven combo o The kitchen extract system matches that consented, however the fans installed were unable to be sighted. o The solid ceiling in the kitchen prevented further inspection of the duct seal on the main duct riser to be investigated.
Applicant	o The chargrill/rotisserie and deck oven do not have building consent. The Building Code Clauses C1, G12, G13, G4 and G3 need to be complied with. There are no documents from the authority to show these clauses have been complied with.
Applicant's engineer	o The extract system has an electrical system with electric motors however the second draft determination did not consider any Electrical regulations therefore cannot establish full compliance with the Building Code.
Applicant	o A number of as-built features were not documented in the building consent and should not have been given code of compliance, including the deck oven's domestic water connection and the trap to the deck oven waste water.
D3 Use of solid fuel appliances	
Applicant	o The combined single extract duct shows that the extract system was designed for gas fuelled appliances only when compared to paragraph 5.4.5 of AS1668.2 which requires separate systems for solid fuel and gas appliances. o The extract fans are fitted with filters upstream of the fans to protect the fans from grease as the fans and motors cannot be cleaned. Photographic evidence shows grease stains on the fan after around one and a half months use in January 2013. This will increase the fire risk and decrease the cooling efficiency of the motor with grease on the windings. o The grease in the ducts show the potential fire risk in particular when a combination of solid and gas fuel appliances is used in a single duct.
Expert	o The deck oven as installed can be used with solid fuel. o The extract system is not designed for the use of solid fuel as the extract ducts from each hood are combined into a single riser. AS 1669.2 paragraph 5.4.5 requires separate extract systems if using charcoal/solid fuel appliances and grease producing appliances in the same kitchen.
Tenant's engineer	o Solid fuel is no longer used. o 'AS1668 precludes the discharge of …solid fuel appliances into a common system with a system serving grease or oil generating or oil heating appliances. The kitchen extract designer … provided an engineered solution to overcome the concerns of the standard.' o It was clear that the appliances were to be used for solid fuel as well as gas, and this would have been apparent to the authority. o Comprehensive detail of the chargrill and rotisserie was not included in the equipment schedule however a combination unit was shown on the drawings.
Applicant	o There are no building consent documents for the deck oven. It is unclear what was actually installed or commissioned. There are no building consent documents for the rotisserie or the solid fuel chargrill. The word 'chargrill' does not necessarily imply charcoal is being used. o The spark arrestor filters and/or coalescent filters result in compliance with clause 5.4.5 of AS1668 and a single extract system cannot be used for both solid and gas fuels. The hood filters are honeycomb type which does not comply with solid fuels as the fat is contained. o The Building Consent documentation and PS1 makes no mention of a solid fuel chargrill, nor a gas fired rotisserie located on top of the solid fuel chargrill. o The use of solid fuels requires the appliances to comply with Clause C1. There are no Building Consent documents to show this. o The Acceptable Solution requires a separate extract system for solid fuels and separated extract hoods are required. o The plan provided with the PS1 shows four ducts going into the one exhaust riser 'confirms that the design could have been only for gas fuels'.

Review consultant	o The use of a combined duct for the solid fuel exhausts does not fall within AS 1668.2 yet that standard was the stated means of compliance in the building consent. The standard was not met with respect to: ▪ solid fuel exhausts not separate ▪ inadequate kitchen hood overhangs ▪ inadequate extract flow rate to main hood ▪ inadequate extract flow rate to chargrill. o The consent included the installation as detailed in the PS1 without qualification. The 'consent allowed for a ventilation system that was purported to be designed for the use of solid fuel appliances.'
Tenant	o There are no issues of public safety in this case. The tenant has and will not use solid fuel for the chargrill and the deck oven pending resolution. o There is no provision in the Building Code (C1 or C4) for separate ducts.
Tenant's engineers	o The separation of solid fuel exhausts 'is contained in [AS1688.2] only. It has no relevance to the [Building Code] … and should not be a consideration in determining Building Code compliance.' o The review consultant has confirmed that the use of solid fuel was included in the consent.
Applicant 's engineer	o The installation of the deck oven and chargrill/rotisserie cannot be assessed for consent or compliance purposes solely with Clause G4, and has requirements under C1, G12 and G13. o The authority could not have issued a building consent for the use or installation of solid fuel as the consent documents make no mention of the installation of solid fuel appliances showing a single extract system for gas fuels. o The building consent included the use of solid fuel appliances. o The drawing included with the PS1 specifies an extract system that connects into a single attenuator and single extract duct to the roof. This is not permitted and a separate duct is required. The PS1 indicates the designer knew of the single extract to the roof. o The spark arrestors mentioned on the PS1 cannot be considered an alternative solution for a single extract being used for the chargrill together with gas fuel appliances as it does not comply with AS1668.2. o The kitchen installation must comply with paragraph 5.4.5 of AS1668.2 which requires separate extract systems for solid fuel appliances.
Tenant's engineer	o There is no requirement for separate extract ducts for solid fuels. o It is not possible to provide two flues to a solid fuel appliance and somehow separate the exhaust of wood combustion from the gas combustion. o The solid fuel appliances were made in Australia and are compliant with AS/NZS standards.
Applicant	o The combined chargrill/rotisserie and pizza oven installation has a combined exhaust with other kitchen appliances, and this does not comply with paragraph 5.4.5 of AS1668.2.
Applicant	o Spark arresters do not prevent sparks or embers entering the filters/ducts, they only minimise entry and do not deal with fire risk. o The tenant did not install either the spark arrester devices or a separate duct for solid fuel appliances, but instead honeycomb filters. o The pizza oven runs at approximately 350^{o}C, which is above the ignition point for generic grease in extract ducts at approximately 204^{o}C. The pizza oven systems are not failsafe and present a fire risk. o The 'drawing accompanying the PS1 clearly shows that the gas fuelled and solid fuel appliances are combined into a single duct riser which means that the reference to a "separate duct" in the PS1 is a false statement'. o The 'tenant or any subsequent tenant or owner can re-install the solid fuel appliances in reliance upon the existing building consent and code compliance certificate.'
Tenant's engineer	o The deck oven exhaust gases are cooled by a water spray as part of the spark arrester, and further by diluting with air drawn from the kitchen. At the point of contact with grease, the temperature of the exhaust gases is well below the

	ignition temperature for grease, measured at 34^{o} C. o There is no failsafe system on the oven to prevent combustion of oils because the refractories are poor conductors of heat, and therefore there is no undue risk. No additional measures are required.
Expert	o Guidance on alternative solutions directs that the Acceptable Solutions should be referenced as a framework for considering alternative solutions. An alternative solution could be applied where the designer must discharge to an existing common exhaust riser as is the case here. o 'The provision of a water mist (as was provided to the deck / pizza oven) or spark arrestor (as was provided to the rotisserie), if interlocked to the fuel source or to an alarm, would in our opinion form the basis of an alternative solution to [Clause] G4 to be further developed and approved by a peer reviewer with regards to the aspect of fire safety. The installation was not consented as such and we have no evidence that a peer review process was carried out.' o The peer review process would have reviewed: ▪ the ventilation system in total (i.e. the exhaust riser duct and the kitchen ventilation system), ▪ fire safety, and ▪ the potential to discharge to other tenancies creating a nuisance or hazard to people. o A peer review would have included and/or considered: ▪ The possibility of providing independent exhausts for solid fuel appliances. ▪ The input of the fire engineer in terms of the fire safety measures required. ▪ The design of the exhaust riser duct - how is the leaking of exhaust gases into other spaces prevented? Is the riser duct able to be positively pressurised, or should it be placed under negative pressure? ▪ Is grease removal from all appliances as good as possible to minimise fire risk? ▪ For fire safety, a water mist should be provided, as has been for the deck oven. ▪ For fire safety, an alarm interlocked to the fuel supply in the case of gas, or a visual and audible alarm in the case of solid fuel. o 'In our opinion the positively pressurised system does not form the basis of an Approved [Solution or alternative solution] insofar as it allows leakage to other spaces, creating a nuisance and a hazard to people …'
Tenant	o The expert's concerns are related purely to fire safety. The building is sprinkler protected. o 'the installation clearly complies with G4/AS1.' o The attenuator is suspended from the concrete floor slab above, and not from the riser ductwork.
Applicant	o '…the [deck] oven installation has been used illegally since the tenant claimed to have stopped using wood as a fuel in the [deck] oven.' o 'The alternative solution as referred to by the Ministry and their experts will result in a lower fire integrity than the separate extract systems for solid fuels as per the AS/NZS 1668.2. In these circumstances, the alternative solution will not comply with s.16 of the Building Act.' '[A]n alternative solution is illegal in terms of the Gas Act.' o 'Solid fuel appliances require a separate exhaust system and this is a mandatory requirement such that alternative solutions are not permissible (*sic*)' o 'The kitchen will require 3X new separate extract systems with gas safety interfaces as follows: ▪ A separate new extract system for a solid fuel appliance(s) i.e. a charcoal chargrill but without a gas rotisserie. ▪ A separate new extract system for gas fuel appliances with atmospheric burners… ▪ A separate new extract system for a gas only pizza oven…'

Tenant's engineer	o The PS1 states the airflow to the deck oven to be 700l/s from a waterwash system showing solid fuel was to be used. o The PS1 refers to a 'separate duct fan', not a 'separate duct' to the chargrill hood. o The use of solid fuel appliances satisfied Clause G4. o 'The only [paragraph] of AS1668 not followed was a [paragraph] with no correlation to G4.' o The inclusion of a spark arrestor is safer than a separate duct. o In terms of the risk associated with the use of wood in the deck oven, the wood was used to provide flavour to the food.
Applicant's engineer	o 'The waterwash has not been type tested by an authority as a fire suppression device for solid fuels'. The 'manufacturer states in the operating manual that the waterwash is a filter'. o 'the chargrill hood is connected to other hoods with gas fuelled appliances which is not permitted under the Gas Act'. o 'spark arrestors do not prevent sparks from entering a duct'. o The definition of "flue" in AS/NZS 5601.1 includes (NZS 5261 has a similar definition): ▪ "A material or duct through which combustion products are discharged, including any draught diverter, slip joint and associated duct, barometric device, fan or other components in the duct and includes the following …" ▪ "A flue system containing a draught diverter or canopy".
D4 Airflows (refer also D8 for comment on airflows for the chargrill and rotisserie)	
Applicant	o The airflows shown on the PS1 shows that the chargrill/rotisserie was designed for gas fuels with an airflow factor of 375 l/s as the combination solid fuel chargrill would have required 750 l/s as per AS1668.2. o The extract system does not meet the minimum Building Code extract airflow rates. The calculations of the main hood air qualities are incorrect as stated on the PS1: ▪ The main hood designed air quality needs to be increased by at least 33% to comply with the minimum required airflow as per AS1668.2. ▪ The two fans serving the main hood cannot deliver the required minimum airflow without overloading the motor. ▪ The total airflow rate at the roof outlet with all four fans running should be increased by at least 58% to comply with minimum required airflow as per AS1668.2.
Expert	o The expert relied on a commissioning services company test in relation to the calculations of total airflow value ("the airflow test"). o The chargrill had been replaced with a gas target top and oven combo, the total airflow requirement for the new equipment is 'at its worst the same as that consented'. o The calculated flow rate for the main hood and total extract system as given on the PS1 does not comply with AS 1668.2 section 5.6.
Authority	o The design calculation based on the use of gas equipment and to the AS1668.2 2002 standard was incorrect resulting in a shortage of airflow rate of approximately 500 l/sec. The authority relied upon the PS1. o The Designer appears to have based their calculation of the hood design on gas appliances only. The authority relied upon the PS3.
Tenant's engineer	o The exhaust volume flow rates have been incorrectly calculated by the expert; the correct calculations show the flow from the kitchen exceeds the minimum requirements of AS1668.2 and therefore also comfortably exceeds that of Clause G4. o The height factor (vertical distance from appliance to hood under AS1668) is taken from the top of the appliance and not the cooking surface.

Applicant	o The gas top oven range is a type 3 'hot top range' as per AS1668. o The height factor is not taken from the top of any pots on the appliance. o The PS1 is a 'false statement'; the design air quantities are not in accordance with the Acceptable Solutions. o The PS3 is also a 'false statement' as the air quantities shown for the main and chargrill hoods do not comply with AS1668.2.
Tenant	o It is not necessary to retest the extract airflows, the consented figure and the tested figures are compliant. o If performance testing is undertaken it would be appropriate to follow the Verification Method for air purity.
Review consultant	o The height factor is interpreted to be from the cooking device and not cooking utensils such as pots, etc. o The as-built extract airflows of the main hood are below the required airflow given in AS1668.2. o The two airflow tests carried out to date are not considered to be accurate.
Tenant's engineer	o The review consultant has not provided any calculations in stating they agree with the expert as to the flow rate for the main hood. The calculations show a flow rate of 1560 l/s, with a consented figure of 1800 l/s. o The review consultant has incorrectly calculated the fan head calculation for the main hood. o The review consultant recommended airflows be re-measured, this is not necessary due to the commissioning engineers being experienced and potential errors pointed out to the extent noted by the review consultant are unlikely. o It was reasonable to assume the exhaust riser duct was fit for purpose.
Review consultant	o There are no as-built of shop drawings provided and the calculations used are a best estimate. The test results indicate airflows that do not satisfy the PS1, in particular for the deck oven. o The test results when plotted against the fan curves provide contradictory results suggesting either or both are inaccurate. o It was good practice for an engineer to verify the full ventilation system. o There had been much discussion about the correct airflow rates. As the kitchen equipment had been modified from that consented it was recommended a new consent should be applied for with the airflow verified by all parties.
Applicant's engineer	o The airflow calculations on the PS1 and rates on the PS3 are flawed as they are below the minimum Building Code requirements.
Tenant	o Use of the kitchen has proven that the actual flow rates remove cooking fumes and odours from the kitchen adequately.
Applicant	o Airflow calculations need to be considered for use of both appliances, not only the worst case use of either the chargrill or the rotisserie, as these appliances are designed for simultaneous use. o Reviewing the airflow for the rotisserie/chargrill that does not comply with the Building Code is redundant until it complies. o AS1668 does not provide airflow calculations for combined gas/solid fuel extract systems as they are not permitted. o The present extract system does not adequately filter odours from the pizza oven exhaust.
Tenant's engineer	o Incorrect calculations have been used as a basis to require an increase in airflow by 58%. As the riser duct is pressurised and leaks, the airflow measured at the roof is less than the flow from the hoods. o There is no are leakage from the kitchen ductwork.
Applicant	o The 'lack of extract air' means an inability to capture cooking fumes which has 'caused a considerable amount of fat/oil/grease being deposited on the walls, ceilings and floors in the kitchen and elsewhere such as inside the toilets' to such an extent that the tenant recently shut the [café] … for a major clean-up/repaint/refloor and the like…'

Tenant's engineer	o	The airflow rate of 2310 l/s calculated by the expert contained significant errors.
Applicant's engineer	o o	'The airflow calculation is somewhat academic as the AS/NZS1668 does not allow a solid and gas fuel appliance under the same hood nor does it provide airflow calculations for it.' The airflow rate of 2310l/s is correct for Type 3 appliances.
D5 Make-up air supply		
Expert	o o o	As listed on the PS1 the total flow rate for the extract system is 3,490 l/s. A 'Producer statement construction' ("the PS3") was also provided for the mechanical ventilation confirming the extract flow rates in operation as 3,590 l/s but no details regarding make-up air were provided. The PS3 is dated November 2012 and the expert considered it was reasonable to assume windows and doors to the café likely to be open allowing the entry of make-up air. It is not clear how the outdoor make-up air for the deck oven extract is obtained. The outdoor make-up air duct connecting to the proprietary extract spigot over the deck oven could not be observed on site. The solid plasterboard ceiling in the kitchen area also prevented the expert's observation of any possible outdoor make-up air. There is no evidence to suggest that the make-up air for the extract system has been allowed for sufficiently and is unlikely to comply with AS 1668.2 section 5.8. There is a possible difference between testing in summer and winter: in winter doors and windows are more likely to be closed increasing the pressure requirement on the extract fans to draw air through the system.
Expert	o o o o	The PS1 says 'Fresh air to be provided at rear of full height louvered plenum by means of vertical row of hinged filter grilles to suit.' It was unclear whether the grilles mentioned are connected to the duct shown on the drawing accompanying the PS1, an implied separate supply or both. It is reasonable to expect the PS1 note would apply to both the ducted fresh air to the dishwash area, and the separate make-up air supply. 'The wall of the outdoor-air plenum on the kitchen side was completely sealed, with the only opening present for the [approximately 300 x 300 grille to the dishwash area]'. The grille over the dishwash area was providing 'some of the required make-up air'. 'The as-built make-up air would appear to contradict the intentions of the designer to supply a separate outdoor-air supply from the single duct and grille. It is difficult to ascertain the level of deviation from the intended design as the details provided are minimal.' The outdoor air supply system is shown on the kitchen ventilation plan drawing, but no specifications for the flow rate is given and indicates the make-up air is for the café seating area only not for the kitchen extract system. The expert concluded that as no details of either a mechanical or passive make-up air system for the extract system has been provided it is unlikely the make-up air to the kitchen extract system meets AS 1668.2.
Tenant's engineer	o o	Replenishment of extract air is made up from a combination of mechanical supply to the wash up area and from the adjacent café area which is supplied by natural ventilation. The means of opening doors and windows satisfies G4.3.1, which does not require them to be physically open at all times. The PS3 shows that the measured flow was in excess of the consented flow as submitted in the PS1 and is therefore compliant. It is immaterial where the make-up air comes from.
Applicant	o o	The performance of the make-up air system has not been established and the stated 580l/s is inadequate and therefore non-compliant. Open doors do not comply with G4 which requires either permanent openings or a make-up air system.
Tenant	o	The opening of windows and doors are an Acceptable Solution not an alternative solution according to section 3 of AS1668.2.

Review consultant	o The make-up air should be capable of providing approx. 75 - 80% of the extract volume. The make-up air was estimated at 2690 l/s. o The installation as designed has deficiencies in the make-up air path. The installation of the additional fresh air make-up grilles (refer paragraph 2.4.3) appear adequate in addition to other openings. o For the addition make-up grilles to be effective the rear internal door is required to be left open.
Tenant's engineer	o The new make-up air path is an enhancement for fire egress and should not require the additional complication of seeking approval from a fire engineer.
Applicant	o The new make-up air grilles require building consent, no application has been made by the tenant for a certificate of acceptance. o The new make-up air grilles provide insufficient make-up air o There is no evidence in the building consent or code compliance that the make-up air complied (or does now) with section 5.8.3 of AS1668.2. o A determination is not sought on the make-up air as it is now, but as it was at the time the code compliance certificate was issued. o The tenant fire report requires the external kitchen door to be open while the café is in operation. The internal door must be closed due to safety, noise, extract operation and landlord requirements. This makes it impossible for the make-up air to enter into the kitchen. o The maximum air pressure drop of 12Pa through the 4000x590 exterior louvre and 600x600 grills will be exceeded with an air quantity of approximately 2 m^3/s, which is only 50% of the required air quantity.
Tenant's engineer	o A certificate of acceptance could be obtained in retrospect for the additional grilles. o The pressure drop requirement comes from AS1668, not the Building Code. o The pressure drop measured with all doors and windows closed including the internal door blocking air from the grilles 'exceeded 12 Pa'. Under ''normal conditions' the door is normally open was 'significantly below 12 Pa and therefore compliant.'
Applicant	o The tenant has stated no regulation or standard to support the statement that the air supply is significantly greater than the requirement for make-up air.
Expert	o The installation was consented with a 3,490 l/s extract rate and an intake air louver of unspecified size. No sizes or calculations were provided to demonstrate the system complies. o The exterior louvre is likely to have a pressure loss of 4 Pa when the face velocity is 1.5 m/s. Because the installed louvre (by visual inspection) appears to have a lower weather protection rating than a known product type the louvre has a pressure drop lower than 4 Pa. o To not exceed 12 Pa total pressure drop, the pressure drop across the 600x600 egg crate grilles would have to be in the order of 8 Pa, being 12 Pa minus 4 Pa maximum for the intake louver. Providing 3,490 l/s through 2x 600x600 'egg crate' grilles will generate a pressure drop of approximately 33 Pa with no filters. o To have an approximate pressure drop of 8 Pa in order that the total system pressure drop not exceed 12 Pa, 4x such grilles would be required with no filters. If filters were provided, which is the norm to keep the kitchen clean, the number or area of grilles required would be higher again. o The intake louver plus the 2 grilles cannot therefore be said to meet G4/AS1 as a make-up air path. It is allowed and possible that air can be made up from the dining area, any such openings should be interlocked in some way to the extract systems and the like. o The current installation does not comply with the maximum pressure drop limits of G4/AS1. The make-up air could operate at a higher pressure drop than allowed by G4/AS1 but provide a workable solution to Clause G4.
Tenant	o The doors and windows … can be opened by staff as required to produce pressure drops less than 12 Pa… o The expert has ignored the air supply to the dishwash area and ignored leakage from window seals that are 'far from airtight'.

Applicant	o The make-up air system results in a negative air pressure 'which does not comply with the mandatory [paragraph] 2.6.5 of the Gas Regulations' [AS/NZS 5601.1].
Tenant's engineer	o 'The original make-up air louvre[21] as provided by the base-build works would have always been insufficient to provide all of the make-up air…' o The full height louvre 'would have been detrimental to the effective operation of the extraction system. … The permanent opening of this size and location 'would cause a significant through draught and prevented the efficient capture of cooking fumes and odours into the kitchen hood extract system.' o The fan to the dishwash area was supplying 580l/s and not 200l/s. o 'Make-up air through openable doors and windows via adjacent spaces is clearly an acceptable method of complying…' o The eggcrate grilles 'were only installed by the tenant as a measure of good' and were not required for compliance.
Applicant's engineer	o 'the base building make-up air grill was provided together with a plenum behind it, as per the tenant's make-up air requirements … for the tenant to cut/connect into & install a make-up air system/fan'. o The additional egg crate grilles 'serve no purpose as they are located outside the kitchen door that is shut during the [café's] operation'. o The applicant provided the make-up air grill and plenum for the tenant to connect their make-up air system … to prevent noise breakout from the kitchen.
D6 The extract fans	
Applicant	o The fan electrical motors are the open vented type with 'grease laden air' going through the motor windings to cool the motor.
Expert	o Whether the impellers are metal or polypropylene would not affect the compliance of the extract system. The use of a combustible material for the impeller would not be considered good design practice. o The use of an open-vented motor in a fan was not good design practice as grease will inhibit the motor's ability to be cooled by air. o American standard NFPA[22] 96, which defined best practice for commercial kitchen ventilation, requires that fans for the extract system be listed in accordance with UL762 which required that if an open-vented motor is used, it must be removed from the air stream and protected from grease accumulation. If the motor was within the air stream, it must be rated for the application. o The supplier of the extract fans had confirmed they were not rated for use in a commercial kitchen.
Tenant's engineer	o The fans are compliant with AS1668 as the standard states only the casing shall be non-combustible and they have automatic thermal overload protection to safeguard against overheating.
Applicant	o The fans are not compliant with AS1668 as the motor fan is not encased. o The existing 'in duct mounted fans with integral open vented IP20 motors' do not comply with AS1668.1. o The review consultant did not investigate the fan motor's compliance with the Electricity (Safety) Regulations. o It is not possible to clean the fan windings, therefore the motors do not comply with AS1668.1. o The applicant agrees with the review consultant that the fans cannot produce the required air quantities as the fan curves show that the flows cannot be achieved with the calculated static pressure drop.
Review consultant	o The extract fans comply with the intent of AS1668.1 but are not 'best practice'. o No specific requirement in the relevant standards was known of that determined fan or motor characteristics.

[21] The PS1 references fresh air to be provided 'at rear of full height louvres' – these are presumed to be louvres being referred to here

[22] The National Fire Protection Association (NFPA) – a United States trade association that creates and maintains standards and codes for usage and adoption by local governments in the United States.

Tenant's engineers	o The installation of the fans complies with Clause G9 of the Building Code and AS/NZS 3000 Electrical installations. o The motors are fitted with internal thermal protection so if they were to warm up too much (a temperature that is below that required to ignite grease/fat) the electricity would be cut off.
Applicant's engineer	o The fan motor is fitted with a thermal overload that acts on the current drawn, not on the fan motor temperature. o A spark caused by a short circuit may ignite the fat/grease on the motor windings and cause a fire before the thermal overload disconnects the power supply. o An enclosed fan motor should have been installed, where the windings are enclosed. The fan motors do not comply with the Electricity (Safety) Regulations. o '… compliance with G9 & AS/NZS 3000 does not necessarily mean compliance with the Building Code (e.g. as far as electrical installations are concerned)'.
Applicant	o The ventilation system does not comply with the Electrical (Safety) Regulations of the Electricity Act. o The overcurrent relay currently installed is slow acting and cannot prevent a short circuit in the windings, which are grease laden and therefore at risk of fire. o The fan motors do not have thermistors. o The Ministry has not reviewed compliance of the power supply to the fan motors with respect to fire risk. The circuit breakers are located in a distribution board in the wall by the second fire escape. o The power supply to the extract fans was relocated by the tenant in the fire escape route without documentation. o The tenant fire report requires the external kitchen door to be kept open while the café is in operation, meaning the electrical distribution board is also accessible to the public creating a further safety risk.
Tenant's engineer	o The location of the distribution board in the fire escape route is compliant with fire codes, and the fire report considers this acceptable. o An additional door was installed to provide an egress route compliant with C/AS1 – in the kitchen opening outwards onto the landing. The internal door was opened for sufficient make-up air, and the egress route eternal door closed for security, which is in contravention of the fire report. A fire engineer has advised that an additional door is not a fire requirement but would have been suggested for security reasons. This could be left open or changed to security mesh to be compliant.
Expert	o AS/ZNS 3000 Paragraph 4.13.3.1 'Protection against over-temperature' requires that "Protection against over-temperature will be provided where motors may be required to run unattended (where no person is normally in attendance in the vicinity of the motor) – such as refrigerator motor." o A motor driving an extract fan that is usually in operation when someone is in attendance does need overload protection, but does not need over-temperature protection. Depending on the size of the motor, the overload protection is usually a contactor with an associated thermal protection relay fed from a circuit breaker.
Expert	o Paragraph 2.9.2.2 'Accessibility and emergency exit facilities' of AS/NZS 3000 requires: "Sufficient access and exit facilities are considered to be the provision of the following: i) Unimpeded space of at least 0.6 m around the switchboards with the switchgear doors in any position and large circuit breakers racked out … ii) Adequate alternative emergency exit paths where a switchboard." o The location of the circuit breakers in a distribution board located in the wall of the second fire escape must comply with the above, and if it complies with the clearances stated it is considered as no obstruction.
Tenant	o The electrical safety measures to the fans are in place. o The correct distances have been provided round the distribution board.

Applicant	o The fan motors were a fire risk; an electrical short circuit or spark would ignite grease/fat/oils' before any overload protection took effect.
Tenant's engineer	o The fan motors have over temperature protection. 'If a fault in the motor was to result in a short circuit and a spark; then the over-current device, fuse or circuit breaker, located in the switch board would cut the power almost instantly'. o 'Fat etc. on a motor would need significantly more heat than contained in a spark in order to raise the temperature enough to cause a fire'. o The engineer measured clearance around the open switchboard doors (being 655mm).
Applicant's engineer	o The fan motors located in the extract ducts represented an unacceptable fire risk. o Creosote from burning wood has a low flashpoint and can easily be ignited by a spark. o The measured clearance around the open switchboard doors 'failed to measure the distance with the external door shut for the case that the door is shut whilst working in winter time, which is less than 600 mm'.
D7 Exhaust riser duct	
Expert	o There is 'anecdotal evidence' that the weight of the attenuator and how it has been installed may have led to exhaust air leaking out the broken duct seals. o The owner confirmed grease laden extract air leaking from the extract duct. This indicates extract air is getting in to the extract duct riser shaft, which continues to the roof through the offices and apartments on levels 1 and 2 respectively." o The location of the discharge point of the combined extract system at roof level meets AS 1668.2. The discharge velocity of the combined extract system is also compliant with AS 1668.2.
Authority	o Inspection of the duct riser indicates that the riser duct may be leaking.
Tenant's engineer	o AS1668 does not give a specific requirement for access to the exhaust riser duct and it is also not part of the consent being reviewed. o The riser duct forms part of the applicant's 'original base build consent'. It has been established the duct leaks, however, this is not due to the attenuator at the base. o The cause of the odour within the building is due to the riser duct leaking, and therefore not part of the tenant's building consent fit out.
Applicant	o The applicant disputes the statement that the riser duct does not have adequate sealing. The riser duct has a tested airflow well below the minimum required and is not the cause of the odour within the building. o The PS1 states the vertical duct and roof cowl was part of the designer's extract system design. The author of the PS1 is responsible for any design issues with the exhaust riser duct. o Another source of odours is through the building structure as it is not airtight and the surface sealing's of the walls and ceilings do not comply with Clause G3.
Review consultant	o The airflow testing carried out has not been accurate. The exhaust riser is under positive pressure. o Air appears to be escaping from the riser duct into the builder's duct and into the apartments, and is likely to be the primary source of odours. o The location of the exhaust on the roof meets AS1668.2 but this does not remove the possibility of occupants experiencing nuisance odours under certain weather conditions. o The pressure drop at the exhaust cowl was high and 'will be possibly' limiting the fan performance.
Tenant's engineer	o It was contended that it was always the applicant's intention that the riser duct would be at a positive pressure as the tenant's fans would be within the tenancy. It is reasonable to assume the ductwork provided by the owner was fit for purpose.
Applicant	o The designer was aware there was a single exhaust riser which was requested by the tenant at base-build stage. The PS1 shows the design was in accordance with the Acceptable Solution with one exhaust riser. This shows it was designed

	for gas fuels only. o The exhaust riser was opened to check for leaks for around three months in 2013; no leaks were evident. o The exhaust riser is irrelevant to the compliance with the ventilation requirements of AS/NZS 5601.
Applicant	o The tenant's engineer omitted to advise the Ministry that the riser was opened in the first half of 2013 for approximately two months. During this time the tenant's lawyer and engineer undertook several site inspections and found only one leak in the riser at the gap between the sheet metal and concrete ceiling slab in the kitchen. This was the responsibility of the tenant to seal, which the tenant did not do.
Expert	o A common exhaust duct may be either negatively or positively pressurised. The exhaust duct is positively pressurised; there is no fan at the discharge of the riser to the atmosphere exceeding the flow rate of the combined appliance exhaust fans. o Standards for the design of galvanised steel kitchen exhaust ductwork systems allow specified leakage rates owing to fabrication of the seams, gaskets, connections, cleaning, access panels, etc. Ductwork with a 0% leak rate must be specially designed, fabricated, and installed. o Industry best practice is to negatively-pressurise exhaust risers where the riser passes through other floors, meaning 'standard' kitchen exhaust ductwork may be used as air will leak into instead of out of the duct., properties or tenancies specially specified 0% leakage rate ductwork must be designed, installed and later maintained. o The system did not comply with Clause G4.3.4 at the time of installation as the ductwork system is probably of a type which can leak under positive pressure creating a nuisance and a hazard to people by leaking the products of cooking exhaust and combustion to occupied and enclosed spaces. o The leakage of exhaust gasses is independent of whether or not solid fuel appliances discharge to the common exhaust. Cooking fumes with a lesser odour, likely in the absence of solid fuel, will potentially contain the same hazardous products of combustion but may go unnoticed owing to lower unaided detectability.
Tenant's engineer	o The riser duct falls outside the building consent that is the subject of the determination. o The riser duct was exposed and inspected for two months in early 2013 and it was not leaking. The present condition is unknown due to vibration and the weight of the attenuator.
D8 The chargrill and rotisserie	
Tenant's engineer	o The rotisserie was provided with a metal heat shield between the gas burners and the grease filters above. The hood has a fire suppression sprinkler and a water spray spark arrestor above the filter where the fumes discharge into a fire-rated riser. o The kitchen hood overhangs meets AS1668. o The chargrill and rotisserie were not able to be operated at the same time as it would be too hot to remove the rotisserie skewers. The design engineer used the correct approach (paragraph 5.5 of AS1688.2 (not clause 5.6 as stated by the review consultant). The PS1 calculated the 'worst case operation scenario' of the chargrill.
Review consultant	o The rotisserie and chargrill are two separate appliances as far as AS1668.2 is concerned and the designed airflow for these appliances did not comply with AS 1668.2. Based on the actual hood dimensions the airflow required by AS1668.2 Clause 5.6 is 2228 l/s. The PS1 allows for 990 l/s. o The PS1 nor any supporting correspondence did not say that the rotisserie and the chargrill was not be used that the same time. Staff should also understand equipment limitations.
Expert	o In the expert's supplementary report, it was noted the rotisserie and chargrill have been removed so assessment is on photographs and plans provided.

	o The rotisserie and chargrill were abutted by a vertical partition wall of incombustible construction (steel stud with fibre cement lining, tiled on the exposed side). o The grease filter is located around 450mm above the top of the grill, meeting the intent of the minimum clearance from international standards, for example NFPA 96 requires a minimum 457mm clearance. o There is no evidence this arrangement failed to comply with Clauses C1.3.1 and C1.3.2 of the Building Code at the time of installation.
Applicant	o The chargrill/rotisserie installation does not comply with paragraph 6.3.7 of AS/NZS 5601.1.
Tenant's engineer	o Paragraph 6.3.7 of AS/NZS 5601 does not apply to the chargrill/rotisserie appliance installed. o The charcoal rotisserie is one combined appliance, not two appliances one above the other. There is a spit drip tray over the chargrill section for when the rotisserie section is in use, preventing the chargrill under the rotisserie being used. [The tenant provided a copy of the installation and service instructions for the chargrill/rotisserie appliance.]
Applicant	o The distance required between the source of ignition and filter for gas fuel cannot be reduced as the fire sprinklers are not fire quenching media nor automatic. o There is no shield in place as stated by the tenant's engineer, rather an open grid/resting rack. o It is the tenant's intention to reinstate the rotisserie. Refer affidavit of Jackie-Lee Grant, dated 22 November 2013. o The manufacturer's installation and service instructions confirm that the chargrill and rotisserie can be used at the same time: "If you are not using the charcoal section at the same time, then place the extra grease tray provided on top of the branding grates under the spits to catch fats etc from the product you are cooking this will prevent fat etc from going into the charcoal pit" (p8, installation and service instructions manual).
Tenant's engineer	o It is possible to have the rotisserie and chargrill alight simultaneously, it is operationally impractical and unsafe to do so and therefore does not occur in practice.
Applicant	o The chargrill and rotisserie appliance required a flue and its installation without one breached paragraph 2.5.8 of AS/NZS 5601.1.
Tenant's engineer	o AS1668 requires the inside dimensions to be taken for the size calculation. The PS1's 1.2mx1.2m internal dimensions for the chargrill hood are correct.
Applicant's engineer	o 'The hood is too small … as its overhang is [less than] 100 mm instead of the 300 mm on the front face required for solid fuels…'
D9 On the expert's report	
Tenant	o The expert's report contained errors in fact and relies on the apparent deficiency in the detail of make-up air for the extract system assuming the extract system had been designed for gas appliances only without due consideration to an engineered solution of the contents of the PS/1.
Tenant's engineer	o The expert's report suggests compliance with AS1668 is the only method of compliance with Building Code Clause G4.
Expert (Review of submissions received as at Aug 2014)	o The expert's report assessed the installation against G4/AS1 including AS1668.2 as this is the stated means of compliance in the building consent. Assessment against other criteria was outside the scope of the expert's report. o The alternative solutions presented by the tenant's engineers may have merit, but any alternative solution was for the authority to consider, and accept if compliant. o 'The only criteria set out by the Acceptable Solution for Solid Fuel is; 1. That the exhaust be separated from extract systems removing grease or oil fumes. While the standard does not specifically state why this needs to be done, the implication is fire risk to greasy ducts from sparks.

	2. Reference to … pollution control authorities where the discharge is likely to be significant pollutant…' o Testing of the kitchen extract system could be completed to validate and support proposals relating to compliance put forward by the tenant's engineer. o The building consent and code compliance certificate allow the use of solid fuel appliances and the installation of a solid fuel oven. o The make-up air path is not compliant.
Applicant	o The ventilation system is a forced ventilation system used for combustion. o Mechanical ventilation and safety interfaces are required, including an interlock.
Tenant's engineer	o The passive ventilation is compliant with the gas regulations and therefore no safety interface is required. o The café does not have a mechanical system and therefore clause 5.8.2 (of AS1668.2) does not apply.
D10 The code compliance certificate	
Authority	o The authority acted reasonably in relying on the producer statements and therefore disputes the statement in the draft determination that the authority was incorrect to issue the code compliance certificate.
Tenant	o The building work was completed in accordance with AS1668 which is an Acceptable Solution cited in G4/AS1. o It was not accepted that the use of solid fuel appliances and the installed ventilation system in the kitchen did not meet the Building Code, or that a code compliance certificate was incorrectly issued.
Tenant's engineer	o The kitchen extract system completed under Building Consent No. B/2012/4175 complies with G4 of the Building Code. The building consent and code compliance certificate made no distinction between the use of solid fuel appliances, gas fired appliances or duel fuel appliances. The code compliance certificate was correctly issued. o 'The separation of solid fuel exhausts is contained in AS1668' which has 'no relevance to [the Building Code] and 'is of no significance in determining which method of compliance is highlighted in completing a Producer Statement.'
Review consultant	o '…the PS1 provided to demonstrate compliance with G4 indicates that the design is based on the Acceptable Solution and AS 1668. This document was relied upon by [the authority] in issuing the Building Consent.'
Applicant	o The kitchen extract system does not comply with Clause G4. The building consent documents imply gas fuels only and AS1668 makes a distinct difference between solid fuel and gas fuel appliances requiring separate extract systems for solid fuels. The code compliance certificate was not correctly issued. o The extract system when considered as an Acceptable Solution does not comply with AS1668.2 due to the combined extract system. An alternative solution will have to meet the same standard as the Acceptable Solution. It is unlikely in this case that the installation will be approved as an alternative solution.
Applicant's engineer	o The authority issued the code compliance certificate on the strength of the PS3 given for G4, however, the authority was unaware the PS3 was flawed with regards to air quantities and confirmed a single extract system. o Disagreed the code compliance certificate included both the chargrill and deck oven as solid fuel appliances as the authority has relied on building consent documentation and producer statements which did not show any solid fuel appliances.
Applicant	o The Gas Fitting Certificate of Compliance does not mention the installation of the rotisserie/chargrill, indicating that this appliance was not part of the approved building consent or code compliance documentation.
Tenant's engineer	o The kitchen ventilation system has been working for several years effectively, and its in-service history can be used as an alternative solution to comply with the Building Code. o Whether the design is considered as an Acceptable Solution or alternative solution, it is still compliant with the Building Code which is the only mandatory requirement.

Applicant's engineer	o 'Since the [café] opened in December 2012, the foul kitchen cooking odours & vibrations/noise from the [café] has pervaded the inside of building as well as … outside … i.e. the … footpaths and the courtyard … with numerous historical, ongoing and present complaints from tenants & others' o 'Tests'[23] to determine the cause of the odours were conducted in March 2013. The test results showed 'a fan paralleling & fan stall problem as the fan systems are unstable'. 'The fan problem has never been rectified and remains a problem to this day and is the reason for the extract system not capturing the cooking fumes.'
D11 Submissions on legal basis for establishing compliance	
Tenant	o The applicant is attempting to interpret and read into the Acceptable Solution mandatory requirements not contained in the Building Code; the matter should be determined on the basis of consent No. B/2012/4175 and the installations and equipment in situ.
Applicant	o The building consent for the kitchen extract system was applied for by complying with the Acceptable Solution G4/AS1 as stated in the PS1. The compliance with G4/AS1 makes section 5 of AS1668 mandatory. o AS1668.1 is referenced in Clause C1.1 of the Building Code and is a requirement of the Building Code.
Tenant	o Compliance with the Gas Act or Electricity Act are not relevant to compliance with the Building Code if they are not stated as the means to compliance. o References to AS1668.1 in the Acceptable Solutions for the fire safety clauses are all limited to systems which are not relevant to the café. o G4/AS1 paragraph 2.1 not relevant - it is applicable to gas boilers. Kitchen equipment can neither be room-sealed nor have a draught diverter if the cooking surface is to be accessed. o Section 19 of the Act refers to compliance in accordance with any or all of the principles set out in that section - only one means of compliance is required.
Applicant	o The gas and electrical installations fall under section 19(e) of the Act, and for which compliance with the Building Code has to be established. o AS/NZS 5601 is mandatory under section 43(1) of the Gas (Safety and Measurement) Regulations 2010[24]. The building consent application included both gas and electrical installation in the kitchen and certificates for these 'were issued as a means of compliance'. Compliance with the Gas and Electricity Acts is mandatory and therefore compliance with AS/NZS 5601 and AS1668.1 (&.2) is mandatory. o AS/NZS 5601 in turn requires compliance with AS/NZS 1668.1 & 2. o The solid fuel is used for cooking, not just flavouring (refer AS1668.1 14.3.4). o G4/AS1 paragraph 2.1 is 'natural ventilation' and 2.1.3 is for all appliances and includes kitchen appliances. o AS/NZS 5601 paragraph 5.13.1 applies as the kitchen's gas appliances' (pressure) regulators are located inside the kitchen.

[23] I have not seen a copy of the test results
[24] Amended on 1 July 2013.

Applicant	o There is no Electrical Compliance Certificate for the fan installation in the code compliance certificate documentation. o The location of the chargrill/rotisserie is not fixed as it has wheels, so ongoing compliance cannot be maintained with respect to being located away from building elements adversely affected by heat transfer or concentration. o Disagrees with the Ministry's conclusion that building consent cannot permit use of an appliance, as the Building Code expressly governs and permits use of certain appliances provided they comply. o Seeks a reversal of the authority's decision to grant building consent and the resulting code compliance documentation. o The matters to be determined should be considered with regard for all applicable clauses of the Building Code. o The matters for which a determination has been sought have not yet been assessed. o The applicant does not amend the matters for which it seeks a determination.
Applicant	o 'The applicable mandatory gas regulations for this determination are the Gas (Safety and Measurement) Regulations 2010 … and the applicable mandatory standard is AS/NZS 5601.1.' The determination's statement that NZS 5261 applied at the time the consent was issued is erroneous. o 'Mandatory internet registers of certified/declared and endorsed appliances is kept by WorkSafe New Zealand, as required by the Gas Regulations.'; the deck oven and the chargrill/rotisserie are not listed, and their installation is 'illegal'.
D12 Additional matters relating to Clauses C1, G11, G12, and G13	
Applicant's engineer	o The building consent did not attach any documents, producer statements, or other information for the chargrill/rotisserie or deck oven to show their installation was compliant with Clause C1 of the Building Code. o The chargrill/rotisserie had a fire risk relating to the rotisserie producing oil and fats; and the chargrill providing the ignition for a fire. o The deck oven is a high temperature appliance and requires a separate extract system. There are no documents showing compliance with Clause C1. o A domestic water connection in a building requires a building consent application with producer statements and documents to detail compliance with Clause G12. The deck oven has a domestic water connection for an integral spray filter but no documentation for this. o There is no backflow prevention as required by Clause G12.3.7(d)[25]. o A waste water connection requires a building consent application with a producer statement and documents to detail compliance with G13. The deck oven has a foul sewer connection for an integral spray filter, and no foul water trap.
Expert	***Deck oven's compliance with Clause C1*** o At the time of installation the deck oven was a solid fuel appliance capable of using solid fuel or gas fuel or both. It is currently being used as a natural gas appliance only. o The construction containing the deck oven is incombustible (steel stud walls with fibre cement linings). The extract ductwork is metallic, with no visible combustible material. There is no evidence the arrangement did not comply with C1.3.1 and C1.3.2 of the Building Code. ***Deck oven compliance with Clause G12*** o The deck oven complies with Clause G12.3.2. The spray nozzle acts as an air break between the building water supply and contaminated water sources. ***Deck oven compliance with Clause G13*** o The deck oven complies with Clause G13.3.1. The flue water tray collects water from the spray nozzle and is drained to the sanitary sewer. The drain is adequate in diameter for the flow rates and does not convey solids or grease. o The drain and water trap prevent foul air entering the building. The trap cannot be taken apart for cleaning but the drain can be disconnected and rodded above the drain tray for maintenance and unblocking. The copper drain ensures water is cool enough to enter the uPVC sewer.

[25] Clause G12.3.7(d) is only applicable if a backflow prevention device is required to satisfy Clause G12.3.2.

	Gas system compliance with Clause G11 o The expert is of the opinion the gas system complies with G11.3.2 under common interpretation of the clause. G11.3.2 defines that gas must be isolated if ventilation fails for safety aspects. o No continuous forced ventilation systems are required for combustion, all burners are atmospheric type. There are continuous forced ventilation systems for extract fans and hoods, none of which were initially installed with automatic interlocks to the gas supply. When the deck oven extract fan failed, and overheated, the interlocked gas cut-out solenoid valve was installed on repair. o Other appliances no not have interlocks between extract fans and gas supply. If the associated extract fan(s) failed the appliance would continue to operate in a safe manner. Ventilation is adequate to prevent overheating and it is reasonable to assume other ventilation could only be relied on until staff realised a problem and disabled the appliance.
Tenant's engineer	o The installations meet the provisions of C1. The appliances are designed and manufactured in Australia to meet standards common to Australia and New Zealand. o The deck oven has thick refractory masonry with substantial fire insulation preventing surface temperatures of surrounding materials becoming hot and below the flash point of oils and fats for cooking. o The deck oven has (and rotisserie had) spark arresters to prevent sparks coming into contact with deposits on the downstream ductwork from other appliances discharges. o The extract system is fire-rated so if a fire were to occur within the extract system it is contained within the system and will not spread to the parts of the building where people are present, complying Clause C1. o Clause G11 references NZS 5261:2003 (replaced by AS/NZS 5601) relating to the requirement for ventilation of commercial cooking spaces. o The air requirement is deemed to be satisfied by adventitious openings if the total gas from the gas appliances does not exceed 3MJ/h per cubic metre of room/enclosure volume. This is satisfied and no additional air is required. o The water installation satisfies Clause G12 and the waste water installation appears to satisfy Clause G13.
Applicant	o With respect to the gas system's compliance with Clause G11, the calculation of adventitious openings in paragraph 5.13.1 of AS/NZS 5601 show the adventitious openings to the outside to be insufficient to comply with the Standard. o The interlock between the supply air and gas supply is required to shut off the entire gas supply to the kitchen and not solely the deck oven. o The spray nozzle to the deck oven is enclosed in a metal box, the exhaust fumes contain creosote and other fumes that are toxic. A backflow preventer is required due to the toxic environment of the spray nozzle. o The copper trap was installed at a later stage.
Tenant's engineer	o The extract ducts within the café are constructed and installed to meet the fire resistance as required by AS1668.1 in that they are sheet metal and have surrounding insulation from combustible material provided by air. o Creosote is not listed as a contaminant in the New Zealand Drinking Water Standard ("NZDWS") and is not a contaminant that falls within the definition of a "toxic environment" as defined in G12/AS1. o The deck oven drain is compliant with G13. The copper trap is most likely original and is unlikely to have been concealed in a partition wall if installed after the café opened. o The chemical compounds listed by the applicant are not listed in the NZDWS and are therefore not applicable for consideration for air gap backflow prevention.
Applicant	o The extract ducts are made from sheet metal and are not fire rated. o Creosote/tar, etc, from wood burning will be a contaminant not complying with NZDWS. [The applicant provided a list of chemical compounds typical of Beechwood creosote]. o The air gap in the deck oven's spray box to which the water is connected cannot

	be considered an air gap as 'there is no air present but exhaust fumes and creosote'. The present connection enclosed box spray is a hazard which should be managed in terms of the Health & Safety Act by fitting a backflow preventer. o There are no building consent documents for the water connection to the deck oven; it was not approved as part of the consent. o The consent documents and producer statements do not include the foul water drain. The tenant advised they fitted a trap some months after the café opened. o Table 2 of in Acceptable Solution G12/AS1 says air gaps must not be used in a toxic environment.
Tenant's engineer	o The chargrill/rotisserie was one combined appliance and had been designed with AS/NZS5601 in mind. o It is noted there is a spit drip tray which goes over the chargrill section for when the rotisserie section is in use which prevents the chargrill under the rotisserie being used. o AS/NZS 5601 is not mandatory for compliance with the Building Code.
Applicant's engineer	o The manufacturer does not state the chargrill and rotisserie should not/cannot be operated simultaneously. o The building consent documents do not show a gasfitting certificate of compliance for the chargrill/rotisserie and it was therefore not possible for the authority to issue a building consent or code compliance certificate for it. o The spit tray only covers a portion of the chargrill and does not prevent the use of the chargrill with the rotisserie in operation.
Tenant 's engineers	o As there is no wall in between the kitchen and the seating area, and it is counted as one enclosure under NZS 5261. The kitchen alone is compliant, it is not reliant on a mechanical system and no interlock is necessary. o The café volume is many times larger than the minimum to provide the sole means of combustion air. The café has additional air supplies with the extract system drawing air into the kitchen.
Applicant	o Room volume is not the only requirement as the adventitious openings have not been evaluated as per AS/NZS 5601 paragraph 6.4.4.1. o 'The [café and] kitchen is airtight to the latest Building Code requirements and adventitious openings are insufficient', therefore a mechanical ventilation system and safety interlocking is required.
D13 Process for determination	
Applicant	o Disagrees with the Ministry's proposal to amend the application, however provides revised matters for which a determination is sought: • Was a valid building consent issued for the installation of any solid fuel appliances? • Should the Chief Executive reverse the authority's decision to issue a building consent for the installation of solid fuel appliances? • Was a valid code compliance certificate issued for the works undertaken pursuant to the building consent for solid fuel appliances? • Should the Chief Executive reverse the authority's decision to issue a code compliance certificate for the installation of solid fuel appliances? • Was a valid building consent issued for the installation of a solid fire pizza oven? • Was a valid code compliance certificate issued for the pizza oven? • Should the Chief Executive prohibit the use of the pizza oven until the matter is regularised by the tenant by obtaining a certificate of acceptance? • Was a valid code compliance certificate issued for the installation of a gas fired rotisserie grill? • Did the configuration of the gas fired rotisserie grill and solid fuel chargrill unit comply with the building code?
Tenant	o The determination process is not being used for the purposes intended by the Building Act 2004, but rather for collateral purposes as part of proceedings currently before the Court. o The increasing cost of the determination for the tax payer is a cause for concern. o It is not reasonable to continue to respond to amendments to the determination

		for matters that have been resolved.
Applicant	o	Section 188 of the Building Act does not empower the Chief Executive to redefine the matters for determination, and the applicant disagrees with the need to amend the application for determination regarding the matters to be determined.
	o	The applicant withdraws the proposed amendments to the matters for determination set out in the application.
Tenant	o	To continue with this determination would be vexatious or frivolous.
	o	The matters raised by the applicant have continued to change, for which there is no provision in the Building Act to amend an application.
	o	Section 185 of the Building Act requires determination to be made within 60 working days. There has been no agreed extension of time and so these matters have expired.
Tenant	o	The determination process was being misused. Much of the determination relates to equipment removed in 2013.