*under:* the Resource Management Act 1991

*in the matter of:* an application to the Selwyn District Council to change the Selwyn District Plan ('PC50') – including proposed amendments to the 'Dairy Processing Management Area'.

# Statement of evidence of Richard Leslie Chilton

Dated: 8 March 2017

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## STATEMENT OF EVIDENCE OF RICHARD LESLIE CHILTON

### INTRODUCTION

1 My name is **Richard Leslie Chilton**.

2 I hold the position of Principal Air Quality Scientist at Golder Associates (NZ) Limited (Golder), a ground engineering and environmental consulting firm. I have been employed by Golder since January 2006 and have over 17 years of experience in air quality management.

3 I hold the qualifications of a Bachelor of Science (University of Canterbury) and a Master of Science (Honours) in Environmental Science (University of Canterbury), specialising in air pollution meteorology. I am a member of the Clean Air Society of Australia and New Zealand (*CASANZ*) and a Certified Air Quality Professional (*CAQP*). My broader qualifications, expertise and experience are included in more detail in **Appendix A** of this evidence.

4 In terms of experience relating to dairy factories, I have project managed air discharge assessments and air discharge permit applications for a large number of Fonterra's sites. This includes the Fonterra Darfield (Stages 1 and 2), Clandeboye, Studholme, Pahiatua, Edendale, Kaikoura, Hautapu, Waitoa, Te Awamutu, Takaka, and Stirling sites. I have also been involved in the technical review of the air quality assessment of the most recent expansion of Synlait's dairy factory to the south of Dunsandel.

### SCOPE OF EVIDENCE

5 I have been asked by Fonterra Limited (*Fonterra*) to prepare this brief of evidence to assist the Hearing Panel in relation to odour amenity issues raised in the three submissions opposing proposed Plan Change 50 to the Selwyn District Plan (*PC50*).

6 In preparing my evidence I have:

6.1 Reviewed the PC50 application documents;

6.2 Reviewed the three submissions in opposition to PC50 where odour amenity issues were raised. These are the submissions by **Mr and Mrs Buttle**, **Ms Georgina McKeever-Eaves**, and **Mr and Mrs Jenkins**;

6.3 Reviewed the section 42A report (*s42A report*) prepared by consultant planner **Mrs Melanie Foote** for the Selwyn District Council (*SDC*); and

6.4 Reviewed the technical memorandum dated 27 February 2017 prepared by **Mr Andrew Curtis**, air quality expert for the SDC and **attached** to **Mrs Foot**'s s42A report.

7 I took part in the expert caucusing that was held between planning and air quality experts on 23 February 2017, the outcomes of which are detailed in **Mrs Foote**'s s42A report.

8 As noted in paragraph 4 above, I was responsible for overseeing the air quality assessments that were prepared for Fonterra in relation to its resource consent applications for both the Stage 1 and 2 development of its Darfield site. This included preparing and presenting expert evidence at the resource consent hearings for both stages. I also oversaw the air discharge assessment for the installation of two small waste oil fired heaters at the site's tanker workshop. I have visited the site on a number of occasions, including most recently on 22 February 2017.

9 I have read the Expert Witness Code of Conduct set out in the Environment Court Practice Note 2014. I have complied with the code in preparing this evidence and I agree to comply with it while giving oral evidence. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

## ODOUR CONCERNS RAISED IN SUBMISSIONS

10 The Buttle submission expresses concern that the PC50 assessment of environmental effects (*AEE*) and PC50 provisions fail to consider potential odour effects resulting from the expanded land use operations provided for under PC50. The submission expresses the concern that PC50 would enable development on Fonterra site that would have the potential to generate significant adverse effects which will not be adequately avoided, mitigated or remedied by the PC50 provisions and that these effects include odour effects on the Buttle property.

11 The Jenkin and McKeever-Eaves submissions are similar to one-another and generally express concern regarding odour from the operation of two irrigators near to each submitter's property.

## FRAMEWORK FOR ODOUR ASSESSMENT

12 I consider it is helpful to explain how odours are managed and assessed in New Zealand under the resource management framework established by the Resource Management Act 1991 (*RMA*).

13 When assessing odour, the key determinant under the RMA is whether the odour impact is deemed to be an 'offensive or objectionable' effect. On its face this presents a challenge, because whether an odour is deemed to be 'offensive or objectionable' by an individual is subjective. What one person may find objectionable may not be for another person. It depends on a number of factors

such as a person's olfactory sensitivity and even their upbringing and cultural perceptions.

14 In New Zealand an objective approach is therefore taken by regulatory authorities when establishing whether odour effects are offensive or objectionable by considering the frequency, intensity and duration of odour impacts, the offensiveness/character of the odour (which may be pleasant, neutral or unpleasant), and the sensitivity of the location where the odour impacts are occurring. These factors are commonly referred to as the FIDOL factors and are described by the Ministry for the Environment (*MfE*) in its 'Good Practice Guide for Managing Odour'[1] and the Canterbury region's relevant regional plans, namely the Canterbury Natural Resources Regional Plan (*NRRP*) and the Proposed Canterbury Regional Air Plan (*pCARP*). The FIDOL factors should be used by regulatory authorities when investigating any alleged odour effects from an activity.

**RESPONSIBILITY FOR THE REGULATION OF ODOUR**

15 In my experience there is often some overlap between a district and a regional council when it comes to the assessment of odour. However, it is my understanding that it is a regional council that has the actual responsibility for regulating discharges to air, including odour, from 'industrial or trade activities' whereas for a district council, odour is only of more general relevance to the extent that it might inform wider amenity.

16 To explain this further I refer to the MfE's 'Good Practice Guide for Assessing and Managing Odour'[1] which sets out the legislative context for managing odour under the RMA. The guide notes that with respect to odorous emissions, district plan requirements are often similar to those of regional plans, but that there are two general approaches for exercising local government odour management functions:

> *(i) The effects of odour emissions should primarily be controlled at the regional level;*
>
> *(ii) A combined approach is taken, where odour emissions associated with any land use are controlled at the district level, and odour emissions associated with any activity requiring consent for discharges to air are controlled at the regional level.*
>
> *[my emphasis added as underlined text]*

17 The guide goes on to notes that *"Ideally, duplication between district and regional plans should be avoided."* These approaches

[1] MfE 2016. Good Practice Guide for Assessing and Managing Odour. Ministry for the Environment. Publication Number: ME 1278.

are consistent with my own experience with how regional and district council's approach the matter of odour regulation in New Zealand. Indeed, it is my experience that SDC will defer to the Canterbury Regional Council (*CRC*) on matters of odour where the CRC requires a resource consent for discharges to air from a given activity.

18 In this instance, the discharges of odour from Fonterra's activities at its Darfield site require a resource consent (an air discharge permit), which Fonterra has obtained and which I discuss later in my evidence. Given this, and the guidance from the MfE, it is clear to me that the regulation of any odours associated with Fonterra's activities associated with its Darfield site are most appropriately dealt with at a regional level. This is entirely consistent with my own experience having been involved in the consenting, compliance auditing, and investigation of odour complaints and the enforcement of air discharge permits requirements when I worked for the Auckland Regional Council.

**REQUIREMENT FOR AN AIR DISCHARGE PERMIT**

19 Fonterra's Darfield site is an industrial or trade premise as defined under the RMA. Section 15(1)(c) of the RMA requires that:

> *(1) No person may discharge any –*
>
> *(c) contaminants from any industrial or trade premises into air; …*
>
> *Unless the discharge is expressly allowed by a national environmental standard or other regulations, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.*

20 There are no national environmental standards or other regulations that I am aware of that provide for discharges to air from dairy factories that are located outside polluted airsheds. However, the discharges to air associated with the Darfield manufacturing site are regulated under the provisions of the operative NRRP and pCARP. The pCARP is not yet fully operative as it is subject to two appeals, however, it sets out the manner in which air discharges in the Canterbury Region will most likely be managed in the future.

21 Notwithstanding the status of the pCARP (which I understand can be given significant weighting in terms of its provisions and in light of section 86F of the RMA), the rules of the NRRP and the pCARP both require air discharge permits for the nature of activities carried out by Fonterra at its Darfield site.

22 The current requirement to obtain a discharge permit for a site such as Fonterra Darfield is essentially unchanged from the Clean Air Act

1972 which set out permitting requirements for industrial activities discharging to air prior to the enactment of the RMA (which repealed the Clean Air Act 1972).

**AIR DISCHARGE PERMITS HELD BY FONTERRA FOR THE DARFIELD SITE**

23 Having explained my understanding that the CRC is the appropriate regulatory authority in relation to odour emissions from Fonterra's Darfield site, and that air discharge permits are required for its activities, I will now go on to outline the relevant odour provisions of the air discharge permits held by Fonterra for its Darfield site.

24 Fonterra's Darfield site holds two air discharge permits from the CRC. The first of these (CRC156761 – **Attached** in **Appendix B** of my evidence) authorises the discharges from the main activities at the site, including discharges to air from the operation of two coal fired boilers and two milk powder dryers. This permit includes 49 conditions governing air discharges from the site. Of particular relevance to odour effects is Condition 3, which requires the following:

> *3(a). There shall be no odour, particulate matter or water droplet emission from the operation of the waste water irrigation or any other associated activity which is objectionable or offensive, in the opinion of the Canterbury Regional Council Enforcement Officer, beyond the boundary of the property where the activity occurs.*
>
> *3(b) The discharges, including construction activities, shall not cause particulate matter or odour that is objectionable or offensive, in the opinion of a Canterbury Regional Council Enforcement Officer, beyond the boundary of the milk processing plant site.*
>
> *[my emphasis added as underlined text]*

25 The second air discharge permit (CRC165424 - **Attached** in **Appendix B** of my evidence) relates to the operation of two small waste oil fired heaters (with a combined heat output of 150 kilowatts) that are used in colder months for heating the workshop used for the maintenance and repair of Fonterra's trucks. In my opinion, the scale and nature of this activity is very small relative to those authorised under Fonterra's main air discharge permit for the site (CRC156761). Condition 15 of this permit includes a similar requirement to CRC156761 in terms of odour effects, which states:

> *(15) The discharges shall not cause odour or deposited particulate material, which is offensive or objectionable beyond the boundary of the property on which the consent is exercised.*

*[my emphasis added as underlined text]*

26 In my experience, these conditions are typical of those required by regional consenting authorities throughout New Zealand for industrial or trade activities where an air discharge permit is required. These conditions are also consistent with the guidance of the MfE[1]. The key requirement is that odour emissions from the activity should not give rise to an offensive or objectionable odour effect beyond the boundary of the site.

27 It is important to understand that this requirement is not a "no odour" requirement but rather that the effects of odour must not be "offensive or objectionable". This leads onto how odour is assessed, which I have discussed earlier in my evidence. Such assessments rely on consideration of the FIDOL factors. Consequently, one of the key considerations is the sensitivity of the receiving environment. Rural farm land is generally considered to have a low sensitivity to odours, whereas rural residences have a moderate to high sensitivity, and residential neighbourhoods have a high sensitivity. Consequently, if the nature of the receiving environment surrounding Fonterra's site changes over time (such as a result of residential development), then this would be reflected in the evaluation of the FIDOL factors when assessing any odour effects.

28 I understand from discussions with Fonterra that it is unclear at this time as to what future changes or expansions may be made to the Darfield site. Consequently, it is not possible to robustly establish the potential changes in odour discharges that might occur. However, given the current requirements of the RMA and the rules in the NRRP and the pCARP, I consider that any proposal by Fonterra to increase the scale and nature of its discharges into air, including odour discharges, would require a change of conditions to the existing discharge permits or more likely further or replacement air discharge permit(s) to be sought from the CRC. Such an application would need to be accompanied by an assessment of effects on the environment, which would need to consider the potential odour effects of the change or expansion.

29 Notwithstanding any change of conditions or replacement resource consent process, I consider that the CRC would continue to require by way of consent condition that there be no offensive or objectionable odour effects beyond the boundary of the site.

**COMPLIANCE WITH AIR DISCHARGE PERMITS**

30 Fonterra's ability to comply with its air discharge permit requirements relating to odour is a matter raised in the three submissions opposing PC50.

31 I am not aware that Fonterra is not currently complying with its resource consent requirements. However, notwithstanding this, **Mr**

**Curtis** addresses the matter of compliance in his technical memorandum (attached to the section 42A report), and I generally agree with the conclusions he reaches. This culminates in **Mr Curtis**' statement in Section 6, paragraph 5, that:

> *"… there is no [odour] control that I am aware that might be included in the proposed plan change, over and above the controls already in the resource consents which could have prevented the odours from occurring, or resulted in a different outcome."*

32 In addition, I consider any potential non-compliance with Fonterra's air discharge permits is a matter that should be resolved between the company and the CRC as the regulator. Accordingly, it should not be a consideration for PC50.

**CONCLUSION**

33 In conclusion, I consider that odour associated with the operation of Fonterra's Darfield site is a matter that is regulated by the CRC. This is evidenced by the fact that Fonterra holds air discharge permits from the CRC for its activities and these permits include appropriate conditions requiring there be no offensive or objectionable odour effects beyond the site boundaries.

34 Any future changes to Fonterra's activities that would change or increase is discharges to air would require a change to or a replacement air discharge permit. However, in my opinion, it is highly unlikely that the CRC would provide for a more 'relaxed' requirement in relation to odour effects than is already required of Fonterra. Given this context, I do not consider it necessary or appropriate that the PC50 include further controls relating to odour.

Dated 8 March 2017

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Richard Chilton

## APPENDIX A: QUALIFICATIONS AND AFFILIATIONS

I hold a Bachelor of Science (Geography) gained from University of Canterbury in 1997 and a Masters of Environmental Science with honours gained from the University of Canterbury in 2000. My Masters' thesis specialised in air pollution meteorology.

I am a Clean Air Society of Australia and New Zealand (CASANZ) Certified Air Quality Professional (CAQP)

My professional affiliations include the following:
- Resource Management Law Association of NZ (RMLA)
- Clean Air Society of Australia and New Zealand (CASANZ)

## EMPLOYMENT

Principal (previously Senior) Air Quality Consultant
Golder Associates (NZ) Limited (Christchurch, NZ) – 2007 to present

Senior Air Quality Consultant
Kingett Mitchell Limited (Christchurch, NZ) – 2006 to 2007

Air Quality Consultant
Bureau Veritas (London, UK) – 2004 to 2005

Technical Officer – Air Quality (consent process, compliance and science)
London Borough of Greenwich (London, UK) – 2004

Air Quality Officer (consent processing, compliance, enforcement, science and policy development)
Auckland Regional Council (Auckland, NZ) – 1999 to 2004

## REGULATORY SECTOR

In addition to being employed as an Air Quality Officer for the Auckland Regional Council for several years, I have also undertaken a number of air quality management related projects and acted as an expert advisor for the regulatory sector in New Zealand and the United Kingdom since the early 2000's. Examples are listed below.

Technical review of resource consent applications on behalf of Auckland, Wellington and Canterbury Regional Council: Astley Leathers (Auckland), New Zealand Breweries – East Tamaki plant (Auckland), Synlait Dairy Factory (Canterbury), Ministry of Justice Precinct earthworks (Canterbury), Computer Concepts (Canterbury), Unilever (Wellington), Southern Landfill (Wellington).

Revision of PARP:ALW poultry activity rules: Project Manager. Review of poultry activity rules in relation to odour discharges for the Proposed Auckland Regional Plan: Air, Land and Water. The project also sought to provide technical advice for Council staff when processing air discharge consents for poultry farms. For the Auckland Regional Council, 2007 to 2008.

Revision of PARP:ALW combustion activity rules: Project manager. Revision of combustion rules for the Proposed Auckland Regional Plan: Air,

Land and Water. This involved dispersion modelling of a wide range of boiler types and sizes to evaluate appropriate permitted activity thresholds and rule requirements. For the Auckland Regional Council, 2009 to 2012.

Auckland regional meteorological datasets: Joint project manager and author. Development of official Auckland Regional high-resolution three-dimensional CALMET meteorological datasets single-point steady state datasets (for AUSPLUME and CALINE) covering key industrial and transport routes for the Auckland Region. For the Auckland Regional Council and New Zealand Transport Agency, 2007 to 2009.

**ASSESSMENTS OF EFFECTS ON THE ENVIRONMENT - AIR QUALITY**

I have completed numerous assessments of effects on the environment (AEEs) in New Zealand, the United Kingdom, Fiji, Australia, Armenia, Bulgaria and Greenland, mainly in support of air discharge permit applications. The AEEs have covered a wide range of sectors including transport, industrial, manufacturing and mining sectors. Example projects are listed below.

Gravel Quarry Dust Assessments in Canterbury: Preparation of dust impact assessments and presentation of expert evidence at council hearings and to the Environment Court for a number of gravel quarries in Canterbury, including for the expansion of the Winstone Aggregates Yaldhurst quarry, the expansion of the Road Metals Yaldhurst quarry (three separate expansions), Fulton Hogan (Roberts Road), and Selwyn District Council. From 2006 to 2015.

Air quality consent applications for Fonterra Limited: Preparation of air discharge assessments and resource consent application for a various Fonterra sites, including the Clandeboye, Darfield, Pahiatua, Edendale, Kaikora, Hautapu, Waitoa, Te Awamutu, Takaka, Stirling and Studholme sites. These all included CALMET meteorological and CALPUFF dispersion modelling to predict potential air quality impacts, evaluating effects against relevant national guidelines and standards, and included attending consultation meetings and presentation of expert evidence at Council Hearing. For Fonterra Limited, 2006 to 2016.

City Rail Link: Air quality technical lead and expert evidence. Prepared the air technical assessment of construction dust and odour from the various staged associated with the City Rail Link project. Also assessed the air quality effects arising from the operation of the CRL route. Aurecon/Auckland Transport, 2014 to 2017.

Southern Horticultural Products Limited: Air quality technical lead and expert evidence. Prepared an assessment of air quality effects in relation to odour and dust emissions from the reconfiguration of South Hort's composting facility near Rolleston. This including providing evidence to a council hearing panel. For Southern Horticultural, 2014 to 2015.

New Zealand Starch: Project manager. Preparation of an air discharge assessment for the continued operation of the NZ Starch plant in Auckland. This included dispersion modelling using CALPUFF to predict contaminant ground level concentrations and the development of a probabilistic assessment approach using Monte Carlo simulations to establish the likelihood of contaminants exceeding national air quality standards. For NZ Starch, 2013.

Mahinerangi Coal Mine – Air Quality Assessment: Preparation of an air quality assessment relating to potential air quality impacts (dust, particulate matter, combustion emissions) associated with a proposed open cast coal mine in the Waikato Region. This involved CALMET meteorological modelling and probability analysis of exposure of sensitive locations to coal dust. It included a detailed air emission estimation and CALPUFF dispersion modelling to determine potential off-site contaminant impacts. The project involved presentations at a community consultation day, and providing expert evidence at the consent hearing. For Glencoal (subsidiary of Fonterra), 2012 to 2013.

## APPENDIX B: AIR DISCHARGE PERMITS

# Details for CRC156761

| | | | |
|---|---|---|---|
| **RMA Authorisation Number** | CRC156761 | **Client Name** | Fonterra Limited |
| **Consent Location** | Racecourse Hill, DARFIELD | **State** | Issued - Active |
| **To** | change conditions of CRC131346 to discharge contaminants to air | | |
| **Commencement Date** | 07 Apr 2015 | | |
| **Expiry Date** | 02 Dec 2045 | | |

1. This consent shall not be exercised concurrently with resource consent CRC103450.
2. Discharges of contaminants into the air shall only be from the construction and operation of a Milk Processing Plant including solid fuel-fired boilers and milk powder dryers, irrigation of wastewater and ancillary activities such as cooling towers and evaporative coolers located on State Highway 73, Racecourse Hill, Darfield.

a. There shall be no odour, particulate or water droplet emissions from the operation of the waste water irrigation or any other associated activity which is objectionable or offensive, in the opinion of a Canterbury Regional Council Enforcement Officer, beyond the boundary of any property where the activity occurs.
b. The discharges, including construction activities, shall not cause particulate matter or odour that is objectionable or offensive, in the opinion of a Canterbury Regional Council Enforcement Officer, beyond the boundary of the milk processing plant site.

4. The processes resulting in discharges into the air shall be operated and maintained using emission control mechanisms to achieve the emission standards stated in the conditions of this consent.
5. After being bought on to the site fuel for the two solid fuel-fired boilers shall be stored in covered underground bunkers (except for day bins attached to the boiler or any containers used to transport coal between the underground bunkers and the boilers).
6. All unloading of solid fuel on the site shall be completed within a solid roofed area.
7. Ash from the two solid fuel-fired boilers shall be contained and managed as much as is practicable so as to prevent the emission of fugitive dust and particulate matter.
8. The solid fuel-fired boilers shall:

a. have a net combined maximum useful energy output of no greater than 75 megawatts;
b. be fuelled by either coal or woody biomass material. The woody material shall not be treated with preservatives, impregnated with chemicals, or contain glues, paints, stains or added oils.

9. Combustion gases from the boilers shall be:

a. Discharged to air via a bag filter, capable of achieving the particulate emission concentration limits specified in Condition 13 and the particulate mass emission limit specified in Condition 14, and from a common boiler stack terminating not less than 60 metres above the local ground level; and
b. Discharged from the stack vertically into the air and not impeded by any obstruction above the stack which decreases the vertical efflux velocity from that which would occur in the absence of such an obstruction.

10. The common boiler stack efflux velocity at the combined maximum continuous rating of two boilers shall not be less than 15 metres per second.
11. The opacity of emissions from the common boiler stack shall not be darker than Ringelmann Shade 1 as described in New Zealand Standard 5101:1973 except when the bag filter is bypassed in accordance with Condition 12.

12. Bypassing of the solid fuel-fired boiler bag filter shall only occur:
    a. In the event of an emergency situation such as if the flue gas temperatures are sufficiently high to damage filter bags but after boiler fuelling is stopped;
    b. When drying out green refractory during commissioning of a boiler, following repairs to a boiler refractory, and during subsequent re-bricking, and only up to two days after commencing dry out at minimum output not exceeding 10 percent of a boiler's capacity;
    c. In the event of bag filter malfunction, providing the bypass shall not occur for more than two hours at any time; and
    d. During start-up of a boiler until the flue gas temperature exceeds 140°C but only at a minimum output not exceeding 10 percent of boiler capacity.
13. The concentration of total suspended particulate in the common solid fuel-fired boiler stack shall not exceed 50 milligrams per cubic metre corrected to zero degrees Celsius and 101.3 kilopascals pressure on a dry gas basis adjusted to 12 percent carbon dioxide or eight percent oxygen by volume, except when the bag filter is bypassed in accordance with condition 12.
14. The discharge of total suspended particulate from the combined solid fuel-fired boilers shall not exceed 9.3 kilograms per hour.
15. The discharge of sulphur dioxide from the common boiler stack shall not exceed 254 kilograms per hour when operating at maximum continuous rating or pro rata at a lesser operating condition. The sulphur dioxide discharge rate shall be calculated from the burning rate of the coal blend and the sulphur content of that coal blend.
16. Each boiler shall have:
    a. The outlet of the bag filter fitted with a broken bag detector alarmed to the boiler control room; and
    b. The broken bag protector set to ensure, as far as practicable, that any damage or deterioration to filter bags or other problems that could cause an exceedance of the 50 milligrams per cubic metre total particulate emission standard is detected.
17. The common boiler stack shall be fitted with a particulate measurement device that gives a continuous display and record of the particulate concentration of the discharge.
18. During periods when either boiler bag filter is bypassed:
    a. The dates and times that bag filter is bypassed and the reasons for the bypass shall be recorded and those records maintained; and
    b. These records shall be made available to the Canterbury Regional Council on request and shall be included as part of the Annual Environmental Report required in accordance with condition 44.
19. Records shall be kept of:
    a. The tonnage and type of solid fuel burned per month;
    b. The average and maximum hourly rate of consumption of solid fuel based on both the average and maximum steam production rates; and
    c. The average calorific value of the fuel used and if coal, the sulphur content by weight.
    d. These records shall be summarised in the Annual Environmental Report required in accordance with condition 44. The recorded data shall be retained and shall be made available to the Canterbury Regional Council on request.
20. The consent holder shall:
    a. Within six months of the date of commencement of operation, provide data on the content by weight of the following trace elements in the coal to be burned on the solid fuel-fired boiler plant: arsenic, beryllium, cadmium, chromium (total), lead, nickel, mercury, and thallium;
    b. Within 30 days of a change in the source of coal or coal blend, provide equivalent data for the new coal or coal blend to the Canterbury Regional Council prior to its use; and
    c. Report changes to fuel as part of the Annual Environmental Report required in accordance with condition 44.
21. Discharges to the air from the two milk powder dryers shall be via bag filters, capable of achieving the particulate emission concentration limit specified in condition 26 and particulate

mass emission limit specified in condition 27.

22. The two vertical Dryer 1 exhaust stacks shall have a height of not less than 45 metres above the local ground level and not less than 7 metres above the upper roof level of the Stage 1 milk dryer building.
23. The two or four vertical Dryer 2 exhaust stacks shall have a height of not less than 55.9 metres above the local ground level and not less than 7.0 metres above the upper roof level of the Stage 2 milk dryer building.
24. The minimum efflux velocity of exhaust air from the Dryer 1 exhaust stacks shall be 13.9 metres per second at the maximum continuous rating of the dryer.
25. The minimum efflux velocity of exhaust air from the Dryer 2 exhaust stacks shall be 14.3 metres per second when at the maximum continuous rating of the dryer.
26. The concentration of total suspended particulate in any dryer stack exhaust air shall not exceed 20 milligrams per cubic metre corrected to zero degrees Celsius and 101.3 kilopascals on a dry gas basis.
27. The combined discharge of total suspended particulate matter from all milk powder dryer stacks (Dryers 1 and 2) shall not exceed 12 kilograms per hour.
28. For each milk powder dryer:
    a. The outlet(s) of the dryer bag filters shall (each) be fitted with a broken bag detector and alarmed to the Milk Powder Plant control room;
    b. The broken bag detector shall be set to ensure, as far as practicable, that any damage or deterioration that could cause exceedence of the 20 milligrams per cubic metre (corrected to zero degrees Celsius and 101.3 kilopascals on a dry gas basis) of total particulate emission standard is detected; and
    c. The operators shall be advised immediately if any such exceedence is detected.
29. The consent holder shall install sampling ports in the common boiler stack and in all of the dryer bag filter stacks in accordance with Australian Standard AS4323.1-1995, or equivalent method, for provision and location of sampling ports, services, platforms and access as well as provision of single phase electrical supply.
30. In-stack monitoring of sulphur dioxide concentrations and combustion flow rates shall be undertaken in the boiler stack that discharges emissions from the boilers. The meters shall be installed and operational from when the second boiler is first operated. The method of sampling SO2 concentrations shall comply with:
    a. USEPA Method 6C “Determination of Sulphur Dioxide Emissions from Stationary Sources (Instrument Analyzer Procedure)” or equivalent standard, or
    b. ISO 7935:1992 “stationary source emissions – determination of the mass concentration of sulphur dioxide – performance characteristics of automated measuring methods”.

    Sulphur dioxide emission rates shall be calculated at all times the boilers are operated, using in-stack sulphur dioxide concentration and gas flow measurements. The data shall be calculated for the combined two boilers as a one-hour average and as a 24-hour average.
31. a. The concentration of total suspended particulate matter, and the concentration of sulphur dioxide, in combustion gas in the common boiler stack or in the duct into the common boiler stack shall be measured within four months of completing commissioning of each boiler and bag filter and thereafter at least every 12 months to determine compliance with conditions 13, 14, 15;
    b. Measurement of the discharge from the boiler stack shall occur when the boilers are operating at a rate of at least 75 percent of their maximum continuous rating.
    c. Testing and analysis of samples shall be carried out by an organisation and laboratory accredited by International Accreditation New Zealand (IANZ) for the tests and analyses involved.
32. a. The concentration of total suspended particulate matter in the exhaust gas from all milk powder dryer stacks shall be measured within four months after completing commissioning of each milk powder dryer and bag filter and thereafter at least once every 12 months.
    b. Testing and analysis of samples as appropriate, shall be carried out by an organisation and laboratory accredited by International Accreditation New Zealand (IANZ) for the tests and

analyses involved.

33. a. The method of sampling and analysis for total particulate matter shall comply with USEPA Methods 5 or 17, or ISO 9096:2003, ASTM D3685, or equivalent method, provided that such a methodology shall be provided to the Canterbury Regional Council on request.
    b. The testing time for each particulate sample shall be two hours continuous and at least three samples shall be collected.
    c. Results shall be adjusted to zero degrees Celsius, 101.3 kilopascals and 12 percent carbon dioxide or 8 percent oxygen by volume on a dry gas basis and reported as a mass emission expressed as kilograms per hour.
34. a. The method of sampling and analysis for sulphur dioxide shall be USEPA Method 6 or 6A, or an equivalent method, provided that such a methodology shall be provided to the Canterbury Regional Council on request.
    b. The testing time for each sulphur dioxide sample shall be one hour continuous and at least three samples shall be collected.
    c. Results shall be adjusted to zero degrees Celsius, 101.3 kilopascals and 12 percent carbon dioxide or 8 percent oxygen by volume on a dry gas basis and reported as a mass emission expressed as kilograms per hour.
35. a. Volumetric flow of combustion gas and gas temperatures during each particulate and sulphur dioxide emission test shall be determined and recorded; and
    b. Results shall be presented as part of the particulate emission test report
36. a. The oxygen (or carbon dioxide) concentrations in combustion gases shall be continuously monitored and recorded during each particulate and sulphur dioxide emissions test: and
    b. Results shall be presented as part of the particulate emission test report.
37. a. The results of the emissions tests and a description of the testing methods shall be provided to the Canterbury Regional Council within 40 working days of the testing being completed.
    b. A summary of the results shall also be included in the Annual Environmental Report.

38. Condition deleted

39. Once the 45 megawatt Stage 2 boiler has been commissioned and operated and the consent holder anticipates that it will be run at or in excess of 75 percent of full capacity in conjunction with the 30MW Stage 1 boiler for a period of greater than 6 months of the processing season , the consent holder shall:
    a. Commission an independent accredited contractor to measure and record concentrations of ambient sulphur dioxide in ambient air using a continuous monitor that is able to measure and record 1 hour average concentrations for a period of at least 12 months. The monitoring method shall be consistent with “AS3580.4.1:1990, methods for sampling and analysis of ambient air – Determination of sulphur dioxide – Direct reading instrument method” or another equivalent method approved by the consent authority.
    b. Commence continuous monitoring of wind speed, wind direction and temperature for a period of at least12 months. The meteorological monitoring shall occur as close as practicable to the consent holder’s site. . The continuous monitoring shall be consistent with Australian Standard AS2922. This monitoring of meteorological conditions shall continue for the duration of ambient sulphur dioxide monitoring undertaken in accordance with Condition 39.
    c. The location of the monitoring required under condition 39(a) shall be determined by an independent accredited contractor as the best practicable location for monitoring effects from the Fonterra discharge as authorised by this consent. The location shall be on or within 200m of “The Oaks property” (E 1525148, N 5188308).
    d. The consent holder shall use the data collected from the ambient sulphur dioxide and wind monitoring undertaken in 39 (a) and (b) and data from the in-stack sulphur dioxide monitoring required by Condition 30 to validate the accuracy of the dispersion modelling results used as part of the consent application for this consent (CRC120180). The report shall provide analysis of the

results against the National Air Quality Standards, the New Zealand Ambient Air Quality Guidelines and also the Regional Ambient Air Quality Target acceptable level of 230µg/$m^3$ (1-hour average).

e. The consent holder shall submit the results of all ambient air monitoring and model calibration to the Canterbury Regional Council within three months of completion of each 12-month monitoring period.

f. Should the results of monitoring required under condition 39(a) show that as a result of the consent holder's activities there has been an exceedence of the Regional Ambient Air Quality Target acceptable level (1-hour average) then monitoring shall continue until such time that there have been no exceedences within a 12 month continuous period, provided that the total period of monitoring under this condition shall not exceed five years.

40. The two solid fuel-fired boilers shall be serviced at least once every year by a person competent in the servicing of such appliances. The servicing shall include:

a. Internal cleaning and replacement or repair of damaged equipment and services as necessary;

b. Adjustment of the air to fuel ratio to optimise energy efficiency and to minimise the emissions of products of incomplete combustions and calibration; and

c. Adjustment of boiler monitoring equipment consistent with the intent of this consent.

i. Servicing reports shall be prepared and copies provided to the Canterbury Regional Council on request

ii. Confirmation that this service has been undertaken and at least a summary of the service reports shall be provided in the Annual Environmental Report.

41. All bag filters shall be serviced at least once every year or in accordance with the manufacturer's recommendations. Servicing shall include, but not be limited to:

a. Inspection of all bags for general condition; and

b. Replacement or repair of any defective bags

42. Best practicable measures shall be taken to avoid or mitigate the dispersal and deposition of dust resulting from construction activities beyond the property boundary. These dust control measures shall include, but are not limited to, the following:

a. Application of water by water tanker and / or sprinkler systems during dry windy conditions;

b. Restricting vehicle speeds on unsealed surfaces;

c. Restricting dust generating operations during strong wind conditions; and

d. Rapid establishment of grass by 'hydro-seeding' or similar methods on soil bunds and other unsealed areas.

43. A record of all complaints made to the consent holder relating to this consent shall be maintained and shall include:

a. The date, time, location and nature of the complaint;

b. The name, phone number and address of the complainant, unless the complainant refused to supply these details;

c. Details of the complaint;

d. A description of the wind speed and direction and rainfall (if any) at the time of the incident that gave rise to the complaint;

e. The most likely cause of the complaint; and

f. Any remedial action taken by the consent holder.

The record of complaints shall be provided to the Canterbury Regional Council upon request and as part of the Annual Environmental Report required in accordance with condition 44.

44. The consent holder shall, not later than 30 September of each year after the plant is commissioned, provide an Annual Environmental Report to the Canterbury Regional Council, Attention RMA Compliance and Enforcement Manager, setting out a summary of results (with analyses) and comments on all requirements, including emissions tests undertaken in relation to this consent over the previous processing season (from 1 August to 31 July inclusive).

45. At least 10 working days prior to the exercise of this consent, the consent holder shall prepare and submit to the Canterbury Regional Council, Attention RMA Compliance and Enforcement

Manager an Air Discharge Management Plan (ADMP), which details methods and procedures to be used to control discharges to air from the site. The ADMP shall include, but not be limited, to:

a. a description of the site and its operation with a focus on the site components that are of direct relevance to the discharges to air from the site;
b. management and operational procedures including cleaning, replacement procedures, regular maintenance and monitoring requirements, which are specific to the site's emission control systems;
c. management and operational procedures, including shutdown systems, relating to the site's system failure mechanisms;
d. management and operational procedures specific to the site's activities that have the potential to generate odour;
e. management and operational procedures that specifically relate to cooling towers or evaporative coolers if used;
f. management and operational procedures for ensuring boiler optimisation and burner efficiency;
g. inspection and maintenance procedures for the site's plant needed to ensure that all aspects of the site's operation associated with discharges to air are maintained in good operating condition;
h. monitoring and reporting procedures;
i. emergency response and contingency plans for events;
j. procedures for responding to complaints and / or community liaison including contact telephone numbers for staff of the consent holder who are responsible for responding to complaints; and
k. procedures for reviewing and / or improving the ADMP.

46. The consent holder shall review the ADMP at least once every two years and shall ensure that a copy of any updated ADMP is forwarded to the Canterbury Regional Council.
47. The Canterbury Regional Council may, once per year, on any of the last five working days of April or October, serve notice of its intention to review the conditions of this consent for the purposes of:
    a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage; and / or
    b. requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; and / or
    c. requiring monitoring in addition to, or instead of, that required by the consent; and / or
    d. Requiring ambient monitoring of sulphur dioxide for a period of at least one year in the event that there is a change to any national environmental standard (NES) or ambient air quality guideline set by the New Zealand Government or the Canterbury Regional Council that sets a guideline or standard for sulphur dioxide of less than or equal to 50μg/$m^3$ (24 hour average), if the boiler plant is routinely fired on coal; and / or
    e. Requiring measures to reduce sulphur dioxide emissions from the solid fuel-fired boiler plant when fired on coal to a level that is predicted to comply with the standard or air quality guideline described in condition 47(d).
48. This consent shall lapse ten years after the date of commencement, unless the consent is either given effect to before that lapsing date, pursuant to section 125 of the Resource Management Act 1991.
49. This consent shall expire on the 2nd of December 2045.

# Details for CRC165424

| | | | |
|---|---|---|---|
| **RMA Authorisation Number** | CRC165424 | **Client Name** | Fonterra Limited |
| **Consent Location** | Lot 1 DP 456083 | **State** | Issued - Active |
| **To** | To discharge contaminants to air. | | |
| **Commencement Date** | 18 Feb 2016 | | |
| **Expiry Date** | 05 Nov 2048 | | |

1. The discharges into air shall be only from waste-oil fired heaters located at the Darfield Dairy Factory site, State Highway 73, Racecourse Hill, Darfield, at map reference Topo50 BX22:2624-8858.

2. The discharges shall be only combustion products from waste-oil heaters having a total net rated output of up to 152 kilowatts.

3. The discharges into air from the heaters shall occur via stacks at a height of at least 5.9 metres above the ground level at the base of the stacks, and at least 1.1 metres above the roof ridgeline of the building.

4. The discharge stacks shall each have efflux diameters of not more than 205 millimetres.

5. The discharges shall be directed vertically into air and shall not be impeded by any obstruction above the stacks that decreases the vertical efflux velocity below that which would occur in the absence of such obstruction.

6. The maximum total burning rate of oil shall not exceed 19 litres per hour.
7. The concentration of contaminants in the oil in parts per million by weight (ppmw) shall not exceed the following:
    a. Arsenic – 5 ppmw
    b. Cadmium – 2 ppmw
    c. Chromium – 10 ppmw
    d. Copper – 100 ppmw
    e. Lead – 100 ppmw
    f. Sulphur – 10000 ppmw
    g. Polychlorinated biphenyls (PCBs) – 2 ppmw
8. A representative sample of the oil to be burned shall be taken and analysed:
    a. At least once during the period of May to August each year, and
    b. Whenever waste-oil is received that has not been removed from machinery or vehicles on the premises of the consent holder.
9. All sampling required under this consent shall be undertaken by a competent person using the most appropriate scientifically recognised and current methods, and shall be analysed for all the contaminants listed in condition (7) except PCBs.
10. All samples taken shall be analysed using the most appropriate scientifically recognised and current method by a laboratory that is accredited for that method of analysis, or, where there is no laboratory in New Zealand with accreditation for such a method, by a laboratory that has accreditation for similar analyses.

11. For the purposes of condition (10), accreditation must be by International Accreditation New Zealand (IANZ) or a equivalent accreditation organisation that has a Mutual Recognition Arrangement with IANZ.
12. The results of all analyses shall be kept and shall be provided to the Canterbury Regional Council within 10 working days of completion of the analysis.
13. The oil fired heaters shall be serviced at least once every year by a person competent in the servicing of such appliances. This servicing shall include:
    a. Adjustment, if necessary, of the fuel to air ratio to ensure compliance with condition (15), and
    b. Testing of the ratio of combustion gases discharged i.e., carbon monoxide, carbon dioxide and oxygen, using a suitably calibrated instrument.

    Service reports shall be prepared and retained and copies shall be provided to the Canterbury Regional Council on request.

14. The opacity of emissions from the discharge stacks shall not be darker than the Ringelmann Shade 1 as determined in accordance with the New Zealand Standard 5201:1973, except for a period not exceeding two minutes in each hour of operation.
15. The discharges shall not cause odour or deposited particulate material, which is offensive or objectionable beyond the boundary of the property on which the consent is exercised.
16. The lapsing date for the purposes of section 125 shall be 31 December 2018.
17. The Canterbury Regional Council may, once per year, on any of the last five working days of April or October, serve notice of its intention to review the conditions of this consent for the purposes of:
    a. Dealing with any adverse effect on the environment which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage; or
    b. Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment.